Subject Index 1997

Corrigenda from previous volumes

Beard M.J., Bailey J.H., Cherry D.T., Moloney M.G., Bo Shim S., Statham K.A., Bamford M.J., Lamont R.B.: **52**, 3719 (1996): correction to structures 3 and 4, 1177

Colombani D., Maillard B.: 52, 14855 (1996): explanatory text for Scheme 2, p. 14587; additions to ref. 8 and to Table 2; correction to p. 14860, 1545 Dodziuk H.: 52, 12941 (1996): Topological isomers in Figure 1 should read Constitutional isomers, 401

Goj O., Kotila S., Haufe G.: **52**, 12761 (1996): correction to references 1-6, 401

Lan McEldoon W., Wiemer D. F.: **52**, 11695 (1986): pmr data of 2'-ketouridine (**11**) on p. 11701 corrected, 1546

Ramig K., Krishnaswami A., Rozov L. A.: 52, 319 (1996): reversal of absolute stereochemistry of compound 6, 9415

Williams L., Zhang Z., Shao F., Carroll P.J., Joullié
M.M.: 52, 11673 (1996): various corrections to configurations in the Experimental section, 1923

Perspectives

Leonard, N. J., on the chemistry of research collaboration. 2324

Reports

allylic protecting groups and their use in a complex environment, 13509

ambiphilic allenyl enolates, reactivity, 10197

anionic oxy-Cope rearrangements, recent applications, 13971

asymmetric Heck reaction, 7371

chemical transformations induced by hypervalent iodine reagents, 1179

chromium carbene complex photochemistry in organic synthesis, 4105

controlled racemization of optically active organic compounds: prospects for asymmetric transformation, 9417

cyclopenta[c]pyran skeleton of iridoid lactones, synthesis, 14507

design and synthesis of conformationally constrained amino acids as versatile scaffolds and peptide mimetics, 12789 epoxide hydrolases as asymmetric catalysts, 15617 free radical cyclisations involving nitrogen, 17543 high pressure and selectivity on organic reactions, 2669

hydroborations catalysed by transition metal complexes, 4957

intramolecular cycloaddition reactions of allylic cations, 6235

new organometallic reagents using highly reactive metals, 1925

optically active isoxazolidines via asymmetric cycloaddition reactions of nitrones with alkenes, 403

organic reactions on alumina, 7999

peroxidases, oxidations catalysed by, 13183

prebiotic chemistry: a bioorganic perspective, 11493 reactions of electrophilic carbenes with α-amino acid derivatives, 3425

regio- and stereoselective synthesis of γ-alkylidenebutenolides and related compds, 6707

solid-phase organic reactions, Nov 95-Nov 96, 5643 synthesis of nonracemic phosphonates, 16609

synthetic applications of furan Diels-Alder chemistry, 14179

synthetic studies with carbohydrate-derived chiral auxiliaries, 14823

templation and encapsulation in supramolecular chemistry, 15911

Symposia-in-print

chemical biology, 11937

combinatorial chemistry, applications of solid-supported synth, 6573

modern organic chemistry of polymerization, 15157 new synthetic methods, 16213

recent applications of synthetic organic chemistry, 8689

recent aspects of S, Se and Te chemistry, 12067 Acetals

acetals or thioacetals of δ - and ϵ -(phenylthio)ketones, aromatic radical-anion induced reductive lithiation of, synth of δ - and ϵ -lithioketone equivalents, 17607

acetylenic acetals, reactions with 2-aminothiophenol, synth of 2,4-substituted quinolines *via* benzo[*b*] [1,4]thiazepine intermediates, 641

5-amino-4-(4-nitrophenyl)-1,3-dioxan, synthesis and

- stereochemistry of Schiff bases, 1909
- anodic oxidation of methylnaphthalenes and 9methylanthracene, formation of quinone acetals, 8613
- asymmetric desymmetrization of 2,2',6,6'-tetrahydroxybiphenyl using *l*-menthone, synth of resolved 2,2'-biaryldiols, 16663
- bis-orthocyclophanes with dioxymethylene-bridged 10-membered rings between benzenoid units; synth, stacking of aromatic rings, 3015
- bromoketals, reaction with tri-n-butyltin chloride and sodium cyanoborohydride to generate ethers via a tandem sequence comprising of a radical cyclisation-reductive demethoxylation sequence, 10479
- cleavage of function in A-type proanthocyanidins, 2591
- crotonaldehyde dimethyl acetal, theoretical study of metallo-dehydrogenation and addition of MeLi and MeK, 7937
- cyclic and acyclic acetals, hydrolysis to the corresponding carbonyl compds by catalytic CBr₄ in CH₃CN/H₂O solvent mixture under different energy sources, 14255
- cyclohex-3-en-1-one chiral —, amination *via* aziridines using ethyl *N*-nitrobenzenesulfonyloxy-carbamate, 4779
- difluoroketene silyl acetal, asymmetric aldol addition of aldehyde catalysed by chiral Lewis acids, synth of the corresponding α , α -difluoro β -hydroxy esters, 10271
- dihydroxy-anthraquinones from naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, 1823
- 1,7-dioxaspiro[6.6]undecanes, synth of C11-C25 fragment of avermectin A_{2b}, 9377
- diphenyl dithioacetals and alkyl phenyl dithioacetals, reaction with tributyltin hydride, synth of α-phenylsulfenyl and α-alkylsulfenyl radicals respectively, cyclisation of, 4291
- hemiketals and α-diols by addition of water or alcohol to 3-halopyruvamides, 13739
- heterocyclic ketene N,O-acetals, synth from 4-aryl isoxazolin-5-ones, 10433
- ketalisation of tetrahydroxyketones, application to synth of ketal core of zaragozic acid, kinetics and thermodynamics, 11179
- ketalised α and β -lithiated $\alpha\beta$ -unsaturated ketones, new masked acylvinyl anion equivalents, 4921
- ketone silyl acetal, Mukaiyama reaction of catalysed by organotin perchlorates, 14275
- 7-methoxy-3,4-dihydro-2*H*-1-benzopyran-2-one, dimethyl ortho-ester formation and reactions, 3863 8a-methoxy-2*H*,6*H*-chromen-6-ones, synth by phen-

- olic oxidation route, 3879
- methylenecyclohexane siloxy acetals, Prins-pinacol spiroannulations of, synth of spiro[4.5]decan-6-ones, 8927
- oxasilacyclopentane acetals, synth by insertion of formamides into a C-Si bond of *trans*-silirane, synthetic utility of, 16597
- α-oxoketene *O,N*-acetals, reaction with maleic anhydride, synth of *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, 17643
- palmarumycins CP₃ and C₂, and CP_{4a} and CP₅, 1,8-naphthalenediol—, absolute configuration and conformation, calculation of CD spectra, 1655, 3101
- prep from aldehydes and alcohols in CH₂Cl₂ using AlFe-pillared montmorillor, te, 15889
- quinone monoketals by phenyliodonium diacecate oxidation of naphthols, reaction with phthalide sulfones provides benz[a]anthraquinones, 2177
- silylketene acetals, enantioselective conjugate addition to 2-carboxycyclopentenones promoted by TADDOL.TiCl₂ complexes, 13009
- spiroketal fragment of calyculin A, synth of D-xylone-1,4-lactone as intermediate to, 9769, 9777
- α -stannylacetals, reaction with organometallic reagents to provide enantioenriched α -alkoxyalkyl-stannanes, 7615
- 2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3,11}.0^{5,9}.0^{8,12}]tridecanes, synth by ozonolysis of 2-endo-7-anti-diacylnorbornenes, 2401
- see also Acylals, Aminals, Dioxolans, Selenoacetals, Thioacetals

Acetogenins

scanlonenyne, halogenated C₁₅ acetogenin from the red alga *Laurencia obtusa*, structure, 4271

Acetylenes

see Alkynes

Acidity

equilibrium — of sulfoxides and sulfones in THF, ion pairing, 10103

Acridines

- acridones, synth from 1,4-dihydro-4-oxoquinoline-2butanoic acid derivs by cyclization and aromatization, 12717
- 3-amino acridine, reaction with formaldehyde, synth of a dihydrooxazine, a tetrahydropyrimidine deriv, a Tröger's base analogue or acridino[3,4-j]-benzo [b][1,7]phenanthroline depending on stoichiometry, 2871
- disodium 1,8-disulfonato-3,4,5,6-acridinetetracarboxylic acid, formation of a dimer in water that encloses a hydrophobic cavity, 10523
- pyrido[2,3-b]acridine-5,11,12-triones, synth from

N-protected quinolones, 341

Acylals

generation and reaction with Grignard and organo-Li reagents, formation of esters, 12679

Acylation

- of aza-allyl carbanions derived from N-[bis(methylthio)methylene]glycine ethyl ester and N-[bis-(methylthio)methylene]benzylamine,prepofoxazoles, α,α -disubstituted α -acyl- α -amino acids and α,β -didehydroamino acids, 3679
- cyclic and open-chain α -silylvinyl sulfides, synth, —, 7897
- of enaminone lithium dianions with N,N-dimethylcarbamoyl chloride, synth of N,N-dimethylcarbamoylenaminones, 6893
- of hydroxy aromatic compds with 2-bromo-2-methylpropionamide followed by Smiles rearrangement, synth of 2-hydroxy-2-methyl-*N*-arylpropionamides, subsequent conversion to arylamines by hydrolysis, 6303
- lipase-catalysed of amino sugar derivs, 7587, 7629 mercuribis(diazoacetic esters), substrates for reactions, 2371
- of oxazolo[4,5-b]pyridin-2(3H)-ones, 2-phenyl-oxazolo[4,5-b]pyridines and pyrrolo[2,3-b]-pyridin-2(2H)-ones catalysed by palladium, 5159 regioselective of 20R-hydroxyecdysone catalysed by Candida antarctica lipase B (Novozym 435), 5855
- regioselective acylation of carbohydrate derivs using iodine, 11753
- stereoselective —, synthetic studies with carbohydrate-derived chiral auxiliaries, 14823
- of unprotected amino acids using ultrasound, 1123
 Acyloins

see Ketols

Adamantanes

- amino azanoradamantane hexahydro-2,5b-methano-1*H*-3a*S*,3aa,6aa-cyclopenta-[*c*]-pyrrole-4a-amine, synth. 1
- bridgehead functionalization using perfluorocis-2-butyl-3-propyloxaziridine, 5995
- homoadamantane-incorporated nitrones, cyclo-additions with olefins, formation of 3-oxa-2-azatetracyclo[7.3.1.1^{7,11}.0^{2,6}]tetradecanes, 5413
- hydroxylation catalysed by manganese and iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxy-phenyl)porphyrin, 4497
- 4-methylene-3-homoadamantyl mesylate, effect of a γ-cyano substituent on solvolyses, 8155
- trioxadamantane type aglucones of 3-methoxy secologanin derivs by hydrolysis and trans-

acetalation and deglucosylation, 11659

Addition reactions

- 2-acyl-N-tosyl oxazolidines, diastereoselective addition of nucleophiles to C=O, 1759
- addition of nitroalkanes to prochiral acceptors catalysed by proline rubidium salts, 11223
- addition of Reformatsky reagent derived from t-butyl α -bromoacetate to carbonyl compds induced by chiral β -amino alcohols, 3787
- 1,6-additions to alkenynones and alkenynoates, synth of allenyl enolates, reactivity of, 10197
- aldol-type addition of enol borinates to imines, ab initio MO study, 7705
- arene-Mn(CO)₃ complexes, nucleophile promoted by chiral auxiliary, 3849
- asymmetric aldol addition of aldehydes to a difluoroketene silyl acetal catalysed by chiral Lewis acids, synth of the corresponding α,α -difluoro β -hydroxy esters, 10271
- asymmetric Michael of lithiated SAMP hydrazones to alkenylphosphonates followed by oxidative cleavage, synth of 2,3- and 1,2-disubstituted 4-oxophosphonates, 12961
- bromine addition to acenaphthylene: concentration dependence of the steric course, 785
- 1,3 and 1,5-carbonyl transposition sequence of carbonyl conjugated vinylic selenides through organometallic reagent addition reactions followed by acid hydrolysis, 7445
- of chromium carbene complexes, 4105
- conjugate addition of Me₃Al to cyclohexa-2,5-dienone, synth of (—)-solavetivone, a phytoalexin from potato tubers, 603
- copper catalysed conjugate of *n*-butyl Grignard reagents to enones in the presence of chiral ferrocenyl phosphine oxazoline ligands, 16503
- of diethyl 3-oxocyclobutylphosphonate with 5lithio-1-trityl-1,2,4-triazole, synth of 3hydroxy-3-(1,2,4-triazol-3-yl)cyclobutylphosphonic acid, 10289
- 1,2-diol diperchlorates, synth from olefins by reaction with phenyliodine(III) diperchlorate, 16877 enantioselective of diethylzinc to benzaldehyde catalysed by chiral titanate complexes with helical ligands, 4145
- enantioselective conjugate of silylketene acetals to 2-carboxycyclopentenones promoted by TADDOL. TiCl₂ complexes, 13009
- of 1-hydroxyalkyl radical to 3-hydroxy-1-(methylthio)-1-(p-tolylsulfonyl)-1-alkenes and their acetates, application to prep of optically active compds, 12101

intermolecular radical reactions involving formal addition of sulfonyl and allyl fragments of an allylic sulfone across the double bond of an alkene, 6493

- intramolecular of alkyl radicals onto imines, kinetic studies, 73
- Karasch addition of methyl 2,2-dichlorocarboxylates to 1-alkenes promoted by ferrocene, 4419
- Lewis acid promoted Michael addition of 2-(trimethylsilyloxy)furans to oxazolidinone enoates in the presence of hexafluoroisopropanol, synth of 4-substituted butenolides, 17015
- lithiation and fluoride ion-induced eliminationaddition reaction of 1-(triisopropylsilyl)gramine derivs, synth of clavicipitic acids, 51
- Michael addition of lithium salt of cyanohydrin to (S)- and (R)-3-(2,2-dimethyl-1,3-dioxolan-4-yl)-cis-2-propenoate, synth of (+)-fargesin and (—)-picropodophyllone, 9585
- molecular fluorine to 7-oxabicyclo[2.2.1]hept-5-ene deriv, subsequent transformation to fluorine substituted deoxyhexofuranosides, 6327
- of nitric oxide to 1,5-dimethylhexa-2,4-diene, synth of (E)-2,5-dimethyl-2,5-dinitrohex-3-ene, 17221
- nucleophilic additions and [3+2] cycloadditions of aziridines under C-C and C-N bond cleavage, 14297
- nucleophilic additions to β-substituted carbonyl compds, theoretical study of open-chain model of transition states, 13419
- palladium catalysed allylic of diethylzinc to benzaldehyde using 2-(1-p-tolylsulfinyl)alkylpyridines as ligands, 3843
- of 2-phenylcyclohexanone to chalcone, structure and stereochemistry of the products, 11693
- of phenylmagnesium bromide to 2,3-di-O-benzyl-D-glyceraldehyde and 2,3-di-O-isopropylidene-D-glyceraldehyde, synth of protected aminodiols which could be transformed to enantiomers of phenylglycine, 1411
- photoinduced addition of *N*-carbomethoxymethylpyrrolidine to 5(*S*)-t-butyldimethylsiloxymethylfuran-2(5*H*)-one, 1457
- phthalide synth by 1,6-conjugate to 2-(o-vinyl-phenyl)oxazolines, synth of chuangxinol, 14127
- of pyrrole and indole to N-acetyl- and N-alkylpyridinium, quinolinium or isoquinolinium salts, synth of dihydroazines, 13959
- radical addition of thiol acetic acid to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, synth of β -C-glycoside sulfoxides and sulfones, 16355

- of Reformatsky reagents to 1,1-dicyanoalkenes catalysed by Cp₂TiCl₂, 2899
- regio and diastereoselective of Δ^3 -imidazoline 3-oxides to aryl isocyanates, synth of 5,6,7,7a-tetrahydroimidazo[1,5-b][1,2,4]oxadiazol-2(H)-ones, 13873
- of silyloxydienes to 2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, 7715
- stereoselective base-catalysed of (R)-pantolactone to the ketene derived from racemic N-phthalyl valine, dependency on tertiary amine catalyst employed, 13719
- tandem dealkoxycarbonylation-Michael addition reactions for the preparation of five- and sixmembered lactones and lactams, 9477
- thiophilic of organolithiums to trithiocarbonate oxides (sulfines), synth of trithioorthoester oxides, 1323

see also Michael additions

Aggregation

bis-orthocyclophanes with dioxymethylene-bridged 10-membered rings between benzenoid units; synth, stacking of aromatic rings, 3015

Alcohols

- absolute configuration by NMR, anisotropic effects on remote positions, 8541
- alken-1-yn-3-ols, Ru-catalysed hydration/esterification forming 2-oxoalken-3-yl esters, 9241
- allyl, benzyl and sulfonyl substituted alcohols, reductive deprotection using naphthalene-catalysed lithiation, 14355
- allylic alcohols, synth in the solid-phase using tellurium, 12131
- allylic protection of alcohols, Report, 13509
- α-amido trifluoromethyl alcohols and ketones, metallo-β-lactamase inhibitors, synth using Ruppert reagent, 7275
- biphenyl alcohols and benzopyrans by 1,6 and 1,5 ring closure of aryl σ radicals generated from o-bromobenzylethers, 285
- 3-buten-1-ol and 4-penten-1-ol, synth of ω -tosyl derivs, lithiation, synthetic utility, 11449
- butynols, cycloisomerisation at a pentacarbonylmetal template, synth of carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, 5143
- chiral allylic alcohols by [2,3] sigmatropic rearrangement of allylic selenoxides, 12115
- conversion to organic carbonates by carboxylation using the O₂-/CO₂ system, 167
- diamino alcohol lipophilic ligands whose copper(II) complexes are catalysts for cleavage of p-nitro-

phenylesters of phenylalanine and phenylglycine in surfactants solution, 357

- 1,4-dideoxy-1,4-imino-1-(S)-(substituted phenyl)-D-ribitols with OH, NH₂, NO₂, CO₂H and halogeno moieties, synth as transition state inhibitors for N-riboside hydrolases and transferases, 2915
- 3,3-difluorovinyl-1-ethylprop-2-enol derivs, mono-defluorination, 3-lithiation and applications of obtained 3-fluoro-3-lithioallylic alcohol derivs, 14749 trans,trans-2,3-dimethylchroman-4-ol, synth using dimethoxycoumarin, synthetic approach to anti-HIV-1 active Calophyllum coumarins, 14915
- epoxidation of allylic by TBHP in presence of zeolites, diastereoselection in secondary—reactions, 11369
- (R)-(+)- α -(4-fluorophenyl)-4-(2-pyrimidinyl)-1-piperazinebutanoland(R)-(+)- α -(4-fluorophenyl)-4-methyl-1-piperidinebutanol, synth as potential anti-psychotic agents involving lipase-mediated resolution, 15115
- from asymmetric allylation of aromatic aldehydes catalysed by chiral hosphoramides derived from (S)-proline, synth of homoallylic alcohols, 3513
- functionalised 3,3-disubstituted 2,3-epoxy-1-ols, regioselective methylation of, synth of C1-C3, C10 and C7-C9 fragments of briarian diterpenes, 7429 furfuryl alcohols, conversion to 2-cyclopenten-1,4-diol derivs, 1983
- cis fused hydronaphthalenols, synth by oxy-Cope rearrangement of a trans-1,2-divinylcyclohexanol, 14235
- homoallylic alcohols by Barbier-type allylation of chiral α-aminoaldehydes, 2823
- 4-hydroxybenzyl alcohol derivs, reaction with Lascorbic acid, 6971
- 1-imidazolethiocarbonyl derivs from by grinding with thiocarbonyldiimidazole, 2415
- monoprotected bis(allylic alcohol), chemo- and enantioselective cyclopropanation of using a chiral dioxaborolane-derived ligand and Zn(CH₂I)₂ as key step in synth of (+)-bicyclohumulenone, 16277
- oxygenation of organo-Zn compds in perfluorohydrocarbons, formation of — and hydroperoxides, 9135 panaxytriol and panaxydol, polyacetylenic constituents of Ginseng Radix Rubra *Panax ginseng*, stereostructures of, 15691
- (±)-c-4-phenyl-t-, (±)-t-4-phenyl-c-, (±)-t-4-phenyl-tand (±)-c-4-phenyl-c- -5-[(E)-styryl]tetrahydrofuran-r-ol by electrohydrodimerisation of *trans*cinnamaldehyde, 5831
- 4-, 5- and 6-phenylthio-2-hexanol, synth and transformation into ring closed compds, 9487

(R)-1,3- 2 H₂-prop-2-yn-1-ol and (R)-1- 2 H₂-prop-2-yn-1-ol, conversion to (S)- and (R)- $(1,3-^2$ H₂)-allene respectively, 2049

5

- 1-(1,2-propadienyl)cyclopropanols, transformation into substituted hydroquinones using octacarbonyl-dicobalt: synth of vitamin E and K analogues, 11069
- propargylic alcohols, reaction with tetraallylmanganate or triallylmanganate, trapping of intermediate alkenylmanganese compds. 5061
- reductive desulfurization of secondary using a Raney-nickel/sodium hypophosphite combination, 12883
- saturated and unsaturated alcohols, oxidation with t-butyl hydroperoxide and zeolites, 15867
- secondary -, configuration by PMR/CMR, the fucofuranoside method, 5973
- selective tetrahydropyranylation of using TaCl₅-silicagel and TaCl₅ as Lewis acid systems, 14997
- 2-silyl-3-alkenols, electrophilic 5-endo-trig cyclisation as stereoselective route to polysubstituted tetrahydrofurans, 4339
- N-substituted fused pyrazolinols, synth by treatment of β -diketones and the corresponding β -enaminoketones, having modified carane and p-menthane skeletons, with aryl- and alkylhydrazines, 17735
- trans-1-substituted-3-trifluoromethyl-2-butene-1-ols, SET induced cyclisation reactions of the malonic acid esters of, synth of cyclopropane lactones containing a trifluoromethyl group, 13001
- (S)-(—)-2-(tetrahydropyranyloxy)-1-propanol, reaction with 1,8-dichloroanthraquinone, generation of the 1,8-disubstituted product and a monosubstitutedmonodechlorinated product, 4179

Aldehydes

- alkenylation of with phosphorus carbanions, prep of *E*- and *Z*-2-alkoxy- and 2-aryloxy-2-alkenoates, 17097
- α-aminoaldehydes, Barbier-type allylation of, dependence of the stereochemical outcome on metal and allylic halide, 2823
- aromatic aldehydes, asymmetric allylation catalysed by chiral hosphoramides derived from (S)-proline, synth of homoallylic alcohols, 3513
- aromatic dibenzyloxy aldehydes, selective debenzylation of by magnesium bromide in anhydrous etherbenzene solution, 215
- 3-aryl-2,3-unsaturated aldehydes, cyclisation procedure with dimethyl succinate, synth of 4-substituted-3-hydroxy benzoic acids, 15029
- aryl-capped polyenals and polyenedials of various conjugation lengths, one-pot synth, 2717, corrig.

6233

asymmetric aldol addition to a difluoroketene silyl acetal catalysed by chiral Lewis acids, synth of the corresponding α,α-difluoro β-hydroxy esters, 10271 bicyclic —, photo-enolisation and trapping of o-quinodimethanes, 15969

carbohydrate α-azido-aldehydes, synth via C-dichloromethyl sugar derivs, 5493

3-(1-chlorocyclohexyl)propanaland2-(1-iodomethylcyclohexyl)ethanal, synth by regioselective cyclopropyl ring opening of 6-formyl-spirobicyclo[5.2]octane mediated by TMSCl and TBAI, 16341

trans-cinnamaldehyde, electrodimerisation of, synth of (±)-c-4-phenyl-t-, (±)-t-4-phenyl-c-, (±)-t-4-phenyl-t- and (±)-c-4-phenyl-c- -5-[(E)-styryl]tetra-hydrofuran-r-ol, 5831

coupling of polyhalo compds with —, direct electroreduction and use of electroregenerated base, 1721 2,3-di-O-benzyl-D-glyceraldehyde and 2,3-di-Oisopropylidene-D-glyceraldehyde, addition reaction with phenylmagnesium bromide, synth of aminodiols which could be transformed to enantiomers of phenylglycine, 1411

ene-like reaction of — with vinyl ethers displaying the oxygen functionality at the central carbon of an allylic system, key reaction in synth of chlorovulone II—mitomycinoids and phyllanthocin, 16299 furfural, thiophene-2-carbaldehyde, indole-3-carbaldehyde, reactions with diethyl azodicarboxylate, formation of diethyl 2-oxo-8-oxa-6,7-diazabicyclo-[3.2.1]oct-3-ene-6,7-dicarboxylate, 9313

indol-3-yl-carbaldehyde oximes, reaction with electrophilic alkenes/alkynes, synth of nitrones and γ-carbolines, 747

ketones, transformation to gem-dihalides via hydrazones using copper(II) halides, 557

2-methylpropanal and molecular oxygen for oxidation of organic substrates catalysed by Co(II) porphyrin and Co(II)-schiff base, 7641, 7649

ozonolysis of but-3-enoic acids, from dilithium αβ-unsaturated acids, formation of aliphatic — and chloro—, 10883

polymethylhydrosilane-TBAF reduction of — in THF, stereo- and chemo-selectivity, 1627

reaction with imidate derived from dimethyl aminomalonate, general route to 2-oxazoline derivatives, *ortho* and *meta* bis(2'-oxazoline-5'-yl)-benzenes, 6351

reactions with pyrrole, synth of porphyrins bearing meso-linked straps of variable length, rigidity and redox activity, 6755

reactions with tetrathiafulvalenyllithium, synth of

mono-functionalised tetrathia fulvalene derivs, 17781 ring-chain tautomerism of 3-amino-1,2-propanediol adducts with aromatic —, 1081

thioacetalisation, trimerisation and aldolisation of — using TaCl₅-silicagel and TaCl₅ as Lewis acid systems, 14997

trimethylsilylcyanation of — catalysed by chiral salen-titanium complexes, 14327

2,4,6-tris[bis(trimethylsilyl)methyl]selenobenzaldehydes, synth, structures and reactivity of, 12167 unsaturated — by asymmetric hydroformylation of conjugated dienes using chiral phosphine-phosphite-Rh(I) catalyst, 7795

see also Enals

Aldol reactions

aldol-type addition of enol borinates to imines, ab initio MO study, 7705

aldolisation of aldehydes using TaCl₅-silicagel and TaCl₅ as Lewis acid systems, 14997

asymmetric —, fluvistatin analogues, asymmetric synth of (E)-3,5-dihydroxyhept-6-enoates and (E)-3-hydroxypent-4-enoates, 10659

asymmetric aldol addition of aldehydes to a difluoroketene silyl acetal catalysed by chiral Lewis acids, synth of the corresponding α,α -difluoro β -hydroxy esters, 10271

asymmetric synth of taxol C-ring by — and radical cyclization, 7127

boron — of α-heterosubstituted thioacetates with aldehydes and silyl imines, synth of a precursor to antibiotics (+)-thiamphenicol and (—)-florfenicol, 5909

(-)-denticulatins A and B, synth using group-selective aldolization of a meso-dialdehyde, 9169

of di-t-butyl ester of (R,R)-tartaric acid, synth of cinatrin C₁ and C₃, inhibitors of phospholipase A₂, 8779

reagent control in — addition of chiral boron enolates to chiral aldehydes, 5593

stereoselective aldol condensations, synthetic studies with carbohydrate-derived chiral auxiliaries, 14823 tandem Mukaiyama aldol-lactonisation employing thiopyridylsilylketene acetals and various aldehydes, synth of β -lactones, 16471

Aldols

1,6-disubstituted 1,5-dienes with an aldol substitution pattern, thermal Cope rearrangements of, 133

formation from α,β-epoxy ketones by organo-Se mediated reduction, 12469

Algae

Botryococcus braunii, braunixanthins 1 and 2, carotenoids linked to alkylphenol and echinenone

- residues, 11307
- Laminaria digitata, synth of (±)-lamoxirene, gamete-releasing/attracting pheromone, 14651

Alkaloids

- acridone —, synth from 1,4-dihydro-4-oxoquinoline-2-butanoic acid derivs by cyclization and aromatization, 12717
- alboinon, 1,3,5-oxadiazin-2-one alkaloid from ascidian *Dendrodoa grossularia* of the Baltic Sea, structure, 2055
- arteannuin B, secondary metabolite from Artemisia annua, boron trifluoride-acetic anhydride catalysed rearrangement of dihydroarteannulin B in study of route to artemisinin, 14975
- aspidospermidine, asymmetric synth of the pentacyclic ring system of *Aspidosperma* alkaloids *via* condensation of 2-hydroxytryptamine with a chiral C9 lactone, 14247
- 2-azabicyclo[3.3.1]nonanes, subunit of some alkaloids, synth by intramolecular carboradical cyclisation of 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, 1391
- benzastatins E-G, indoline alkaloids with neuronal cell protecting activity from *Streptomyces nitrosporeus*, structures and toxicity, 4309
- (-)-carnavaline, piperidine —, synth of both 11'-epimers and assignment of (S) to natural compd, 7255
- castanospermine, polyhydroxylated alkaloid from seeds of legume Castanospermum australe and pods of Alexa leiopetala, synth of analogues modified at C-1 or C-7, 245
- cephalotaxine, 1,3-dipolar cycloaddition approach to indolic aza-analogues, 3269
- Dendrobates alkaloids: synth involving Michael reaction of didehydropiperidinecarboxylate to afford trans(2,3)-cis(2,6)-trisubstituted piperidine, 9553
- N-deoxyribosides of agroclavine, lysergol and 9,10-dihydrolylsergol, prep by N-glycosylation of their TMS derivs with 1-chloro-3,5-di-O-toluoyl-2-deoxy-D-ribofuranose, 4503
- 4,5-dioxoaporphines, isoquinoline alkaloids, synth by bicyclisation of biphenylacetamides, 14397
- ellipticine: synth and DNA intercalative properties of 5,10-dihydro-5,10-dimethyl-2,5,10-triazadibenzo-[a,e]pentalene, the pyrroloindole analogue of ellipticine, 479
- (—)-epilupinine, quinolizidine alkaloid, synth from proline *via* a spirocyclic ammonium ylid, 16565 eupomatidines 1-3, naphtho[1,2,3-*ij*][2,7]naphthyridine —, synth, 6001

- isaindigotidione, an indolizino[7,6-c]quinoline-6,12-dione, and isaindigotone, a pyrrolo[2,1-b]quinazolin-9-one, novel alkaloids of *Isatis indigotiga*, 13323
- konbu'acidin A, bromopyrrole alkaloid with cdk4 inhibitory activity from *Hymeniacidon* sponge, structure and enzyme inhibitory activity, 15681
- kuanoniamine A, 11-hydroxyascididemin and neocalliactine acetate, polycyclic aromatic alkaloids from marine organisms *Amphicarpa meridiana*, *Leptoclinides* and *Calliactis parasitica*, synth, 17029
- lamellarian alkaloids from an unidentified mollusc from the Arabian Sea, structures, 3457
- lamellarin D and H, [1]benzopyrano[4',3':4,5]pyrrolo[2,1-a]isoquinolines, marine — from molluses and ascidians, synth, 5951
- (-)-laudanosine, (+)-glaucine and (+)-xylopinine, synth by Pictet-Spengler reaction, 16327
- manzamine A: synth of the perhydropyrrolo[1,2-a]indole nucleus by cyclisation of amino-cyclohexadienone, 8871
- manzamine alkaloids, approach to core structure of the bridged hydroisoquinoline alkaloids of keramaphidin B, ingenamine and the ingamines and xestocyclamines using biogenetic theory, 2271
- (S)-mappicine and mappicine ketone, antiviral molecules against herpes virus and cytomegalovirus, synth from methylacetoacetate *via* radical cascade reaction of isonitriles, 8881
- martinelline from the root of *Martinella iquitosenis*, synth of the tricyclic pyrrolo[3,2-c]quinoline core by radical cyclisation of *N*-(2'-iodophenyl)pyrrole-3-carboxamides, 8287
- meridine, pentacyclic marine with 12-hydroxy-benzo[b]pyrido[4,3,2-de][1,7]phenanthrolin-8-one structure, synth, 1743
- 6-methoxy-1,3,4,5-tetrahydrobenz[cd]indol-4-amine, synth by Vicarious Nucleophilic Substitution of hydrogen, 193
- (-)-mirabazole B, algal thiazoline —, synth using chloroimidazolium coupling reagent, 8323
- (+)-pancratistatin from *Pancratium littorale*, convergent synth from conduritol A based on intramolecular electrophilic aromatic substitution, 11153
- polygonapholine, alkaloid from the rhizome of Polygonatum alte-lobatum, structure, 2025
- pyrrolo[2,3,4-d,e]quinoline nucleus of discorhabdin alkaloids: Fischer indole synthesis of 7-hydroxyindoles and application to alkaloid nucleus, 8853

- resedine, synth from chiral β -hydroxy- β -phenylethylamine, 4579
- rubanone (quinidine derivative), diastereocontrol of nucleophilic attack at C=O, 9145
- secologanin, monoterpenoid glycoside and precursor to many alkaloids, acidic deglycosylation of N-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, graph analysis, 10489
- (+)-solenopsin-A, venom alkaloid, synth from (S)-2-methyl tetrahydropyridine-N-oxide via an isoxazolidine, 11203
- tauroacidins A and B, bromopyrrole with taurine residue from *Hymeniacidon* sp., Okinawan sponge, 16679
- tenuisines A-C, tenuiphylline, bis-indole from Kopsia tenuis, 12661
- vasconine, assoanine, oxoassoanine, pratosine and ismine, *Amaryllidacaea* alkaloids, synth by radical cyclisation route, 299
- yaoundamine A, a naphthyldihydroisoquinoline alkaloid isolated from *Ancistrocladus korupensis*, absolute axial configuration by experimental and theoretical Circular Dichroism, 2817
- yaoundamines A and B, antimalarial naphthylisoquinoline alkaloids from *Ancistrocladus korupensis*, structures, 8121

Alkanes

- mono-, di- and spirocyclic silaalkanes, prep from the di- and tetraallylsilanes by Cp₂Zr induced ring forming reactions, 12979
- nitroalkanes, asymmetric Michael addition to prochiral acceptors catalysed by proline rubidium salts, 11223
- oxidation of using Fe^{III}(PA)₃ and Fe^{III}(PA)₂Cl₂Pyr₂H with bis(trimethylsilyl)peroxide, 487, 511
- polychalcogenadisilabicyclo[k.l.m]alkanes and their germanium analogues, synth by reaction of tris(trimethylsilyl)methylsilane or tris(trimethylsilyl)methylgermane with sulfur or selenium, 12215
- unsymmetrical bis-1,2-(3-indolyl)ethanes, cyclisation of, synth of (—)-tjipanazole F1, an indolocarbazole glycoside, 16553

Alkenes

- acetylene, ethylene and cyclopropene cycloadditions to benzo[b]- and benzo[c]-fused heterocycles, theoretical study, 13285
- 2-acyloxy-3-hexenoyl cyclohexenones, synth and intramolecular photocycloadditions of, diastereoselectivity of, 8963
- 1-alkenes, Karasch addition of methyl 2,2-dichlorocarboxylate addition to — promoted by ferrocene,

4419

- alkenes tethered to pyridyl groups or phenyl groups, comparison of acceleration of reactivity for Diels-Alder cycloaddition of enoate esters and hydrogenation of allylic and homoallylic ethers, 13063
- 4-alkenylamide having a β -chiral centre, α -iodination of, synth of syn α -iodoalkenamide through formation of cyclic ketene N, O-acetal, 6825
- E- and Z-2-alkoxy- and 2-aryloxy-2-alkenoates by alkenylation of aldehydes with phosphorus carbanions, 17097
- γ-alkylidenebutenolides and related compds, regioand stereoselective synth, 6707
- catalytic epoxidation of by H2O₂ using perfluoroacylaminoaryl Mn(III)-porphyrins, 6145
- di(chloromethyl)benzenes, lithiation under Barbiertype conditions, synth of di(lithiomethyl)benzenes, 13897
- 1,1-dicyanoalkenes, addition of Reformatsky reagents catalysed by Cp₂TiCl₂, 2899
- (E)-2,5-dimethyl-2,5-dinitrohex-3-ene, synth by addition of nitric oxide to 1,5-dimethylhexa-2,4-diene, 17221
- 2,5-distyryl-heteroarylenesand1,4-bis[2-(hetero-aryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, synth, characterisation and electronic properties, 15069
- ethene cycloaddition onto several cyclic nitrones, synth of [n.3.0]heterobicyclicalkanes devoid of substituents in the ring skeleton, 11869
- formal addition of sulfonyl and allyl fragments of an allylic sulfone across the double bond of an -, 6493
- 3-hydroxy-1-(methylthio)-1-(p-tolylsulfonyl)-1-alke nes and their acetates, addition of 1-hydroxyalkyl radical to, application to synth of optically active compds, 12101
- o-hydroxystilbenes, irradiation of using 2,4,6-triphenylpyrylium tetrafluoroborate as photosensitiser, 681
- isopropenyl and isopropylidene isomers of an alkene from allylic 2-hydroxypropyl, 2-trimethylsilylethyl, and benzothiazol-2-yl sulfones *via* α-alkylation, 1,3-rearrangement and desulfonylation, 307
- 2-phenylthio-3,3,3-trifluoropropene and its sulfoxide and sulfone, Diels-Alder reactions with various dienes, 6861
- reaction with dimethyl (trifluoromethanesulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), synth of sulfur derivs of

- nortricyclane, 8173
- (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, synth by reaction of [ArI*-F*OTf] with acetylenes, 13139
- (±)-17 α -vinyl-1,3,5(10)-gonatriene derivs bearing a lactonic bridge on the β -face, regiochemistry of Wacker-type oxidation of, 7577
- see also Enamines, Enamides, Enols and derivs, Olefins

Alkenyl halides

Pd-mediated C-O and C-S bond forming reactions with vinylic halides or triflates and acetylenic halides, 1025

Alkenylation

of aldehydes with phosphorus carbanions, prep of Eand Z-2-alkoxy- and 2-aryloxy-2-alkenoates, 17097

Alkoxylation

alkoxylated p-phenylenevinylene oligomers, synth, spectroscopic and electrochemical properties, 13811

Alkyl halides

1,6-dibromododecahedrane, synth and dehalogenation, 10029

Alkylation

- of α -silylacetic ester enolates, synth of α -silylcarbonyl compds, 2855
- α-alkylation of 1-menthylphosphetane sulfide, diastereoselective route to chiral phosphetane sulfides, 4363
- N-alkylation of α-amino esters using 2- and 4-nitrophenylsulfonamide intermediates, 15787
- alkylation-cyclisation of iodo-umbelliferone to yield furanocoumarins which on transfer-hydrogenation gave deuterium-labelled marmesins, 17699
- 2-(alkylthio)thiolane 1-oxides, synth, metallation at C-2, and hydroxy-—, diastereoselectivity, 2459, corrig. 5641
- amidoalkylation of piperidones with indole, synth of 6-(3-indolyl)-2-piperidones, 719
- of an α-amino cyanoacetate deriv with iodomethyl-substituted silanes followed by hydrolysis, synth of silicon-containing α-amino acids, subsequent reaction with KOCN and HCl provides hydantoins, 13695
- of 1-benzyl-2-(ethoxycarbonylmethylene)-2,3,4,5tetrahydroimidazole with halogenoalkanes, dihalogenoalkanes and epoxides, subsequent removal of the ethoxycarbonyl group provides 2-alkyl-4,5dihydroimidazoles, 11781
- benzylation of ketone enolates under PTC conditions, effect of π - π interaction between substrate and reactant, 11437
- of calix[4] arenes capped by diamide bridges in

- 1,3-position on the lower rim; synth and NMR investigation, 9799
- of 2-(3-chloropropyl)- and 2-(4-chlorobutyl)-4substituted benzimidazoles bearing 4-nitro-, 4-amino-, and 4-methyl groups; ambident heterocyclic reactivity, 6937
- copper-mediated of vitamin D C-ring, C-11-functionalised vitamin D₃, 10851
- deoxophylloerythroetioporphyrin (DPEP), synth from chlorophyll A, unexpected methylation and propylation reactions of ring E by CH₂Cl/Br₂ and 1,5,7-triazabicyclo[4.4.0]dec-5-ene, 16107
- deoxyguanosine, nucleotide and oligo-nucleotide, reactions with N-methyl-N-nitrosourea, methylation products, 4063
- diastereoselective of (1S,2R,4R)-10-(dicyclohexylsulfamoyl)isobornyl 2-cyanopropanoate with α -halocarbonyl compds, synth of α -methylaspartic acid, 5891
- 1,2-dihydro-2,4-dimethyl-6*H*-pyrazino[2,1-*b*]quinazoline-3(4*H*),6-dione,regio-anddiastereo-selective di—reactions of anion at C-1, 16795
- 1,3-dimethoxybenzene-Cr(CO)₃ complexes, metallation/deprotonation and alkylation, effect of conditions on selectivity, 9219
- double of calix[4]arenes to generate mixed tetraethers of calix[4]arenes, 10503
- double benzylation of acetophenone under phase transfer catalysis conditions, effect of acidity and π - π interaction, 3659
- electrochemical reductive methylation of o-hydroxy-p-benzoquinones, 469
- enantioselective alkylation of benzaldehyde with diethylzinc catalysed by chiral titanate complexes with helical ligands, 4145
- of (4,6-heptadien-3-one)- and (methyl 3,5-hexadienoate)Fe(CO)₃, model studies for prep of protomycinolide IV, 4185
- histidine and histamine, radical at C-2, 2365
- mono- versus dialkylation of alkali salts of diethyl malonate with 1,2-bis-, 1,2,4,5-tetrakis- and 1,2,3,4,5,6-hexakis(halomethyl)benzenes, solvent and leaving group effects, 8195
- mono- vs di— of carbanions; effect of acidity of conjugate acids in selectivity control, 14973
- N-(4-picolyl) 2,6,9,13-tetraaza[14]paracyclophanes, selectivity in N-functionalisation, 16169
- β-pyrrolylmethylation of C-nucleophiles by β-hydroxymethyl pyrroles, 7731
- reductive alkylation of 2-nitropropane anion by 4-chloromethyl-2-methyl-5-nitrothiazole by S_{RN}1 mechanism, 5471
- regioselective electrophilic of anilines with

phenylacetylene in the presence of montmorillonite KSF, synth of 1,1-diarylethylenes, 3795

- regioselective methylation of functionalised 3,3-disubstituted 2,3-epoxy-1-ols, synth of C1-C3, C10 and C7-C9 fragments of briarian diterpenes, 7429
- stereoselective —, synthetic studies with carbohydrate-derived chiral auxiliaries, 14823
- tandem Michael addition of vinylphosphonates, 9623
- Tebbe methylenations of heteroatom-substituted ketones, synth of heteroatom-containing bicyclic endoperoxides, 37
- of (6R)-2,3,5,6-tetrahydro-3,6-diaryl-N-[(2'R)-2'-methyl)phenyl-methyl]-4H-1,4-oxazin-2-onessynth of α-substituted N-[((2S)-2-hydroxy-2-phenyl)-ethyl]-2-phenylglycine derivs, 17711
- see also Benzylation, Cyclopropanation

Alkynes

- N-acetyl propargylglycine amide, Pd-catalysed couplings forming arylethynylalanine derivs, 17489 acetylene, ethylene and cyclopropene cycloadditions to benzo[b]- and benzo[c]-fused heterocycles, theoretical study, 13285
- acetylene reaction with [ArI⁺-FOTf], synth of (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, 13139
- acetylenic carbinols, coupling with o-iodoanilides, synth of quinolines and dihydroquinolinones, 13397 acetylenic metabolites from sponge, use of CAD tandem MS, 799
- acyclic alkynol, tungsten pentacarbonyl-induced cyclisation to provide a cyclic tungsten oxacarbene which could be converted to pyranose glycals, 11061
- 1,6-additions to alkenynones and alkenynoates, synth of allenyl enolates, reactivity of, 10197
- alken-1-yn-3-ols, Ru-catalysed hydration/esterification forming 2-oxoalken-3-yl esters, 9241
- alkynyl enones, organozinc/Ni(COD)₂-mediated cyclisation of, synth of a series of monocyclic and bicyclic heterocycles with exocyclic alkenes, 16449 biological labels with acetylenic linker arms, synth and attachment to biological molecules, 1505, 1523 bromoacetylenic oxy-Cope rearrangements, formation of reduced bromo-indenes, -naphthalenes, -benzocyclooctenes, -cyclodecadienones, 12637
- butynols, cycloisomerisation at a pentacarbonylmetal template, synth of carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, 5143
- chiral Pauson-Khand reactions with acetylenic

- thioethers, synth of alkylthio-cyclopentenones, 8651 2-cyanoisopropyl radical addition to arylalkynes, formation of 1:2, 1:3 and 2:1 adducts and others, 7929
- dialkynyl-α-diketones, synth and reactions, 14655 diarylacetylene generation by (NO)₂ loss from diarylfuroxans in UV light and trapping by alkenes, 17395
- 1-(N,N-diethylamine)prop-1-yne, cycloaddition reaction with N-vinylic heterocumulenes, synth of pentasubstituted pyridines, 4521
- 1,2-diheteroaryl ethynes, synth, electronic structure, PE spectra, 13339
- diphenylacetylenes, diphenyldiacetylenes, tri- and tetra-(phenylethynyl)benzenes containing alanine residues, synth by coupling reactions, 2475
- DMAD reactions of Ritter product from 2,6-dimethylenebicyclo[3.3.1]nonane and acetonitrile, and with 6,7-dimethoxy-1-methyl-3,4-dihydroiso-quinoline, formation of fused 1,3-dihydro-3-oxo-pyrrol-2-ylideneacetates, 10899
- ethynyladenosine, potential agonists for the adenosine A₂ receptor, synth using triflic enolates in palladium-catalysed cross-coupling reactions, 6747 functionalised propargyllithium reagents by reaction of chlorinated acetylenic ether or amines with lithium and a catalytic amount of DTBB in the presence of different electrophiles, 17201
- hexynyl and heptynyl iodides, cyclisation by Unimolecular Chain Transfer (UMCT) reactions, 5679
- 3-methyl-1-butyn-3-ol, starting reagent for generation of 1,3-disubstituted allene, subsequent use in enantioselective intramolecular allene/enone photocycloadditions, 16253
- 4- and 14-octadecynoic acids, synth, and chemoenzymatic synth of lipids containing these, 14627
- phenylacetylene tridendrons of asymmetric polarity, synth, formation of polar domains, characterisation, 15331
- polyacetylenic constituents of Ginseng Radix Rubra Panax ginseng, stereostructures of, 15691
- polymer bound α,ω-alkynols in intermolecular Pauson-Khand reaction of norbornene-derived substrates. 6791
- (R)-1,3- 2 H₂-prop-2-yn-1-ol and (R)-1- 2 H₂-prop-2-yn-1-ol, conversion to (S)- and (R)- $(1,3-^{2}$ H₂)-allene respectively, 2049
- bispropargyl compd and a mono-propargyl compd, tin-mediated radical cyclisation to form functionalised bicyclo[4.4.0] and spiro[5.4] compds,

11685

propargyl phenyl ethers, 2*H*-chromene synth by microwave-mediated cyclization, 12621

propargylation of sugar aldehydes, diastereoselection, 2653

propargylic alcohols, reaction with tetraallylmanganate or triallylmanganate, trapping of intermediate alkenylmanganese compds, 5061

ortho, meta and para ring-substituted phenylacetylene derivs, synth from iodoaniline isomers by consecutive carbon-carbon bond formation, Sandmeyer reaction and desilylation, 7595

sterically constrained phenyleneethynylenes and dioxapropylphenylethynylene oligomers, synth, 11881, 11899

see also Cycloalkynes, Diynes, Enynes, Enynones, Ynamines

Alkynyl halides

Pd-mediated C-O and C-S bond forming reactions with vinylic halides or triflates and acetylenic halides, 1025

Allenes

- alkyl —, polymerisation using $(\pi$ -allyl-NiOCOCF₃)₂, formation of poly(1-alkyl-2-alkylidene)ethylene systems, 15187
- (S)- and (R)-(1,3- 2 H₂)-allene, synth from (R)-1,3- 2 H₂-prop-2-yn-1-ol and (R)-1- 2 H₂-prop-2-yn-1-ol respectively, 2049
- allenyl and methylallenyl anions, gas-phase generation, reactions with CS₂, COS and CO₂, mechanism of thioketene formation, 9847
- dactylallene, C₁₅ cyclic 12-membered ether with bromoallene side-chain isol from sea hare, 17343
- 1,3-diaza-2-azoniaallene salts, reaction with 1,3-butadienes and cumulenes, synth of triazolium salts, 5755
- 1,3-dipolar cycloaddition of substituted 3,4-dihydroisoquinoline *N*-oxides with —, synth of 5methylene isoxazolidines, 9575
- 1,3-disubstituted allene, generation from 3-methyl-1-butyn-3-ol and use in enantioselective intramolecular allene/enone photocycloadditions, 16253 prelaureatin conversion into laurallene by enzymatic and chemical bromo-etherification, 8371
- synth by Pd-catalysed addition of C pronucleophiles to conjugated enynes, 9097

see also Phosphaallenes

Allylation

asymmetric — of aromatic aldehydes catalysed by chiral hosphoramides derived from (S)-proline, synth of homoallylic alcohols, 3513

Barbier-type — of chiral α-aminoaldehydes, depend-

ence of the stereochemical outcome on metal and allylic halide, 2823

and benzylation of enolates derived from β -phenylselanyl silyl enol ethers, synth of α -phenylselanyl γ -unsaturated ketones, 6365

carbohydrate-attached 1-methylbut-2-enyl titanocenes, asymmetric reaction with aldehydes, 16097

catalytic electrogenerated zinc in — of carbonyl compounds and unusual regioselectivity of a trifluoro-prenyl bromide, 6027

diastereoselective addition of allyl organometallics to N-tosyl and N-benzyl-N-tosyl L-alaninal, 13373

geminal diallylation of a carbonyl compd with allyl bromide in the presence of a low-valent vanadium complex and zinc: synth of asymmetric quaternary carbons, 9525

3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl phosphine, ligand for chiral Pd catalysis, 4035

Aluminium and compds

bulky aluminium phenoxides, effect on stereospecificity of methacrylate polymerisation, 15263 organic reactions on alumina, 7999

role of Al³⁺ cation in electrochemical detosylation of *N,N'*-bis-(*o*-tosylaminophenyl)malondiamide,16721

Ambiphilic activity

ambiphilic allenyl enolates: report, 10197

Amidation

aminolysis of several Block-L-Glu(OEt)-OEt catalysed by the lipase B of *Candida antarctica*, effect of the N-blocking group, 11745

Amides

- achiral tridentate lithium amides and chiral bidentate amines, lithium-hydrogen interchange between, approach to catalytic enantioselective deprotonation, 16987
- 4-alkenylamide having a β -chiral centre, α -iodination of, synth of syn α -iodoalkenamide through formation of cyclic ketene N,O-acetal, 6825
- allyl, benzyl and sulfonyl substituted amides, reductive deprotection using naphthalene-catalysed lithiation, 14355
- α-amido trifluoromethyl alcohols and ketones, metallo-β-lactamase inhibitors, synth using Ruppert reagent, 7275
- N-[2-(6-amino-9H-purin-9-yl)ethyl]-N'-[3-(6-chloro -2-methoxyacridin-9-ylamino)propyl]-4-hydroxy-iminomethylpyridine-2,6-dicarboxamide, synth for recognition of abasic site lesions in DNA, 13749 α-amino/amido lithiomethyl sulfones, synth, uses,

biphenyl acetamides, bicyclisation of promoted by (COCl)₂/SnCl₄, synth of 4,5-dioxoaporphines, 14397 4,6-bis(acetamidomethyl)-dibenzofuranand-dibenzo-

- thiophene, H-bonding and conformation as spacer for parallel β-sheet formation, 17425
- bispyridine tetramide macrocycles, complexation of Ag⁺ and the role of preorganisation on selectivity, 10841
- 2,4-bis(4-carboxyphenoxy)-6-methoxy-S-triazine amide group containing linker for binding of oligonucleotides, 321
- chiral bidentate Li amides for enantioselective deprotonation, NMR study and solvent dependence, 7191
- chiral bidentate lithium amides having an alkyl- or a fluoroalkyl substituent at the amide nitrogen for deprotonation of 4-substituted cyclohexanones, 13641
- α-chloro α-(phenylsulfinyl) ketones (RCOCHCl-SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843
- circinamide, papain inhibitor from cyanobacterium Anabaena circinalis Rabenhorst (NIES-41), 5747
- cyclic sulfamidates derived from D-allosamine, treatment with S-, N-, O- and C-nucleophiles leading to nucleophilic displacement, 5863
- deoxygenation of by a Sm/SmI₂ mixed system, 12865
- dimethyl formamide, dediazoniation of aryldiazonium fluoroborates by, 10009
- 2,2-dimethyl-N-(phenylsulfonyl)-propanamides, directed lithiation of, synth of benzo[d]-1,2-thiazole-1,1-dioxide derivs, 3615
- formamides from imines by oxidative rearrangement using sodium perborate, 3805
- glycamide surfactants by amidification reaction, condensation of *N*-methyl-glucamine with oleic acid, 5185
- halogen atom transfer/cyclization in *N*-allyl-*N*-benzyl-2,2-dihaloamides to pyrrolidinones, Fe⁰-FeCl₃ or CuCl-TMEDA promotion, 14031
- o- (and m-) halogeno-N-phosphorylmethylbenzamide derivs, aryne cyclisation and Horner reaction of, synth of 3-(aryl and alkyl)methylene-1H-isoindolin-1-ones, 10313
- 3-halopyruvamides, addition of water or alcohol to, isolation of α -diols and hemiketals, 13739
- 2-hydroxy-2-methyl-*N*-arylpropionamides, synth by acylation of hydroxy aromatic compds with 2-bromo-2-methylpropionamide followed by Smiles rearrangement, subsequent conversion to arylamines by hydrolysis, 6303
- α-hydroxy- amides, carboxylic acids, esters and ketones, synth from α-hydroxythioesters, 16213
- 5-[(2-hydroxyacyl)amino]-2,4,6-triiodo-1,3-benzene

- dicarboxamides, synth from phenoxyacetamides via Smiles rearrangement, 11919
- N-(2'-iodophenyl)pyrrole-3-carboxamides, radical cyclisation of, synth of tricyclic pyrrolo[3,2-c]-quinoline core of martinelline alkaloid, 8287
- macrocyclic diamides and tetramides containing phenol ether units, synth, 7957
- N-methyl acetamide, acetanilide and N-acetyl imidazole, investigation of alkaline hydrolysis by ab initio molecular orbital calculations, 4317
- polyamide dendrimers based on 5-(2-aminoethoxy)isophthalic acid, convergent approach to perfect branching, 15535
- primary carboxamides, reaction with MeONa in DMF, synth of acylformamidines, 15827
- proton, cation-induced shifts in spectra of dioxyacetamide ionophores, 17235
- 2-(2-pyridylsulfanyl)-carboxamides by homologation of carboxylic acids with acrylamide, subsequent desulfurisation to form primary amides: application to synth of 3-deoxy-D-arabino-2-heptulosonic acid, 12067
- secondary effects in flexible hydrogen bonding networks, 9881
- solid state polycondensation within cyclodextrin channels, water soluble polyamide rotaxanes, 15575 N,N-unsaturated dialkyl- and N-unsaturated alkyl-N-alkyl-β-ketoamides, thermal rearrangement to yield spirolactams, 5775
- see also Enamides, Lactams, Peptides and polypeptides

Amidines

- acylformamidines, formation by reaction of primary carboxamides with MeONa in DMF, 15827
- and guanidine, reaction with β-alkoxycarbonyl-β-enaminoketoesters, synth of pyrimidine *ortho*-dicarboxylic acid derivs, 14497

Amido alcohols

regioselective epoxide opening to β— under solidliquid PTC, 4787

Amidoximes

- N-arylbenzamidoximes, reaction with nitrile oxides, formation of 1,2,4-oxadiazole 4-oxides and 1,2,4-benzotriazines, 1089
- nitrile oxide cycloaddition to *N,N*-diethylamidoximes, formation of 1,2,4-oxadiazole 4-oxides and their deoxygenation by ArCNO with generation of ArCO-NO, 1787

See also Oximes

Aminals

activation of — by SO₂ and reactions with electronrich aromatics, 13361

from glyoxal, anilines and formaldehyde, synth of 2,4,6,8-tetraaryl-2,4,6,8-tetraazabicyclo[3.3.0]-octanes, 2551

piperidine or morpholine aminals of benzaldehydes, reaction with 2-hydroxy-α-bromoacetophenones, synth of flavones, 9813

Amination

- catecholboronate esters, formation by chiral hydroboration of olefins and electrophilic —, comparison of aminating agents, 11411
- chiral α -aralkyl acetates, —, synth of C_2 -symmetric ferrocenylalkylamines, diferrocenyl pyrrolidines and piperidines, 7219
- cyclohex-3-en-1-one chiral acetals, via aziridines using ethyl N-nitrobenzenesulfonyloxycarbamate, 4779
- 1-deoxy-D-galactostatin derivs, galactosidase inhibitors, synth by double reductive — of L-arabinohexos-5-uloses, 3407
- of γ -silylated α , β -unsaturated esters, synth of β , γ -unsaturated α -amino ester derivs, 15853

Amines

- 5-amino pyrazoles, synth from 1-cyano-1-alkylhydrazines and enolisable ketones, 1729
- acyl N-aminides, complexation with ZnCl₂, structures of complexes, 6411
- adducts of amines and glyoxylic acid, reaction with aryl and heteroaryl boronic acids, synth of α -aryl and α -heteroaryl glycine derivs, 16463
- allyl, benzyl and sulfonyl substituted amines, reductive deprotection using naphthalene-catalysed lithiation, 14355
- amine N-oxides, synth by treatment of heterocyclic aromatic amines and anilines with dimethyldioxirane, 15877
- amine oxidations of 3-methyl-5-ethyllumiflavinium perchlorate, kinetic aspects of, 5027
- 3-amino acridine, reaction with formaldehyde, synth of a dihydrooxazine, a tetrahydropyrimidine deriv, a Tröger's base analogue or acridino[3,4-j]-benzo-[b][1,7]phenanthroline depending on stoichiometry, 2871
- amino azanoradamantane hexahydro-2,5b-methano-1*H*-3a*S*,3aa,6aa-cyclopenta-[*c*]-pyrrole-4a-amine, synth, 1
- 5-amino-2,5-dideoxy-heptono-1,5-lactams by reaction of 2-trimethylsilyloxyfuran with a glyceraldehyde derived nitrone *via* hydrogenolysis of the formed tetrahydrofuro[2,3-*d*]isoxazol-5(2H)ones, 11721
- 3-amino-4-arylisothiazole 1,1-dioxides, functionalisation by reaction with vinyl-, aryl-, heteroaryl-

- and alkynylstannanes, 15859
- α -amino/amido lithiomethyl sulfones, synth, uses, 4835
- α-aminoalkylphosphonates, synth from vinylphosphonates via aziridinylphosphonates, 13603
- aminodiols from addition of phenylmagnesium bromide to 2,3-di-O-benzyl-D-glyceraldehyde and 2,3-di-O-isopropylidene-D-glyceraldehyde, subsequent transformation to enantiomers of phenylglycine, 1411
- 5-aminopyrrolo[3,4-c]pyridin-1,3(2H)dione and 7-aminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-aminopyridines, 8225
- 3-aminosuccinimides, regioselective reduction for synth of pyrrolo[3,2-c]isoquinolines and 3,6-methano-2,5-benzodiazocine, 2075
- 2-aminothiophenol, reaction with acetylenic acetals, synth of 2,4-substituted quinolines *via* benzo[b] [1,4]thiazepine intermediates, 641
- arylamines by hydrolysis of 2-hydroxy-2-methyl-*N*-arylpropionamides, 6303
- N-(o-bromobenzyl)anilines, treatment with n-tributyltinhydride, radical C_{aryl}-C_{aryl} coupling to form phenanthridines, 269
- chiral amines with achiral (salen)manganese(III) complex for asymmetric epoxidation, 9541
- chiral bidentate amines and achiral tridentate lithium amides, lithium-hydrogen interchange between, approach to catalytic enantioselective deprotonation, 16987
- copper-catalysed phenylation by pentavalent organobismuth reagents, 4137
- N,O-diacylated 2-aminophenols, treatment with p-toluenesulfonic acids, synth of benzoxazoles, 457 diastereoselective reduction by 1-benzylDABCO borohydride of β-enamino-sulfoxides to the corresponding β-amino-sulfoxides, 16883
- diselenides having a chiral tertiary amino group, synth for asymmetric methoxyselenylation and intramolecular oxyselenylation of olefins, 2029
- erythro N-protected α-amino epoxides, stereocontrolled synth involving reduction of the corresponding haloketone, 5325
- formation by chiral hydroboration of olefins and electrophilic amination, comparison of aminating agents, 11411
- from reduction of imines by treatment with catalytic *n*-butyltris(2-ethylhexanoate)tin and stoichiometric polymethylhydrosiloxane, 16349
- β,β'-functionalised N,N-divinyl-N-trimethylsilyloxyamines, synth by silylation of β-substituted aliphatic nitro compds with N,O-bis(trimethylsilyl)acetamide, mechanism, 13085

- heteroamine A (6-methoxy-7,9-dimethyl-2-N,N-dimethylaminopurinium chloride) from the aerial parts of *Heterospemma brownii*, synth from 5-amino-4-cyano-1-methylimidazole and N,N-dimethyldichlomethyleniminium chloride, 8269
- heterocyclic Tröger's bases derived from C-amino heterocycles, synth and molecular structures, 2233 histamines, synth of ring-substituted derivatives, 4539
- β-hydroxyamines, synth from primary by carbamate protection, electrochemical oxidation, elimination and asymmetric reduction, 4579
- hymenidin, oroidin and keramadine, marine 2-aminoimidazole metabolites, prep from imidazolemethanol, 7605
- imidoylation of with selenium and isocyanides, synth of isoselenoureas, 12159
- iodoaniline transformation into *ortho, meta* and *para* ring-substituted phenylacetylene derivs involving consecutive carbon-carbon bond formation, Sandmeyer reaction and desilylation, 7595
- methyl 4-amino-4,6-dideoxygulopyranoside and *epi*-tolyposamine, deoxy aminohexoses, synth from fully protected L-threonine deriv, 6473
- methyl glycosides of N,O-diacetate of acosamine and daunosamine, synth from sugar δ-enelactones, 739 nitramines and nitrate esters by nitrodesilylation reactions using dinitrogen pentoxide, 4371
- 2-nitraminopyridine, tautomeric and conformational preferences in, comparison of theoretical and experimental data, 17211
- oxidation of cyclic secondary amines by tetrapropylammonium perruthenate, 3223
- 1-phenyloxiranemethanamines, Lewis acid-catalysed rearrangement/reduction of, synth of β -phenethylamines, 21
- 3-phosphorylated 4-aminoquinolines from β-phosphine oxide and phosphonate enamines, 2931 piperidin-3-amines and -3-methanamines, potential substance P antagonists, 12699
- primary amines, reaction with phthalidylidene dichloride, synth of *N*-substituted phthalisoimides, 5305
- regioselective electrophilic alkylation of anilines with phenylacetylene in the presence of montmorillonite KSF, synth of 1,1-diarylethylenes, 3795
- secondary-alkyl and N-(tertiary-alkyl) phosphoramidates, synth by nucleophilic ring-opening of N-phosphorylated aziridines 4935
- substituted 2-amino-1,4-naphthoquinones, reaction with Wittig reagents, 3649
- 1-(N-substituted)-aminopyrrolidines from hydrazines and 2,5-dimethoxytetrahydrofuran, 3707

α-vinyl-, α-allyl- and α-allenyl-aldimines, transamination reactions by 1,3-proton shift leading to corresponding amines, 10783

Aminium salts

 and protic acid-induced reactions of 1,1,2-triphenyl-1,2-ethanediol, solvent effects and mechanisms, 10817

Amino acids and derivs

- α-amino acids where the α-carbon of the amino acid is incorporated into a 5-, 6- or 7-membered ring, synth by bisalkenylation of (R)-2,5-dihydro-3,6-dimethoxy-2-isopropylpyrazine and ring opening metathesis, 2309
- α-substitutedN-[((2S)-2-hydroxy-2-phenyl)-ethyl]-2-phenylglycine derivs by alkylation of (6R)-2,3,5,6-tetrahydro-3,6-diaryl-N-[(2'R)-2'-methyl)phenyl-methyl]-4H-1,4-oxazin-2-ones, 17711
- N-acetyl propargylglycine amide, Pd-catalysed couplings forming arylethynylalanine derivs, 17489 acylation of unprotected using ultrasound, 1123 α-amino acid derivatives, reactions with electrophilic carbenes, 3425
- α-amino acid derivs, synth by reaction of 1,3-oxazolidines or 1,3-dimethylimidazolidine with 2-methylfuran, 14381
- α-amino esters, N-alkylation of using 2- and 4-nitrophenylsulfonamide intermediates, 15787
- 1-amino-2-hydroxy- and 2-amino-1-hydroxy-substituted ethylene-1,1-bisphosphonic acids and their N-methylated derivs, synth from N-phthaloylglycine, 17795
- 3-amino-3-vinylpropanoic acid, synth from 4-acetoxyazetidin-2-one, subsequent conversion to 4-amino-5-hydroxy-4,5-dihydrofuran-2-one hydrochloride, 15807
- (2S,3S,8S,9S,4E,6E)-N-Boc-3-amino-9-methoxy-2,6,8-trimethyl-10-phenyl-4,6-decadienoic acid, synth from (S)-serine and (S)-phenyllactic acid, 1447
- cis and trans 2-aminocyclopentanecarboxylic acid enantiomers, 7975
- (1S,2R)-2-aminocyclopropanecarboxylic acid, synth from cyclopropane-1,2-dicarboxylic anhydride and incorporation into pseudo-peptides, 17417
- aminodi-α,α'-isovaleric acid, a sterically congested iminodiacid, its *N*-substituted derivs, and benzyl 3,α-diisopropyl-2-oxomorpholine-1-acetate, 14591
- 2-[1-amino-2-(p-hydroxyphenyl)ethyl]thiazole-4-acrylic acid, novel aminoacid constituent of oriamide, sponge peptide, 16147
- α -aryl and α -heteroaryl glycine derivs by reaction of aryl and heteroaryl boronic acids with the adducts of amines and glyoxylic acid, 16463

- aza-allyl carbanions from N-[bis(methylthio)methylene]glycine ethyl ester and N-[bis(methylthio)methylene]benzylamine, acylation of, 3679
- N-t-butoxycarbonylphenylalanyl enol family of HIV-1 protease inhibitors, NMR and molecular modelling characterisation, 4231
- by EPC synth using chiral spiro 3-oxazolin-5-one 3-oxides, 5725
- carba analogues of sugar moiety of nikkomycins and polyoxins, α-amino-sugar acids, synth of azide precursor, 14635
- (±)-cis- and (±)-trans-clavicipitic acids, synth by combinatorial use of directed lithiation and fluoride ion-induced elimination/addition of 1-(triisopropylsilyl)gramine derivs, 51
- conformationally restricted serine derivs through ruthenium(II)-catalysed ring closing metathesis, 5925
- congeners of CMP-NeuAc, substrates for enzymatic synth of natural and designed sialyl oligosaccharides, synth by coupling of cytidine phosphoramidite with the tertiary hydroxyl group of sialic acid, 11109
- cyclic 1-amino-1-carboxylic acids, synth involving ruthenium-catalysed enyne metathesis, 10603
- cyclopropane-1,2-bis(glycine) derivs, synth using (S)-4-benzyl-2-oxazolidinone as chiral auxiliary and trisyl azide as the electrophilic source of amine nitrogen, 10459
- design and synthesis of conformationally constrained amino acids as versatile scaffolds and peptide mimetics, 12789
- di- and tri-antennary lysine-based galactose- and N-acetylgalactosamine-containing ligands for the hepatic asialoglycoprotein receptor (ASGP-R), solid-phase synth, 759
- di- and tripeptides incorporating non-proteinogenic amino acids, synth by reaction of C-terminal diand tripeptide organozinc reagents with electrophiles, 13905
- L,L-N,N-dimethylcycloisodityrosine, synth, and formal synth of deoxybouvardin, 10753
- diphenylacetylenes, diphenyldiacetylenes, tri- and tetra-(phenylethynyl)benzenes containing alanine residues, synth by coupling reactions, 2475
- α , α -disubstituted β -hydroxy α -amino esters by reduction of α -acyl-N-[bis(methylthio)methylene]-alaninates and phenylalaninates, 2189
- [18F]fluoro aromatic α-methyl-L-amino acids, radiopharmaceuticals for Positron Emission Tomography (PET), asymmetric synth, 5785
- N-Fmoc-α-amino acids with nucleic acid bases in

- side-chain, synth, 1167
- fused bicyclic —, synth by intramolecular Pauson-Khand reactions, 6611
- L-glutamic α-monoamide derivs, synth by aminolysis of Block-L-Glu(OEt)-OEt, effect of the blocking group, 11745
- glycinyl-NeuAc saccharopeptides, synth by ring opening of sialyllactones with glycine esters, 11039 histidine, allylic protection of imidazole ring, 12525 histidine, radical alkylation at C-2, 2365
- histidine, synth of ring-substituted derivatives, 4539 (2S,3S)-4-hydroxyvaline, stereoselective synth by asymmetric radical HBr addition to β,γ-dehydrovaline deriv, 1151
- imidazoline analogues of the kainoid family, synth *via* β-aminoglutamic acid derivs, 2775
- (S,S)-isodityrosine, synth from L-tyrosine and L-serine employing addition of tyrosine to cyclohexenone oxide and coupling of an aryl iodide with an iodoalanine deriv, 8815
- β-isopropyl phenylalanines (β-phenyl isoleucines), synth of all diastereoisomers, 16645
- L-isoxazolylalanine by ozonolysis of L-1,4-cyclohexadienylalanine followed by cyclisation with hydroxylamine, 4457
- kainoids, pyrrolidine dicarboxylic acids, towards a synth of kainoids from *trans-4*-hydroxy-L-proline, 5233, 5255, 5273
- 2S-[2-2H]-kynurenine, synth and use in kinetic isotope effect studies with kynureninase, 15761
- (+)-lactacystin, non-protein neurotropic factor having α,α-disubstituted α-amino acid structure, total synth from D-glucose, 16287
- 16-, 18-, 19- or 20-membered secondary tetralactams with L-tartaric acid or β-hydroxyglutaric acid moieties, synth via a diamide diamine, 13757
- (2S,3R,4S)-3,4-methanoproline and analogues, synth by intramolecular cyclopropylidene insertion into an *N*-benzyl or *N*-allyl group, 14773
- 4-methoxy-5-hydrazino-2-oxazolidinones, synth as templates for synth of α -amino acids, 1275
- α -methylaspartic acid by diastereoselective alkylation of (1S,2R,4R)-10-(dicyclohexylsulfamoyl)isobornyl 2-cyanopropanoate with α -halocarbonyl compds, 5891
- p-nitrophenylesters of phenylalanine and phenylglycine, cleavage in surfactants solution using copper(II) complexes of chiral diamino alcohols as catalysts, 357
- non-proteinogenic amino acids, synth by reaction of the lactam enolate of the protected pyroglutamic acid ester with activated imines, 10545

- optically active α-amino acids, synth from glycine t-butyl ester through Schiff base employing (+)-N-alkyl-10-camphorsulfonamides as chiral auxiliaries, 11141
- 4-oxo- and 4-(R)-hydroxypipecolic acid derivs, synth from L-aspartic acid involving Michael addition, 15671
- phenylglycine, synth by addition of phenylmagnesium bromide to 2,3-di-O-benzyl-D-glyceraldehyde and 2,3-di-O-isopropylidene-D-glyceraldehyde via protected aminodiols, 1411 (R)-α-phenylproline, synth of N-Boc-Et ester, 9233 phosphoramides derived from (S)-proline as catalysts
- phosphoramides derived from (S)-proline as catalysts for asymmetric allylation of aromatic aldehydes, synth of homoallylic alcohols, 3513
- phosphotyrosine mimetic L-4-[diethylphosphono(difluoromethyl)]-phenylalanine derivs, solution and solid phase synth from L-4-iodophenylalanine, 11171
- N-phthalyl valine ketene, stereoselective addition of (R)-pantolactone to, 13719
- proclavaminic acid ((±)-threo-5-amino-3-hydroxy-2-(1'-aza-2'-oxocyclopentyl)-pentanoic acid), incubation of the γ-lactam analogue of using clavaminic acid synthase, 7011
- silicon-containing α-amino acids and respective hydantoin derivs, synth by alkylation of an α-amino cyanoacetate deriv with iodomethyl-substituted silanes followed by hydrolysis, 13695
- (3S,4S)-statine, 4-amino-3-hydroxy-5-methylheptanoic acid, synth employing chiral boron enolate addition to aldehydes, 5593
- strapped Zn-porphyrin receptor for benzyloxycarbonyl —, 9115
- γ -substituted γ -amino acids, stereoselective synth from the corresponding α -amino acids employing reduction of the keto functionality of α -amino acyl Meldrum's acid as the key step, 12867
- D- and L-allo-threonine, preparation of protected derivs for peptide synth, 3369
- β,β,β-trifluoroalanine, from α-keto-perfluorocarboxylic esters by biomimetic transamination, 8307
- β , γ -unsaturated α -amino ester derivs, synth by amination of γ -silylated α , β -unsaturated esters, 15853
- unsaturated and bis-hydroxylated (S,S)-2,7-diaminosuberic acid derivs, asymmetric synth from acetonide protected sugar alcohols, 6925

Amino alcohols

β-amino alcohols to induce enantioselective Reformatsky reaction, 3787

- (1S,2S)-2-amino-1-phenyl-1,3-propanediol, Mitsunobu thioesterification with thioacids, regioand stereochemistry, 10615
- 1-amino-2-naphthols, condensation reaction with methylene-substituted azaheterocycles in the presence of an oxidising agent, synth of photochromic spirooxazines, 9669
- 2-aminocyclopropanols from photocyclization of β-aminoketones and their oxidative ring-opening to enaminones, 7855
- 2-amino-1-phenylpropane-1,3-diol, application as chiral auxiliary to synth of styrylazetidinones, 7985 C₂-symmetric and -pseudo-symmetric 1,4-diamino-2,3-diols, protease inhibitor design, 4769
- 3,4-epoxy- and 3,4-epimino-alcohols, regioselective nucleophilic ring-opening, formation of 1,3- vs 1,4-diols and -, 16139
- β-hydroxyamines, synth from primary amines by carbamate protection, electrochemical oxidation, elimination and asymmetric reduction, 4579
- 4-nitrophenyl serinol, ring-chain tautomerism of Schiff bases, 1873, 1891

Amino aldehydes

- α-aminoaldehydes, Barbier-type allylation of, dependence of the stereochemical outcome on metal and allylic halide, 2823
- diastereoselective addition of allyl organometallics to N-tosyl and N-benzyl-N-tosyl L-alaninal, 13373
- modified Horner-Wadsworth-Emmons olefination of base-sensitive chiral β-hydroxy-α-aminoaldehydes, Z-selective using trifluoroethyl phosphonates, 1707

t-Amino effect

tandem Wolff rearrangement of 1-diazo-2-oxo-(2-N,N-disubstituted aminophenyl)ethylphosphonates by thermolysis giving rise to 2-oxoindolinium enolate derivs. 7557

Amino ketones

- β-amino carbonyl compds, synth by reduction of 2-acylaziridines using samarium(II) iodide, 8887
- photocyclization of β-aminoketones, formation of 2-aminocyclopropanols and oxidative ring-opening to enaminones, 7855
- substituted 2-amino-1,4-naphthoquinones, reaction with Wittig reagents, 3649
- N,N-unsaturated dialkyl- and N-unsaturated alkyl-N-alkyl-β-ketoamides, thermal rearrangement to yield spirolactams, 5775

Amino sugars

- 3-amino-3,6-L-talopyranose monosaccharide, carbohydrate segment of antifungal agent Sch 38516, synth through diastereoselective dipolar cycloaddition, 16377
- carba analogues of sugar moiety of nikkomycins and

- polyoxins, synth of azide precursor, 14635 carbocyclic —, synth from 2-aza-3-oxabicyclo[2.2.1]-heptene hydrochloride, 3347
- 1-carboxylic ester and -ketone analogues of 1-deoxynojirimycin and castanospermine, synth from 1-amino-1-deoxy-D-glucitol, 12739
- chiral dihydropyran Diels-Alder adducts, synth of deoxy-hexoses, dimethylamino-deoxy- and O-methyl deoxy-hexoses, 4763
- 6-deoxy-allo- and gulo-nojirimycin, 6-deoxy-D,Ltalo-nojirimycin, D-fuconojirimycin and 6-deoxy-2-D,L-allosamine, synth by hetero-Diels-Alder cycloadditions, 13769, 13783
- 1-deoxy-D-galactostatin derivs, galactosidase inhibitors, synth by double reductive amination of L-arabino-hexos-5-uloses, 3407
- 4-formamido-4,6-dideoxy-2-methoxy-3-methyltalopyranose, sugar moiety of callipeltoside B, 3243 N-glycolylneuraminic acid, synth using enzyme-

N-glycolylneuraminic acid, synth using enzymecatalyzed reactions, 2387

lipase-catalysed N-acylation of amino sugar derivs, 7587, 7629

oligonucleotides with 3-hydroxy-*N*-acetylprolinol as sugar substitute, synth, 14957

Ammonium salts

benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent in synth of thiolactones from ω-halo acid chlorides, 11835, corrig. 16607

calix[5]arene-crown hosts, binding with quaternary -, complexation equilibria from NMR titrations, 4901

fused isoxazolidines, cleavage by methyl iodide to quaternary hydroxyalkylammonium salts, 16891

Analgesics

acylation of oxazolo[4,5-b]pyridin-2(3H)-ones, 2-phenyloxazolo[4,5-b]pyridines and pyrrolo-[2,3-b]pyridin-2(2H)-ones in the route to replacing the benzene ring of analgesics with a pyridinic structure, 5159

etodolac, antiinflammatory and analgesic drug, synth of enantiomers by resolution *via* crystallisation of diastereoisomeric salts with (+) and (—)-α-methylbenzylamine, 17769

Anhydrides

acetic and propionic anhydrides for ring transformation of 2,3-dihydroimidazo[2,1-a]-phthalazin-4-ium-6-olates by acetic and propionic anhydrides, 7021

formation of - in Mitsunobu reactions, 3933

maleic anhydride, reaction with α-oxoketene *O,N*-acetals, synth of *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, 17643

1,3,8-trioxaspiro[4.5]decane-4,7,9-trione, citric acid 1,5— substitute, 5537

Annulation

aza-annulation of enaminones with α,β -unsaturated acid chlorides bearing hydrogen atoms on the γ -carbon, reversal of regiochemistry when triethylamine is used as mediator, 11827

- of cyclohexadienones with the anion of 3-cyanophthalide affords anthraquinones, 4387
- 1-methylpyrrole-2-acetonitrile, ring forming condensed and substituted indoles, 14737

Prins-pinacol spiroannulations of methylenecyclohexane siloxy acetals, 8927

reactions of lithium trimethylsilyldiazomethane and diazomethane with the 5,6-double bond of uracil and uridine derivs, synth of annulated and fused heterocyclic systems, 7045

Annulenes

annulenes and heteroannulenes, direct calculation of conjugation energies from molecular dimensions, 17195

Anthelmintics

artemisinin from *Artemisia annua*, reduction by lithium aluminium hydride generates two rearranged hydroperoxide products, mechanism, 7493 avermectins, synth of the oxahydrindane subunit of avermectins from isoquinuclidine derivs, 5195

heteroatom-containing bicyclic endoperoxides, synth by Tebbe methylenations of heteroatom-substituted ketones, 37

kainoids, natural products with anthelmintic and insecticidal activities, synth of imidazoline analogues of, 2775

yaoundamines A and B, antimalarial naphthylisoquinoline alkaloids from *Ancistrocladus korupensis*, structures, 8121

Anthracenes

anodic oxidation of methylnaphthalenes and 9methylanthracene, formation of quinone acetals, 8613

- chiral bridged 1,2,3,4,5,6,7,8-octahydro with outer rings derived from nopinone, formation of central ring by 5+1 Heck benzannelation, 7753
- 9,10-dicyanoanthracene as promoter of photoinduced electron transfer reactions of benzyl phenyl sulfides, 4469
- trans-1,4:5,8-dimethano-1,2,3,4,5,6,7,8-octahydroanthracen-9-carbaldehyde and related structures, synth and use in porphyrin synth, 11257, 11277
- milled on alumina, H-transfer and carbonisation, synth of polyhydro-anthracenes, 4051
- [3.3]orthoanthracenophanes in the Diels-Alder reaction with N-(p-substituted phenyl)maleimides,

- substituent effects on the selectivity, 6817
- 2,3-substituted anthracenes, synth by Diels-Alder aromatisation reaction or by Friedel-Crafts approach, 6377

Anthraquinones

- anthracycline analogues, 1,4-dihydroxyanthraquinones with 2-[1-(4-aminocyclohexylcarbonyloxy)ethyl] group, with/without F at 6- or 7-, synth, 17469
- benz[a]anthraquinones by anionic annulation of phthalide sulfones with quinone monoketals accessible by phenyliodonium diacecate oxidation of naphthols, 2177
- bis-anthracycline analogues, α,ω-bis-(1,4-dihydroxy-anthraquinon-2-yl)-α,ω-bis-(4-aminocyclohexyl-carbonyloxy)alkanes, synth as DNA bisintercalating agents, 17477
- by annulation of cyclohexadienones with the anion of 3-cyanophthalide, 4387
- 1,8-dichloroanthraquinone, reaction with (S)-(-)-2-(tetrahydropyranyloxy)-1-propanol, generation of the 1,8-disubstituted product and a monosubstituted-monodechlorinated product, 4179
- dihydroxy-anthraquinones from naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, 1823
- steroid-anthraquinone hybrids, synth from 1,4-naphthoquinones and reduced indenyl dienes, 10871

Antibacterials

- 2-alkylcarbapenems, synth by cross-coupling of carbapenem-2-yl triflates with alkylborane, antibacterial activity against Gram-negative and -positive strains, 539
- clavulanic acid as inhibitor of serine β-lactamases: prep of bicyclic γ-lactams by incubation of γ-lactam analogue of proclavaminic acid using clavaminic acid synthase, 7011
- erythromycin A: novel transannular rearrangements of azalide iminoethers, 16923
- synth of monosaccharide components of the Ospecific polysaccharide of the lipopolysaccharide of the enteropathogenic bacterium Shigella sonnei, 4159

Antibiotics

- alamethicin F-30 and trichovirin I 4A, peptaibol linear antibiotics, synth using a 2-chloro-1,3-dimethylimidazolidium hexafluorophosphate, 567
- 2-alkylcarbapenems, synth by cross-coupling of carbapenem-2-yl triflates with alkylborane, 539
- ambiphilic allenyl enolates: report, synth and reactivity of, 10197
- 7-aminoaziridinomitosene, synth of fully functionalised compd, 4549

- 4-aminocarbonylmethoxy trinems, synth by opening of an epoxide intermediate with allyl glycolate followed by deallylation, activation of the free acid and reaction with a series of trimethylsilylamines, 15011
- angucyclines, C-glycoside antibiotics, synth of galtamycinone, a common aglycon of C-glycosyl naphthacenequinone angucyclines, 16533
- angucyclines, polyketide antibiotics with a benz-[a]framework, synth of the framework by anionic annulation of phthalide sulfones with quinone monoketals, 2177
- anthracycline analogues, 1,4-dihydroxyanthraquinones with 2-[1-(4-aminocyclohexylcarbonyloxy)ethyl] group, with/without F at 6- or 7-, synth, 17469
- avermectin A_{2b}, synth of C11-C25 fragment, 9377 avermectins, synth of the oxahydrindane subunit of avermectins from isoquinuclidine derivs, 5195
- azetidin-2-ones by [2+2]cycloaddition of chlorosulfonyl isocyanate to 3-O-vinyl ethers derived from D-glucose and D-glucuronolactone, conversion to 1-oxacephem related to clavulanic acid, 5883
- azinomycins A and B, antitumour antibiotics from Streptomyces griseofuscus S42227, construction of the C6-C13 aziridino[1,2a]pyrrolidine core substructure, 16313
- bleomycin antitumour antibiotic, synth of the disaccharide moiety (2-O-(3-O-carbamoyl-α-D-mannopyranosyl)-L-gulopyranose) from D-mannose by application of stannylene acetal methodology, 10993
- caliheamicin $\gamma 1^1$ and esperamicin A_1 , synth of methyl α and β -glycosides corresponding to the amino sugar component of the E-ring, synth from methyl 2-deoxy- α and β -D-ribopyranoside, 14369
- didehydro-dideoxy C-glycosides with furan substituents, synth using ring closing metathesis, 12991 dissymmetric indolocarbazole glycosides, antitumour—, synth by Mitsunobu reactions, 5937
- erythromycin A: novel transannular rearrangements of azalide iminoethers, 16923
- FK-506, macrolide —, construction of C16-C34 fragment, and culmination of synth, 13221, 13257 formycin B, ionisation constant of, 6903
- (+)-lactacystin, non-protein neurotropic factor having α,α-disubstituted α-amino acid structure, total synth from D-glucose, 16287
- (±)-methylenolactocin and (±)-protolichesterinic acid, β-carboxy-α-methylene-γ-lactones, synth using retro-Diels-Alder reactions, 17335
- mitomycins, asymmetric approach to

- 1,2-disubstituted mitosenes based on the intramolecular cyclisation of diazoesters, 16521
- moenomycin A, introduction of a thiol function and use to couple moenomycin to differently substituted maleimides, 17669
- moenomycins A and A₁₂, synth of trisaccharide analogues, structure-activity relations, chemoenzymatic approach to synth, 1665, 1675, 1695, corrig. 5357
- monensin, polyether antibiotic from *Streptomyces*, biomimetic approach to the C₁₂-C₂₁ bistetrahydrofuran region by application of a series of *syn*-oxidations, 16435
- neplanocin A, antiviral carbocyclic nucleoside, synth from adenosine, 13621
- nikkomycins and polyoxins, synth of azide precursor of carba analogues of sugar moiety, 14635
- 2-nitroimidazole azomycin antibiotic, synth of the 15-crown-5 complex of the sodium salt of 2-nitroimidazole, structure, 13177
- nodusmicin, 10-membered macrolide with 1,5epoxy-octahydronaphthalene moiety, synth of O-bridged decalin, 3083
- nonactin, homologue of nactins, a class of macrotetrolide antibiotics from *Streptomyces*, stereoselective approach to nonactate esters, 17079
- 4-oxo- and 4-(R)-hydroxypipecolic acid derivs, consituents of some antibiotics, synth from L-aspartic acid involving Michael addition, 15671
- palmarumycins CP₃ and C₂, and CP_{4a} and CP₅, absolute configuration and conformation, calculation of CD spectra, 1655, 3101
- papyracillic acid, spiro-butenolide from ascomycete Lachnum papyraceum, reactivity towards nucleophiles, pyridine, etc., 6209
- (—)-polygodial and (—)-warburganal, antifeedant antibiotics, reactivity towards amino acids and triacetic acid lactone, 237
- protected thymine polyoxin C, synth using prochiral ketone 8-oxabicyclo[3.2.1]octan-3-one, 14417
- pyranose glycals related to carbohydrate moieties of pluramycin and vancomycin, synth by tungsten pentacarbonyl-induced cyclisation of an acyclic alkynol via cyclic tungsten oxacarbene, 11061
- pyrrolo[2,1-c][1,4]benzodiazepines, oxidation of cyclic secondary amine by TPAP, 3223
- streptonigrin antibiotics from Streptomyces flocculus, absolute configuration of the chiral biaryl system by exciton coupled circular dichroic spectroscopy, 15101
- synth of monosaccharide components of the O-specific polysaccharide of the lipopolysaccharide

- of the enteropathogenic bacterium Shigella sonnei, 4159
- tautomycin, synth of segments B and C followed by total synth by coupling methods, 5083, 5103, 5123
- (+)-thiamphenicol and (—)-florfenicol, synth of precursors by boron aldol reactions of αheterosubstituted thioacetates with aldehydes and silyl imines, 5909
- tunicamycin, antibiotic which interferes with glycoprotein synth by inhibiting glycosyl transfer to the protein, 16355

see also Cephams and cephems, Penicillins

Antibodies

cis-1,2,3,4,4a,7,8,8a-octahydroquinoline N-oxides, and their epoxides, synth as haptens in catalytic formation for terpenoid cascade cyclization, 11237

Anticoagulants

diphenacoum and brodifacoum, 4-hydroxycoumarin rodenticides, asymmetric synth, 6045

Antifeedants

- azadiradione, synth of 13β-analogs from agathic acid using Nazarov cyclization, 14131
- (—)-polygodial and (—)-warburganal, antifeedant antibiotics, reactivity towards amino acids and triacetic acid lactone, 237

Antifungals

- protected thymine polyoxin C, synth using prochiral ketone 8-oxabicyclo[3.2.1]octan-3-one, 14417
- Sch 38516 antifungal agent, synth of the carbohydrate segment, 3-amino-3,6-L-talopyranose monosaccharide, by diastereoselective dipolar cycloaddition, 16377
- tautomycin (from Streptomyces spiroverticillatus) as antifungal against Sclerotinia sclerotiorum, synth of segments B and C followed by total synth by coupling methods, 5083, 5103, 5123

Antigens

screening a "library" of hydroxystilbenes for selective inhibition of B cell — receptor kinase cascade, 11995

Antiinflammatory compds

- (—)-borjatriol $(8\alpha,13(R)$ -oxylabdane- $7\beta,14(R)$,15-triol, hemisynth from larixol, 673
- 16α -carboxyprednisolones, synth based on addition of bromonitrile oxide to pregnatrienone to provide bromoisoxazoline which can be converted to the 16α deriv *via* the hydroxynitrile, 14317
- etodolac, antiinflammatory and analgesic drug, synth of enantiomers by resolution *via* crystallisation of diastereoisomeric salts with (+) and (—)- α -methylbenzylamine, 17769
- a-methyl carboxylic acids, enantioselective synth

using 1,3-dithiane 1-oxide (DiTOX) units as chiral auxiliary, 13149

sialyl-Lewis^X mimetics, synth, biological activity of side products, 2485

Antimalarials

artemisinin from Artemisia annua, reduction by lithium aluminium hydride generates two rearranged hydroperoxide products, mechanism, 7493

heteroatom-containing bicyclic endoperoxides, synth by Tebbe methylenations of heteroatom-substituted ketones. 37

yaoundamines A and B, antimalarial naphthylisoquinoline alkaloids from *Ancistrocladus korupensis*, structures, 8121

Antiparasitic compds

see Anthelmintics, Antimalarials

Antitumour compds

- 5-fluorouracil acyclonucleosides, synth, effectiveness against rhabdomyosarcoma cells, 7319
- amide-linked A-norpaclitaxel and 2-aroyl analogues, synth from 1-deacetyl baccatin III, 5699
- 7-aminoaziridinomitosene, synth of fully functionalised compd, 4549
- anthracycline analogues, 1,4-dihydroxyanthraquinones with 2-[1-(4-aminocyclohexylcarbonyloxy)ethyl] group, with/without F at 6- or 7-, synth, and of bis-anthraquinone derivs linked by polymethylene chains, 17469, 17477
- azinomycins A and B, antitumour antibiotics from Streptomyces griseofuscus S42227, construction of the C6-C13 aziridino[1,2a]pyrrolidine core substructure, 16313
- bleomycin antitumour antibiotic, synth of the disaccharide moiety (2-O-(3-O-carbamoyl-α-D-mannopyranosyl)-L-gulopyranose) from D-mannose by application of stannylene acetal methodology, 10993
- caliheamicin $\gamma 1^1$ and esperamicin A_1 , synth of methyl α and β -glycosides corresponding to the amino sugar component of the E-ring, synth from methyl 2-deoxy- α and β -D-ribopyranoside, 14369
- (+)-camptothecin, total synth from dimethyl 2-ethylmalonate, 11049
- carbohydrate-based non-peptide mimetics of peptidic antagonist of α_v, β_3 and α_v, β_5 pentapeptide cRGDFV, design and synth, 8751
- 5-(p-carboranylalkyl)-3,8-diaminophenanthridinium salts, synth in connection with boron neutron capture therapy, 17519
- conagenin, immunomodulator from Streptomyces roseosporus MI696-AF3, synth of conagenin

- analogues modified at 3'-carbon centre from D-xylose, 13883
- (+)-curacin A, cytotoxic agent from marine cyanobacterium *Lyngbya majuscula*, synth utilising geraniol and serine, 11087
- 1*H*-cyclopenta[*b*]benzofuran lignans, cytotoxins from stems and fruits of *Aglaia elliptica*, 17625
- 7-deoxy-10-acetyldocetaxel and analogues, synth from European yew, biological activity, 12575
- development of anti-cancer compds during metabolism of selenium in plants and animals, 12299
- dibenz[e,g]indoles, DNA intercalative delivery template, synth of nitrogen mustard and enediyne containing systems, 14599
- (3Z)-4,8-dimethylnon-3-en-1-yl sulfate, isolation from ascidian, antiproliferative effect on murine fibrosarcoma cell line, 11489
- dynemycin analogs lacking ring N atom, cross-coupling approach to synth, 9159
- 4'-C-(fluoromethyl) nucleosides, synth as antineoplastic agents, 13315
- 6-N-formylamino-12,13-dihydro-1,11-dihydroxy-13 -(β-D-glucopyranosyl)-5H-indolo[2,3-a]-pyrrolo-[3,4-c]carbazole-5,7(6H)-dione (NB-506), synth, 585
- FR900482, antitumour compd from *Streptomyces sandaensis*, synth of the aromatic segment and enatiomerically pure aliphatic segment from 5-hydroxyisophthalic acid: total synth by assembly of the segments, 10229, 10239, 10253
- GI147211C, topoisomerase I inhibitor, asymmetric synth utilising Heck, Sharpless asymmetric dihydroxylation and Mitsunobu reactions, 10953
- hydroxymethylacylfulvene (HMAF), illudin S derivative, reactions with thiols, 14579
- mitomycins, asymmetric approach to 1,2disubstituted mitosenes based on the intramolecular cyclisation of diazoesters, 16521
- mycalazols 1-12 and mycalazal 1-2, cytotoxic 5-acyl-2-hydroxymethylpyrroles and 5-alkylpyrrole-2-carbaldehydes from *Mycale micracanthoxea* Atlantic sponge, cytotoxic activity of, 331
- naphtho[2,3-b]furano-4,9-quinones, synth of diodantunezone and 2-ethylfuronaphthoquinones, 3195
- norsiphonarienone A, isosiphonarienolone, 2-deoxysiphonarienfuranone and isopectinatone, polypropionates from *Siphonaria pectinata*, cytotoxic activity against mice P388, human A549, human HT29 and human Mel28, 2303
- onapristone, potent antiprogestin with low antiglucocorticoid activity for treatment of

hormone-dependent breast cancer, studies towards total synth from Eder-Hajosh ketone, 13709

- paclitaxel, synth of *C-nor*-paclitaxel and a study of the oxidation of 6α-hydroxy-7-epipaclitaxel with TPAP, 3441
- (+)-pancratistatin from Pancratium littorale, convergent synth from conduritol A based on intramolecular electrophilic aromatic substitution, 11153
- podophyllotoxin derivs lacking the lactone ring, prep from naturally occurring lignans, cytotoxic activity, 15743
- Δ^7 -prostaglandin C_1 , primary metabolite of antitumour Δ^7 -prostaglandin A_1 on the sera, 17009 quinazolin-4-one-based antifolates with modified glutamate side-chains, potential thymidylate synthase inhibitors, 13383
- saundersioside A and B, 24(23-22)abeo-cholestane glycosides from bulbs of *Ornithogalum saundersiae*, characterisation and cytostatic activity, 11549 swainsonine, mannosidase inhibitor and anticancer drug, synth of (3R)- and (3S)-3-(hydroxymethyl)-swainsonine from D-ribose, 11021
- 3,7,11,15-tetramethyl-hexadecan-1,19-sodium disulfate and heneicosane-1,21-sodium disulfate, antiproliferative sulfated metabolites from the Mediterranean tunicate Ascidia mentula, activity, 5877

Antivirals

- 5-amino and 5-glycosylaminopyrrolo[3,4-c]-pyridin-1,3(2H)dione and 7-amino and 7-glycosylaminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-amino and 2-glycosylaminopyridines, 8225
- bicarbocyclic dideoxynucleosides as potential antiviral agents, 1957
- bis-(3→5)-cyclic bis(1,4-anhydro-2-deoxy-Derythro-pentitol-3-phosphate), bis-abasic cyclic dinucleotide inhibitor of HIV-1 integrase, synth from 2-deoxy-D-ribose, 11033
- 2',3'-dideoxy-3'-hydroxymethylcytidine, antiviral nucleoside, synth by two routes from protected uridine and cytidine 2',3'-epoxide and from 2',3'-didehydro-2',3'-dideoxycytidine, 8085
- HIV, anti-HIV-1 active Calophyllum coumarins from dimethoxycoumarin (limettin), 14915
- HIV, derivs of 4-amino-2,3-dihydroisothiazole 1,1-dioxides and 4-amino-1,2-oxathiole 2,2-dioxides, synth, 17795
- (S)-mappicine and mappicine ketone, antiviral molecules against herpes virus and cytomegalovirus, synth from methylacetoacetate via radical cascade

reaction of isonitriles, 8881

neplanocin A, antiviral carbocyclic nucleoside, synth from adenosine, 13621

Arenes

- arenediazonium salts, Heck reactions of: arenediazonium perchlorates and fluorides as new Heck substrates, 2213
- N-arenesulfonylaziridines bearing α,β-unsaturated ester groups, ring-opening with formic acid, 12933 bromination of alkylbenzenes in presence of montmorillonite, 2581
- C-pentyl resorcarene, condensation with long chain aliphatic diamines and formaldehyde, synth of tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, 17691
- (pyrimidin-2,4,6-triyl)-tris-hetarenium salts, synth by nucleophilic substitution of 2,4,6-trichloropyrimidine with 4-dimethylaminopyridine, 1methylimidazole and 4-(pyrrolidin-1-yl)pyridine, 1295

Aromaticity

- absolute hardness (η) from molar refractivity as indicator of of heterocycles, 3319
- bond shift in monohalo-cyclooctatetraenes, kinetics, energetics, 10093
- 1,3,2-diazaphospholes, *ab initio* calculations, 2357 energetic and geometric contributions to —, effect on of condensed benzenoid hydrocarbons of introduction of CH₂⁺ group, *ab initio* calculations of HOMA, EN and GEO contributions, 11383

Aromatisation

polyphenylenes by thermolysis of enediynes and o-dialkynyl aromatics, Bergman cyclo—, 15515

Arvlation

- 6-aryluracil, 2-aryl-2-cyclohexen-1-one, 5-aryl-1-benzyl-2,3-dihydropyridin-4(1*H*)-one, synth by Pd(0)-catalysed coupling, 16711
- copper-catalysed phenylation of amines by pentavalent organobismuth reagents, 4137
- decarbonylative α,α-diarylation reaction of 2-methoxyalkanoic acids in phosphorus pentoxide-methanesulfonic acid mixture, synth of 1,1-diarylalkane homologs, 14287
- 2,5-distyryl-heteroarylenes and 1,4-bis[2-(heteroaryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, synth, characterisation and electronic properties, 15069

Arvnes

aryne cyclisation and Horner reaction of o- (and m-)

halogeno-N-phosphorylmethylbenzamide derivs, synth of 3-(aryl and alkyl)methylene-1H-isoindolin-1-ones, 10313

Ascidians

see Molluscs

Asymmetric induction

arene-Mn(CO), complexes, nucleophile additions promoted by chiral auxiliary, 3849

nucleophilic additions to β-substituted carbonyl compds, theoretical study of open-chain model of transition states, 13419

Asymmetric reactions

asymmetric Heck reaction, Report, 7371

asymmetric reduction of ketones with 3-(p-tolylsulfinyl)-1,4-dihydropyridines, 593

Baylis-Hillman reaction of camphor-based acrylates, formation of optically pure products, 16423

epoxide hydrolases as asymmetric catalysts, 15617 stereoselective base-catalysed addition of (R)-pantolactone to the ketene derived from racemic N-phthalyl valine, dependency on tertiary amine catalyst employed, 13719

Asymmetric synthesis

- 4,4-bis(trifluoromethyl)imidazoline—based ACAT inhibitors, and absolute stereochemistry, 5359
- of (+)-coronafacic acid and (+)-coronatine, phtotoxins from *Pseudomonas syringae* pv., by intramoleular 1,6-conjugate addition starting from (R)-(+)-4-acetoxy-2-cyclopenten-1-one, 9509
- (+)- and (-)-trans-2,6-dimethylpiperidines, synth via perhydrooxazolo[3,2-a]pyridines, 8447
- diphenacoum and brodifacoum, 4-hydroxycoumarin rodenticides, 6045
- of [18F]fluoro aromatic α-methyl-L-amino acids, radiopharmaceuticals for Positron Emission Tomography (PET), 5785
- of GI147211C, topoisomerase I inhibitor, utilising Heck, Sharpless asymmetric dihydroxylation and Mitsunobu reactions, 10953
- of lignans ((+)-fargesin and (-)-picropodophyllone) by Michael addition of lithium salt of cyanohydrin to (S)- and (R)-3-(2,2-dimethyl-1,3-dioxolan-4-yl)-cis-2-propenoate, 9585
- of the pentacyclic ring system of Aspidosperma alkaloids via condensation of 2-hydroxytryptamine with a chiral C9 lactone, 14247
- of (R)- and (S)-piperidin-2-yl-phosphonic acid by diastereoselective addition of trialkyl phosphite onto 2-ethylphosphonate-6-oxazolopiperidine or 2-cyano-6-oxazolopiperidine, 3627
- of 5-substituted cyclohexenones from an *O*-metalated lactam *via* α-cycloenamine, 8795

of unsaturated and bis-hydroxylated (S,S)-2,7-diaminosuberic acid derivs, 6925 see also Enantiocontrol, Enantioselection

Atropisomerism

asymmetric desymmetrization of 2,2',6,6'tetrahydroxybiphenyl using *l*-menthone, synth of resolved 2,2'-biaryldiols, 16663

barriers to rotation in 9-substituted triptycenes, AM1 MO calculations, 4661

biphenyl- and 1,1'-binaphthyl-2,2'-diols and -dithiols, synth, rotation of aryl rings and of thiocarbamido groups in phenolic bis-O-(dimethylthiocarbamates), 6073

bromo—and iodo-o-xylenes, proton and carbon NMR study, conformation (atropisomerism) effects in $\alpha,\alpha,\alpha',\alpha'$ -tetrabromo-o-xylene, 10113

- 3,10-diaryl-5-deaza-flavins, when 3-aryl group is o-substituted, 4601
- dynamic equilibration of diastereomeric salts of atropisomers, proton NMR spectra of 1,8-di(3'-pyridyl)naphthalene in the presence of *R*-camphorsulfonic acid, 465
- 1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by Suzuki coupling, barriers to rotation, conformation, AM1 and PM3 calculations, 5379 meso-tetraalkyl porphyrin-Co(III), axially
- neso-tetraalkyl porphyrin-Co(III), axially (substituted-imidazole)-coordinated, barriers to rotation, 12487

Aza compds

- amino azanoradamantane hexahydro-2,5b-methano-1*H*-3a*S*,3aa,6aa-cyclopenta-[*c*]-pyrrole-4a-amine, synth, 1
- 6-aza-1-oxaphenalene, synth by transformation of 5,8-dimethoxy-4-one, 4511
- 1-aza-2-deoxy-L-carbafucose (2-C-methyl-1,2,5-tri-deoxy-1,5-imino-L-ribitol), synth from L-arabinose,
- aza-allyl carbanions from N-[bis(methylthio)-methylene]glycine ethyl ester and N-[bis(methylthio)methylene]benzylamine, acylation of, prep of oxazoles, α,α -disubstituted α -acyl- α -amino acids and α,β -didehydroamino acids, 3679
- 2-azabicyclo[3.3.1]nonanes, synth by intramolecular carboradical cyclisation of 4-(trichloroacetamido)-cyclohexenes substituted with an electron withdrawing substituent, 1391
- 7-azaindole, lithiation followed by addition of electrophiles, synth of 2-substituted-1*H*-pyrrolo-[2,3-*b*]pyridines, 3637
- 1-azatriene, cyclisation as a route to annelated pyrido[4,3-b], 4447

- cage-shaped (1S,4R,5R)-4-hydroxy-2-oxa-6-azabicyclo[3.3.0]octane, synth from 1,2-epoxy-4penten-3-ol, 1369
- DAB-1 and LAB-1, pyrrolidine type aza sugar glucosidase inhibitors, synth from diethyl tartrate, 7501
- 1,3-diazabutadienes, [4+2] and [2+2] cycloadditions with ketenes, formation of azetidinones and dihydropyrimidinones, 14107
- 5,10-dihydro-5,10-dimethyl-2,5,10-triazadibenzo-[a,e]pentalene, the pyrroloindole analogue of ellipticine: synth and DNA intercalative properties of, 479
- oxazaphosphorinane, synth as precursors to chiral phosphite triesters, diastereoselective synth of DNA phosphorothioates, 16945
- oxime- and Schiff base-containing aza- and diazacrown ethers which can be used for heteronuclear binding with hard and soft metal ions, synth from aza-15-crowns, 17595
- polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105
- pyrazole-containing azacrown ethers by intramolecular cycloadditions of functionalised nitrilimines, 3005
- [4-pyrrolidino-1-(1,2,3-triazol-4-yl)-2-aza-1,3-butad ienes, reactions with N-phenylmaleimide, diazonium ions, tosyl azide, diethyl azodicarboxylate, 9393

Azepanes

balanol, synth of - moiety, 4857

Azepines

(3R,4S)-N-p-toluenesulfonyl-3,4-epoxy-hexahydro-azepine and (1R,4S)-N-t-butoxycarbonyl-7-azabicyclo[2.2.1]heptan-2-one, synth from D(—)-quinic acid, 17177

Azetidines

methyl (2R)-2-[(2R,3S)-3-[(R)-1-(t-butyldimethylsilyloxy)ethyl]-4-oxoazetidin-2-yl]propanoate, intermediate to 1β -carbapenem, synth by radical cyclisation of N-vinylic α -bromo amides, 9611

Azetidinones

- 4-acetoxyazetidin-2-one, starting material for synth of 3-amino-3-vinylpropanoic acid, 15807
- 1,3-diazabutadienes, [4+2] and [2+2] cycloadditions with ketenes, formation of and dihydropyrimidinones, 14107
- a (3-hydroxy-1-aryl-4-oxoazetidin-2-yl) thiazol-2-one, synth and conversion into a thiazolo[3,4-a]-pyrazine-3,6-dione, 12729
- lactendiynes, 10-membered enediynes fused to β-lactam ring, synth and reactivity, 3249

1-oxacephems, synth from D-arabinal and L-rhamnal, 14153

- cis-3-phthalimido-4-styryl-2—, chiral synth using 2-amino-1-phenylpropane-1,3-diol as chiral auxiliary, 7985
- ring-opening of β -lactams, formation of α -methoxy-enamino-thiolate esters from 3-methoxy-4-methylthio-azetidin-2-ones, 8439

Azides

- α-azido five-membered heterocycles, thermal decomposition in the ground singlet state, *ab initio* molecular orbital study, 9647
- 4-azidothiazoles, neighbouring group effects on rates of thermolysis of, 9657
- carba analogues of sugar moiety of nikkomycins and polyoxins, synth of azide precursor, 14635
- carbohydrate α-azido-aldehydes, synth via C-dichloromethyl sugar derivs, 5493
- diazo transfer from tosyl to 2-(trimethylsilyl)-1,3-dithiane, carbenoid reactivity of 2-diazo-1,3-dithiane, 9269
- glyconolactones from per-O-alkylated glycopyranosides using TMS-azide, and ring contraction of pyranoses, 3123
- 1,2- and 1,3-hydroxyalkyl azides, reaction with ketones, synth of *N*-hydroxyalkyl lactams *via* formation of a hemiketal, 16241
- pyrrolo[2,3-b]quinolines, synth from a diazide by four-step process, 3281
- (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, reactions with triphenylphosphine, 15041
- tosyl azide, reaction with 4-pyrrolidino-1-(1,2,3-triazol-4-yl)-2-aza-1,3-butadienes, formation of triazolylimidazolines, 9393

Azines

- azines and azoles, calculation of resonance energies from their molecular dimensions, 13111
- azinomycins A and B, antitumour antibiotics from Streptomyces griseofuscus S42227, construction of the C6-C13 aziridino[1,2a]pyrrolidine core substructure, 16313
- dehydrazination of arylhydrazines using nitric oxide in the presence of oxygen, mechanism, 15701
- dihydroazines by addition of pyrrole and indole to N-acetyl- and N-alkylpyridinium, quinolinium or isoquinolinium salts, 13959

Aziridines

- 2-acylaziridines, reduction by samarium(II) iodide, synth of β -amino carbonyl compds, 8887
- 7-aminoaziridinomitosene, synth of fully functionalised compd, 4549
- azinomycins A and B, construction of the C6-C13

- aziridino[1,2a]pyrrolidine core substructure involving Wadsworth-Horner-Emmons olefination and intramolecular addition-elimination reaction sequence, 16313
- aziridination of vinylphosphonates using PhI=NTs, hydrogenation of the resulting aziridinylphosphonates furnishes the α-aminoalkylphosphonates, 13603
- aziridines bearing an α,β-unsaturated ester group, ring-opening with formic acid, 12933
- aziridinium salts derived from homochiral 2,3-epoxy amines, coupling with α-amino ester nucleophiles, key step in synth of bestatin related aminopeptidase inhibitors, 15729
- 2-carboxyazirines, formation from 5-alkoxyisoxazoles by Fe²⁺ salts, 10911
- chiral in synth of azepane moiety of balanol, 4857 cyclohex-3-en-1-one chiral acetals, amination via using ethyl N-nitrobenzenesulfonyloxycarbamate, 4779
- 5-deoxy-5-diethylphosphono-D-ribose, conversion into 2,3-aziridino-γ-lactone *via* cyclic sulfate and azide, 10743
- derived from 5,6-dihydro-2*H*-pyran and *cis* and *trans*-aziridines derived from 3-(benzyloxy)cyclohexene, 2-(benzyloxy)-3,6-dihydro- and 2-benzyloxy)-6-methyl-3,6-dihydro-2*H*-pyran: synth and ring-opening, 1417
- 3,4-epoxy- and 3,4-epimino-alcohols, regioselective nucleophilic ring-opening, formation of 1,3- vs 1,4-diols and amino-alcohols, 16139
- nucleophilic additions and [3+2] cycloadditions of aziridines under C-C and C-N bond cleavage, 14297
- N-phosphorylated—, nucleophilic ring-opening, synth of secondary-alkyl amines and N-(tertiary-alkyl) phosphoramidates, 4935

Azirines

methyl 2-methyl-3-phenyl-2*H*-azirine-2-acrylate, reaction with diphenylketene, formation of 3,4-dihydro-2*H*-pyrrol-2-ones and of cyclopropane derivs. 7089

Azo compds

- N-arylazoindoles solid-phase synth by reaction of diazonium ions, immobilised on an ion-exchange resin, with sodioindole, 9749
- arylazosulfones, reaction with potassium salts of (t-butoxycarbonyl)methyl and tosylmethyl isocyanide, synth of 4,5-bis(t-butoxycarbonyl)- and 4-tosyl-1-arylimidazoles respectively, 2125
- azoalkene cyclizations, tautomerism, theoretical calculations, structure, of 1*H*-pyrazol-5(2*H*)-ones

- (1,2-dihydro-3H-pyrazol-3-ones), 5617
- diethyl azodicarboxylate, reaction with furfural, formation of diethyl 2-oxo-8-oxa-6,7-diazabicyclo-[3.2.1]oct-3-ene-6,7-dicarboxylate, 9313

Baeyer-Villiger reactions

- brassinosteroids with epoxy functions, synth, effect on regioselectivity of -, 11347
- of 3-indolyl-imidazol-4-one as possible route to alboinon, a 1,3,5-oxadiazin-2-one alkaloid isolated from ascidian *Dendrodoa grossularia*, 2055

Barbier reactions

- acylals, formation of esters by alkylative de-acylation using Grignard reagents and organo-Li compds, use of Barbier conditions and ultrasound, 12679
- Barbier-type allylation of chiral α-aminoaldehydes, dependence of the stereochemical outcome on metal and allylic halide, 2823
- DTBB-catalysed lithiation of di(chloromethyl)benzenes under Barbier-type conditions, synth of di(lithiomethyl)benzenes, 13897
- intramolecular samarium —, probes for radical and organo-Sm intermediates, 9023
- organostannane synth by sonochemical -, 859
- SmI₂-induced Barbier cyclisation as key step in construction of the bridged nine-membered ring ether moiety of eunicelline diterpene, 4331

Baylis-Hillman reactions

- of camphor-based acrylates, formation of optically pure products, 16423
- catalytic enantioselective with methyl vinyl ketone, effect of pressure, 1015

Benzazepines

tetrahydro-2—, use of lithiated β -aminoalkyl sulfones in synth. 4791

Benzimidazoles

- 1-benzyl-2-iodobenzimidazoles, coupling with arylboronic acids, regioselective synth of 6-substituted 2-aryl-1-benzylbenzimidazoles, 12755
- by treatment of N,N'-diacylated 1,2-phenylenediamines with p-toluenesulfonic acids, 457
- 2-(3-chloropropyl)- and 2-(4-chlorobutyl)-4substituted benzimidazoles bearing 4-nitro-, 4-amino-, and 4-methyl groups, intramolecular cyclisations of; ambident heterocyclic reactivity, 6937
- N,N'-linked 1,2-ethanediyl-poly(benzimidazoline-2-ones), prep and characterisation, 7689

Benzisoxazoles

- 3-alkoxy-2,1-benzisoxazole-4,7-diones, photorearrangement and stereoselective synth of 4-cyanoalkylidenebutenolides, 3363
- 3-amino-2,1-benzisoxazoles, formation from

α-amino-2-nitrobenzylphosphonates in base, 11399 **Benzocyclooctenes**

bromoacetylenic oxy-Cope rearrangements, formation of reduced bromo-indenes, -naphthalenes, -benzo-cyclooctenes, -cyclodecadienones, 12637

Benzodiazepines

imidazo[1,5-c][1,3]benzodiazepine ring system, synth by reaction of the iminophosphorane derived from (Z)-5-(o-azidoarylidene)hydantoin with isocyanates, 15895

3-ureido-1,5-benzodiazepine-2,4-diones, resolution of 3-amino precursor, 7347

Benzodioxins

- 2-alkyl and 2,2-diakyl-2*H*,4*H*-1,3-benzodioxins, lithiation and rearrangement, formation of *o*-hydroxyhomobenzyl alcohols, 17373
- 2,2-disubstituted-2,3-dihydro-1,4-benzodioxins, synth from 2-substituted-2-hydroxy-2,3-dihydro-1,4-benzodioxins, 2061

Benzofurans

- 2-Benzofurans, see Isobenzofurans
- β-(benzofur-2-yl)- and -(indol-2-yl)enamines, reaction with benzoquinone leads to formation of 3-heteroarylbenzofurans, 177
- 1,1'-bi(dibenzofuranyl)-2,2'-diol(BIFOL), resolution and sulfonation reactions of, 5899
- cycloalkenobenzofuransandmonoalkoxybenzofurans, synth by reaction of cycloalkenediol with methoxyhydroquinone, 2,6-, 2,5- and 2,3-dialkoxyhydroquinone, 9789
- 1H-cyclopenta[b]benzofuran lignans, isolation from stems and fruits of Aglaia elliptica, 17625
- isobenzofurylmethyl benzoates, pyrolytic chemistry of, 17115
- phthalidylidene dichloride, reacion with primary amines, synth of N-substituted phthalisoimides, 5305

Benzopyrans

and biphenyl alcohols by 1,6 and 1,5 ring closure of aryl σ radicals generated from o-bromobenzylethers, 285

Benzoquinones

- p-benzoquinone and chlorobenzoquinone, reaction with azaenamine-benzaldehyde phenylhydrazone, synth of 5-hydroxyindazoles and indazole quinones, 15005
- o-hydroxy-p-benzoquinones, electrochemical reductive methylation of, 469
- maesaquinone (2,5-dihydroxy-3-(Z)-10'-penta-decenyl-6-methyl-1,4-benzoquinone) from fruit of East African plant *Maesa lanceolate*, synth from 1,4,5-trimethoxymethyloxy-2-methoxybenzene, 16969

pentahelicenebenzoquinone, synth by Diels-Alder reactions of 3,3',4,4'-tetrahydro-1,1'-binaphthalene, 6873

2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, addition of silyloxydienes to, 7715

ubiquinones with specific ¹³C labelling at C5 or C6, synth, 2505

see also Ouinones

Benzothiazoles/benzothiazolones

- 3-(benzothiazol-2-yl)-3-oxopropanenitrile, reaction with phenylisothiocyanate followed by addition of hydrazonyl bromides or 2-bromoacetylbenzothiazole, synth of 1,3,4-thiadiazole derivs or thiophenes, 161
- chloroalkylbenzothiazoles, reaction with alkoxides, production of substitution and ring-expanded products, 5839
- α-oxobenzothiazole-2-acetimidoyl chloride, formation and reactions with dinucleophiles and dipolarophiles, 17461

Benzothiophenes

- [cd]-fused 1,3-dihydro-2-benzothiophene S,S-dioxides, synth; generation and trapping of bicyclic o-quinodimethanes, 15957
- 3-oxo-2-phenyliodonio— 1,1-dioxide ylid, synth, reactivity, trimer formation, reaction with thiocarbonyl compds and olefins, 9365

Benzotriazines

N-arylbenzamidoxime reaction with nitrile oxides, formation of 1,2,4-oxadiazole 4-oxides and 1,2,4-benzotriazines, 1089

Benzotriazoles

application of BT to synth of dialkynyl-α-diketones, 14655

Benzoxazines

- 4-aminobenzoxazine, construction of during Fischer indole synthesis of 7-hydroxyindoles, 8853
- tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, synth by condensation of a C-pentyl resorcarene with long chain aliphatic diamines and formaldehyde, 17691

Benzoxazoles

- by treatment of *N*, *O*-diacylated 2-aminophenols with *p*-toluenesulfonic acids, 457
- Rebek imide benzoxazole, nitrile oxide cycloaddition of acryloyl derivs of, effect of aromatic ring on reactions of a nearby unsaturated imide, 1971

Betaines

3-aminopyrido[1,2-a]pyrazin-4-imines, potential mesomeric —, cycloadditions giving 2-pyridyl aza-and diaza-anthraquinones, 5455

chromogenic pyridinium derivs of calix[4]arenes, solvato- and halo-chromism of -, 16867

isomunchnones (4-oxidooxazolium betaines) and 1,4-oxazines with carbonyl ylid structure, from α -diazo-carboximides with Rh(II) catalysis, 7777

Biarvls

- ambient temperature, unsymmetrical, biaryl coupling reaction for hindered systems based on Suzuki methodology, description, 15123
- by electroreductive coupling of organic halides in alcoholic solvents catalysed by nickel-2,2' bipyridine complexes, 11569
- polyfunctional biaryls, synth by Suzuki cross-coupling reaction of arylboronic acids or sodium tetraphenylborate with aryl halides, 14437

Bicyclic aliphatic compds

- bicyclic ketones by opening of cyclopropyl ketones with samarium(II) iodide followed by intramolecular trapping of an electrophile, 8067
- bicyclo[4.4.1]undecene, rearrangement to bicyclo-[5.3.1]undecene using oxa-di-π-methane photoisomerisation, 11099
- bicyclo[5.3.1]undecane-8,11-dione; conformational analysis, enantiomer separation, CD-spectroscopy and enolisation, 5339
- bicyclo[6.1.0]nonane-2,6-dione chiral 2-ketal, nucleophilic additions to 6-oxo group, conformations, 9043
- bicyclo[10.2.1]pentadec-13-en-3-ones, formation by free-radical macrocyclization, 14807
- di and tricarbocyclic diterpenes possessing a bicyclic [4.3.1] ring system from soft coral *Xenia florida*, structures, 6809
- 6-formyl-spirobicyclo[5.2]octane, regioselective cyclopropyl ring opening mediated by TMSCl and TBAI, synth of 3-(1-chlorocyclohexyl)propanal and 2-(1-iodomethylcyclohexyl)ethanal, 16341
- functionalised bicyclo[4.4.0] system and spiro[5.4] system, synth from a bispropargyl compd and a mono-propargyl compd by tin-mediated radical cyclisation, 11685
- methylenebicyclo[4.3.0]nonanes (1-methylenehydrindanes) by intramolecular bicyclization of β-alkoxycarbonylallylsilanes with enones, 839
- 6-methyl-2-oxobicyclo[3.1.0]hexane-1-carboxylic ester, diastereoselective intramolecular cyclopropanation in synth of vitamin D₃ CD rings, 13307

Bicyclic aromatic compds

6-methoxytetralins, transformation into 8-methoxytetralins through action of zirconium tetrachloride, 15771

Bicyclic heterocyclic compds

3-aminopyrido[1,2-a]pyrazin-4-imines, mesomeric

- betaines, cycloadditions giving 2-pyridyl aza- and diaza-anthraquinones, 5455
- 1-aryl[1,2,3]triazolo[1,5-a]pyrazinium salts, synth, ring-opening to 4-pyrrolidino-1-(1,2,3-triazol-4-yl)-2-aza-1,3-butadienes and cycloadditions of this, 9393
- 3-azabicyclo[3.3.1]nonane derivs functionalised at 1 and/or 9-positions, structural study by molecular mechanics and NMR, 13099
- 2-azabicyclo[3.3.1]nonanes, synth by intramolecular carboradical cyclisation of 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, 1391
- 2-aza-3-oxabicyclo[2.2.1]heptene hydrochloride, synthon for carbocyclic sugars and nucleosides, 3347
- benzo[b]- and benzo[c]-fused heterocycles, theoretical study of cycloadditions to acetylenes, ethylenes and cyclopropenes, 13285
- bi- and tri-cyclic modified furanose sugars as constituents of nucleoside analogues, 4727
- bicyclic endoperoxides derived from substituted cycloheptatrienes, mechanism of rearrangement, 10401
- (1R,4S)-N-t-butoxycarbonyl-7-azabicyclo[2.2.1]-heptan-2-one, synth from D(—)-quinic acid, 17177 cage-shaped (1S,4S,5R)-4-hydroxy-2,6-diazabicyclo-[3.3.0]octane and (1S,4R,5R)-4-hydroxy-2-oxa-6-azabicyclo[3.3.0]octane, synth from 1,2-epoxy-4-penten-3-ol, 1369
- cyclopenta[c]pyrans, furo[2,3-c]pyrans, pyrano-[3,4-b]pyrroles, synth of reduced derivs by cyclization of pseudoglycal derivs, 3957
- dibenzo-7-silabicyclo[2.2.1]hepta-2,5-dienes, charge-transfer complex formation and photoinduced electron-transfer reaction of, 1265
- diethyl 2-oxo-8-oxa-6,7-diazabicyclo[3.2.1]oct-3-ene-6,7-dicarboxylate, dynamics of conformational changes by NMR, 9313
- 10,10a-dihydropyrido[1,2-a]azepines, formation by [1,7] electrocyclization of 1-(penta-2,4-dien-1-yl)-pyridinium 1-ylids, 14687
- 3,4-dihydropyrrolo[1,2-a]pyrazine, theoretical study, ylid formation and cycloadditions, 9341
- N,N'-di-(2-, 3-pyridyl) 2,6-dioxa-4,8-diazabicyclo-[3.3.0]octanes, di-2-pyridyl-2,4-dioxa-6,8-diazabicyclo[3.3.0]octanes, synth, 2557
- 2,2-disubstituted-2,3-dihydro-1,4-benzodioxins, synth from 2-substituted-2-hydroxy-2,3-dihydro-1,4-benzodioxins, 2061
- 2-ferrocenylmethylene-3-methylenequinuclidine, synth, Diels-Alder reactions, 12369

- 3a-methoxy/methylthio-1,3a,4,6a-tetrahydropyrrolo-[3,2-c]pyrazole-5,6-diones, 1813
- 7-oxabicyclo[2.2.1]heptanes, reductive cleavage of 2-(α-hydroxydiphenylmethyl) derivs, synth of tetrahydrofurans, 8519
- 8-oxabicyclo[3.2.1]oct-6-en-3-one, starting material for synth of *cis*-3,5 and *trans*-3,5-substituted β-alkoxy-δ-valerolactones, 14929
- perhydrooxazolo[3,2-a]pyridines, intermediates in (+)- and (-)-trans-2,6-dimethylpiperidine synth, 8447
- perhydrooxazolo[3,4-c]oxazoles (-3,7-dioxa-1-azabicyclo[3.3.0]octanes), synth and stereochemistry, 1891
- 10-phenyl-11-oxa-1-azabicyclo[6.3.0]undecane and congeners, synth, barriers to inversion at N, 5581
- Rh-catalysed hydroformylation and carbonylation of N-alkenyl-1,3-diaminopropanes, formation of perhydro-pyrido- and -pyrrolo-[1,2-a]pyrimidines, 17449
- 2,4,6,8-tetraaryl-2,4,6,8-tetraazabicyclo[3.3.0]octanes (perhydroimidazo[4,5-d]imidazoles), 2551
- 5,6,7,8-tetrahydro-2*H*-1-benzopyran-2,5-diones and 5-acetyl-2*H*-pyran-2-one, reactions with hydrazines, synth of 5-hydrazono-2*H*-1-benzopyran-2-ones and quinoline-2,5-diones, 1383
- thiazolo[3,4-a]pyrazine-3,6-dione ring system, formation from a (3-hydroxy-1-aryl-4-oxoazetidin-2-yl) thiazol-2-one, 12729
- thieno[3,2-b]- and thiazolo[4,5-b]-pyridines, synth using 1-aryl-2-bromoethylidenemalononitriles, 13351
- 1-(triisopropylsilyl)gramine derivs, combinatorial use of directed lithiation and fluoride ion-induced elimination-addition reaction of, synth of clavicipitic acids, 51

Bilins

bilirubin analogues lacking carboxylic groups, synth, stereochemistry, 14547

see also Pigments

Biogenesis

- defensive secretion (esters of C₆ and C₁₀ alcohols) of leaf beetle *Chrysomela lapponica*, 9203
- gonyauline [cis-2-(dimethylsulfonio)cyclopropanecarboxylate], gonyol, and 3-(dimethylsulfonio)propionate; synth of [2,3-¹³C₂]methionine and biogenetic incorporation, 9067

Biologically active compds

A-seco-mevinic acid, synth of B-ring deriv, 1003 adenophostin A from *Penicillium brevicompactum*, expeditious route to and synth of 2',3",4"-triphosphate and 3",4"-bisphosphate-containing

- analogues, 6509, 6523, 6539
- γ-alkylidenebutenolides and related compds, regioand stereoselective synth, 6707
- amide-linked A-norpaclitaxel and 2-aroyl analogues, synth from 1-deacetyl baccatin III, 5699
- 4-aryl and 4-methyl substituted Hantzsch-type 1,4-dihydropyridines having a chiral sulfinyl group as an electron-withdrawing group, synth as possible calcium channel antagonists, 4279
- 4-aryl-dihydropyrimidine calcium channel modulators, conformational analysis by *ab initio*, semiempirical and X-ray crystallographic methods, 2803
- L-ascorbic acid, reaction with vanilmandelic acid and its esters, 6971
- atrial natriuretic factor, synth of analogues by replacing the alkyl or glycol spacer with octapeptide sequence, 6977
- azanorbornane derivs with substance P receptor affinity, synth using a tandem Michael addition derived pyrrolidine as template, 11121
- benzastatins E-G, indoline alkaloids with neuronal cell protecting activity from *Streptomyces nitrosporeus*, structures and toxicity, 4309
- (+)-camptothecin, total synth from dimethyl 2-ethylmalonate, 11049
- 3-chloro-and 3-bromo-2-arylpyrroles, agrochemically and pharmaceutically active compds, synth from 2-aryl-1-pyrrolines by α,α -dihalogenation with N-halosuccinimides followed by monodehydrohalogenation, 3693
- cholesterol absorption inhibitor CP-148,623, ¹⁴·C radiolabelled synth, 11007
- conagenin, immunomodulator from Streptomyces roseosporus MI696-AF3, synth of conagenin analogues modified at 3'-carbon centre from D-xylose, 13883
- cyclolignans with an isoxazoline ring fused to the cyclolignan core, synth by reaction of 7-ketolignans with hydroxylamine, 6555
- cytohalasins from the fermentation broth of *Xylaria* hypoxylon, 6485
- dammarane triterpenes from Maytenus macrocarpa, structures, 6465
- ethynyladenosine, potential agonists for the adenosine A_2 receptor, synth using triflic enolates in palladium-catalysed cross-coupling reactions, 6747 (R)-(+)- α -(4-fluorophenyl)-4-(2-pyrimidinyl)-1-pipe razinebutanol and (R)-(+)- α -(4-fluorophenyl)-4-methyl-1-piperidinebutanol as potential antipsychotic agents, 15115
- fluoxetine, tomoxetine and nisoxetine; serotonin and

- norepinephrine uptake inhibitors, asymmetric synth from a haloester, 6739
- FR900482, antitumour compd from *Streptomyces* sandaensis, synth of the aromatic segment and aliphatic segment from 5-hydroxyisophthalic acid: total synth by assembly of the segments, 10229, 10239, 10253
- (S,S)-isodityrosine, structural subunit of a large class of biologically active natural products, synth from L-tyrosine and L-serine, 8815
- (+)-lactacystin, non-protein neurotropic factor having α,α-disubstituted α-amino acid structure, total synth from D-glucose, 16287
- methyl 3-methyljasmonate and related derivs: molecular modelling, synth and biological activity, 8181
- (R)-Nifénalol (β-blocker), synth by chemoenzymatic hydrolysis of p-nitrostyrene oxide, 9707
- onapristone, potent antiprogestin with low antiglucocorticoid activity for treatment of hormonedependent breast cancer, studies towards total synth from Eder-Hajosh ketone, 13709
- pavoninin-1 and 2, steroid N-acetylglucosaminides from the defense secretion of the sole Pardachirus pavoninus, synth of aglycones of, 8129
- phenylphenalenonic phytoanticipins, acenaphthylene and dimeric phenylphenalenones from the resistant *Musa* selected hybrid SH-3481, structures, 8249
- philanthotoxin-343 analogs, synth and pharmacological activity, 12391
- protein kinase C, minimal structural requirements for diglyceride-site directed activators, 10041
- protoanemonin, physiologically active lactone from Ranunculaceae plants, cycloaddition of 4-substituted protoanemonin with non-stabilised azomethine ylids, 10633
- pyrancarboxylic acid analogues of GLA-60, synth of 2,6-anhydro-3-deoxy-5-*O*-phosphono-3-tetradecan amido-4-*O*-[(3-tetradecanoyloxy)tetradecanoyl]hep tonic acid, and a dimeric analogue, TNFα inhibitors, 16041
- D-(—)-quinic acid as building block for formal synth of (—)-balanol and (—)-epibatidine, 17177
- quinazolin-4-one-based antifolates with modified glutamate side-chains, potential thymidylate synthase inhibitors, 13383
- selectins, synth of neoglycopolymer inhibitors, use of ring-opening metathesis, 11937
- spirofurochromanone derivs, synth by condensation of different cyclic ketones with visnaginone and khellinone, 15799
- [4.4]spirononene dimethyl gloiosiphone A, microbial

- agent from Gloiosiphonia verticillaris, synth by ring expansion of a 2'-(dimethoxymethyl)-1'-(cyclopenten-1'-yl)-4-hydroxy-2-cyclobuten-1-one, 8913
- 1,3,4-substituted tetrahydro-β-carbolines, stereoselective synth from indoles by nucleophilic aziridine ring opening and Pictet-Spengler-like reaction, 8237
- tautomycin (from *Streptomyces spiroverticillatus*), synth of segments B and C followed by total synth by coupling methods, 5083, 5103, 5123
- 2,2,6- and 2,3,5-trimethylpiperazines as monocyclic analogues of the μ-opioid agonist 3,8-diazabicyclo[3.2.1]octanes, synth, modelling and activity, 1481
- triple-helical peptides which mimic the ligand binding site of the human macrophage scavenger receptor, synth and structural characterisation, 14263
- verapamil, drug to lower blood pressure, baker's yeast-mediated approach to verapamil's optically active intermediates, 10555
- see also Chemotherapy, Drugs, Hormones, Insecticides, Pheromones, Phytoalexins, Toxins, Vaccines

Bioluminescence

and chemiluminescence of coelenterazine analogues, isolated from luminescent jellyfish *Aequorea* victoria, 12903

Biomimetic reactions

biomimetic approach to the C_{12} - C_{21} bistetrahydrofuran region of monensin antibiotic, application of a series of *syn*-oxidations, 16435

fused cyclic polyethers related to marine toxins, — synthesis, 12425

Biosynthesis

- amphidinolides R and S, 14- and 15-membered macrolides from dinoflagellate, no incorporation of ¹³C-labelled succinate, 7827
- andibenin B, andilesin A, meroterpenoid metabolites of Aspergillus variecolor, 4013
- of anticancer compds during metabolism of selenium in plants and animals, 12299
- of 6-substituted cyclohepta-1,4-dienes dictyotene, ectocarpene, desmarestene, vinylcycloheptadiene and lamoxirene involving Cope rearrangement of thermolabile bis-alkenylcyclopropanes from female gametes of marine brown algae, 13681
- ligulaverins A-E, eremophilanes with novel carbon skeleton from *Ligularia veitchiana*, proposed route, 6195
- 24-methyl-and 24-ethyl- Δ^{24} -cholesterols, biosynthetic

precursors of 24-alkylsterols in higher plants, ¹³C labelling study, 877

murayaquinone, rearranged polyketide, 4561 prebiotic chemistry: a bioorganic perspective, 11493, 11595

synth of deuterium labelled marmesins as valuable metabolic probes for mechanistic studies in furanocoumarin biosynthesis, 17699

Bismuth and compds

pentavalent organobismuth reagents for coppercatalysed phenylation of amines, 4137

Boron and compds

ambient temperature, unsymmetrical, biaryl coupling reaction for hindered systems based on Suzuki methodology using thallium hydroxide as base with hindered boronic acids and aryl halides, 15123

aryl boron acids as facilitators of competitive transport of reducing sugars through dichloroethane, 3669

aryl and heteroaryl boronic acids, reactions with the adducts of amines and glyoxylic acid, synth of α -aryl and α -heteroaryl glycine derivs, 16463

arylboronic acids or sodium tetraphenylborate, Suzuki cross-coupling reaction with aryl halides, synth of polyfunctional biaryls, 14437

asymmetric allylboration, application of (S,S)-1,2-dicyclopentylethane-1,2-diol as chiral auxiliary, 17395

boron aldol reactions of α-heterosubstituted thioacetates with aldehydes and silyl imines, synth of a precursor to antibiotics (+)-thiamphenicol and (—)-florfenicol, 5909

2-boronylphenylmethyl groups attached to binol system, a rigid saccharide acceptor, association constants, UV, CD, fluorescence effects, 8335

catecholboronate esters, formation by chiral hydroboration of olefins and electrophilic amination, comparison of aminating agents, 11411

chiral oxazaborolidines as catalysts for 1,3-dipolar cycloaddition of Z- and E-nitrones with ethyl vinyl ether and 2,3-dihydrofuran, 11843

enol borinates, aldol-type addition to imines, ab initio MO study, 7705

functionalised poly- and oligo-phenylenes, Suzuki couplings of 1,4-phenylenediboronic esters with aryl dibromides, 15553

hydroborations catalysed by transition metal complexes, 4957

organoboron anion transfer agents in palladium catalysed tandem cyclisation-anion capture processes, 11803

reagent control in aldol addition of chiral boron

enolates to chiral aldehydes, 5593

sodium perborate as reagent for oxidative rearrangement of imines to formamides, 3805 see also Carboranes

Boron heterocycles

10-hydroxy-10,9-borazarophenanthrene (6-hydroxy-dibenz[c,e][1,2]azaborine), its anhydride, synth and hydrogen-bonding, structures and calculated bond lengths/angles, 85993

Bridgehead chemistry

carbocycles possessing bridgehead unsaturation, oxa-di-π-methane photoisomerisation in rearrangement of, 11099

cycloaddition of ethene onto several cyclic nitrones produced [n.3.0]heterobicyclicalkanes devoid of substituents in the ring skeleton, 11869

effect of γ -cyano substituent in allylic bridgehead solvolyses: evidence for cyano π conjugation in carbocations, 8155

perfluoro-cis-2-butyl-3-propyloxaziridine, use in bridgehead adamantane hydroxylation, also fluoro-dehydroxylation using Yarovenko reagent, 5995

Cadmium and compds

transition metal coupling reactions using arylcadmium chloride for synth of oligomers constructed from benzene and thiophene rings, 10357

Cage compds

cage-functionalised 17-crown-5 and 17-crown-6 ethers, synth and alkali metal picrate extraction capabilities of, 3467

cage-shaped (1S,4S,5R)-4-hydroxy-2,6-diazabicyclo-[3.3.0]octane and (1S,4R,5R)-4-hydroxy-2-oxa-6-azabicyclo[3.3.0]octane, synth from 1,2-epoxy-4-penten-3-ol, 1369

dodecahedrane, approaches through pagodanes, comparison of routes, synth of 1,6-dicarboxylic acid and 1,6-dibromo compd, 10029

heptacyclo[6.6.0.0^{2.6}.0^{3,13}.0^{4,11}.0^{5,9}.0^{10,14}]tetradecane, oxidative functionalisation using Gif-type reactions, 1257

homoadamantane-incorporated nitrones, cyclo-additions with olefins, formation of 3-oxa-2-aza-tetracyclo[7.3.1.1^{7,11}.0^{2,6}]tetradecanes, 5413

4-oxo- and 4-anti-formyl-8,10,12,13-tetraoxapenta-cyclo[5.5.1.0^{2.6}.0^{3,11}.0^{5.9}]tridecanes, synth by ozonolysis, 17653

tetracyclo[7.3.1.0^{2,8}.0^{4,12}]trideca-5,10-diene, synthand degenerate Cope rearrangement, 9903

tetracyclo[5.3.2.0^{2,10}.0^{3,6}]dodeca-4,8,11-triene (homotropilidene system), electrophilic additions mediated by TCNE, and dichloroketene

cycloaddition, 4869

2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3,11}.0^{5,9}.0^{8,12}]tridec anes, synth by ozonolysis of 2-endo-7-anti-diacylnorbornenes, 2401

Calixarenes

- 1,3-alternate-calix[4]arenes bearing two anthracenyl groups at one side and two propoxyl or ethoxyethoxyl groups at the other, synth and light-switched metal-tunneling across a π -basic tube, 13609
- ammonium tropolone-5-sulfonate, water-soluble tetrameric formaldehyde condensate, calixarenetype structure, mass spectrum, NMR, 8635
- 1,2-bridged calix[4]arene-biscrowns in the 1,2-alternate conformation, synth, 3767
- calix[4]-, -[6]- and [8]-arenes from o-t-butylphenol, synth, structure, conformation, of calixarenes with exo-hydroxy groups, 3287
- calix[4]- and calix[5]arenes bearing functionalised arm on the methylene bridge, synth from benzaldehydes, diphenylmethanes and formaldehyde or 2,6-dihydroxymethylphenols, 13037
- calix[4]arenes capped by diamide bridges in 1,3-position on the lower rim; synth, alkylation and NMR investigation, 9799
- calix[4]crowns containing an ester group in the crown ether segment, synth from calixarene and polyethylene glycol ditosylate: nitration allowed investigation of their recognition ability with alkylamines, 10345
- calix[5]arene-crown hosts, binding with cationic guests, complexation equilibria from NMR titrations, 4901
- chromogenic pyridinium derivs of calix[4]arenes, solvato- and halo-chromism, 16867
- mixed tetraethers of calix[4]arene, conformational control, 16195
- mixed tetraethers of calix[4]arene, conformational control in the synth of, 10503
- polyaza crown ether derivs of calix[4]arene, role as anion acceptors, 4669
- resorc[4]arenes, regioselective formation of tetrakis-(dihydro-1,3-benzoxazine) analogues, NMR, conformations, 10709
- tetraalkylated dihomooxacalix[4]arenes, NMR conformational studies of, 11791
- thiacalixarenes, analogues of p-t-butylcalix[4]arene with S in place of CH₂ bridges, synth, conformational flexibility, complexation, 10689

Cannabinoids

5',11-dihydroxy- Δ^8 -tetrahydrocannabinol, polar –, synth, 13295

side-chain methyl analogues of Δ^8 -THC, synth, 1557 Carbamates

- alkyl (4-aminothien-3-yl)carbamates, synth from 3,4-diaminothiophene via alkylation on the thiophene nucleus, 10331
- cycloheptyl-N-phenylcarbamate and (±)-trans-2-fluorocycloheptyl-N-phenylcarbamate, microbial oxygenation with Beauveria bassiana, 17055, 17067
- cyclohex-3-en-1-one chiral acetals, amination *via* aziridines using ethyl *N*-nitrobenzenesulfonyl-oxycarbamate, 4779
- N,N-dimethylcarbamoylenaminones by acylation of enaminone lithium dianions with N,N-dimethylcarbamoyl chloride, 6893
- photolabile benzoins, carbamoyl derivatives, synth, reactions, 3917

see also Urethanes

Carbanions

aza-allyl carbanions from N-[bis(methylthio)-methylene]glycine ethyl ester and N-[bis(methylthio)methylene]benzylamine, acylation of, 3679

mono- vs di-alkylation of -; effect of acidity of conjugate acids in selectivity control, 14973

phosphorus carbanions for alkenylation of aldehydes, prep of E- and Z-2-alkoxy- and 2-aryloxy-2alkenoates, 17097

Carbapenems

2-alkylcarbapenems, synth by cross-coupling of carbapenem-2-yl triflates with alkylborane, 539

methyl (2R)-2-[(2R,3S)-3-[(R)-1-(t-butyldimethyl-silyloxy)ethyl]-4-oxoazetidin-2-yl]propanoate, intermediate to 1 β -carbapenem, synth by radical cyclisation of N-vinylic α -bromo amides, 9611

S-4661, 1β-methyl —, synth via an iodonium ylid, 1635

Carbenes and carbenoids

- chromium carbene complex photochemistry in organic synthesis, 4105
- cyclic tungsten oxacarbene, synth by cyclisation of an acyclic alkynol, subsequent conversion into to pyranose glycals, 11061
- cyclohexylcarbenes, hydrogen shifts in, spatial dependence of activating power and of primary deuterium isotope effects, 14871
- diazoacetyl cycloalkanes, Rh-catalysed decomposition, intramolecular CH insertions, Wolff rearrangements, ketene dimer and nor-acid products, 8501
- dimethyl diazomalonate and bis(methoxycarbonyl)carbene, two furanone dimers from these, and addition of methoxy(methoxycarbonyl)ketene to

- cyclopentadiene, 10019
- 1,3-dithian-2-ylidene, generation by diazo transfer and nitrogen loss, trapping and dimerisation, 9269 electrophilic carbenes, reactions with α-amino acid derivatives, 3425
- Fischer carbene with intramolecular chelation of sulfoxide group replacing a carbonyl, formation, structure, 17297
- (2S,3R,4S)-3,4-methanoproline and analogues, synth by intramolecular cyclopropylidene insertion into an *N*-benzyl or *N*-allyl group, 14773
- methylene (from irradiation of CH₂N₂), reaction with spiropentane and spiro[3.3]heptane forming C-H but no C-C insertion products, 9913
- methylene, photogeneration from diazomethane, dihydro-methanophenanthrene, and diazirine, oxonium ylid formation when trapped by 3-methoxycyclohexene, 9823
- methyl(trimethylsilyl)germylene, generation in gas phase, rearrangement *via* intramolecular C-H insertion, [4+1]-cycloaddition to dienes, 10179
- nucleogenic (recoil) ¹¹C atoms, reaction with alkanes, alkenes, dienes, aromatic hydrocarbons, 10155
- 3-oxo-2-phenyliodonio-dihydrobenzothiophene 1,1-dioxide ylid, reactions with olefins and with thiocarbonyl compds, trimerisation, 9365
- phase-transfer reactions of chloroform with alkenyl carbonates, effect of catalyst, 1053
- phenylcarbenes with 2-phenethyl side chain and hetero analogues, generation, addition and insertion reactions, 9935
- reaction of acyl halides with Zn dust, formation of enol esters *via* proposed carbene intermediate, 17265
- reaction of CF with olefins, generation and electrocyclic ring-opening of α-fluorocyclopropyl radicals, 10071
- the β-heteroatom effect, silylmethyl and thiophosphinoylmethyl carbenes, 9989
- vinyl tungsten Fischer —, cycloadditions with achiral and chiral dienes, synth of cyclohex-3-enyl and 4-oxocyclohexyl Fischer —, 9323

Carbenium ions

1,1,3,3-tetraphenylbut-1-ylium cation, proposed blue colour observed with 1,1-diphenylethylene adsorbed on acid zeolites, 4715

Carbohydrates

- adenophostin A from *Penicillium brevicompactum*, expeditious route to and synth of 2',3'',4''-triphosphate and 3'',4''-bisphosphate-containing analogues, 6509, 6523, 6539
- 5-amino and 5-glycosylaminopyrrolo[3,4-c]-

- pyridin-1,3(2H)dione and 7-amino and 7-glycosyl-aminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-amino and 2-glycosyl-aminopyridines, 8225
- 6-O-(2-amino-2-deoxy-α-D-glucopyranosyl)-D-myoinositol 1-phosphate, inner core structure of glycosylphosphatidylinositols and part of a proposed insulin second messenger phosphate, synth, 17727
- 3-amino-3,6-L-talopyranose monosaccharide, carbohydrate segment of antifungal agent Sch 38516, synth through diastereoselective dipolar cycloaddition, 16377
- 1-aza-2-deoxy-L-carbafucose (2-C-methyl-1,2,5-trideoxy-1,5-imino-L-ribitol), synth from L-arabinose, 697
- 2-benzyl-N-t-butoxycarbonyl-1,5-imino-1,2,5-trideoxy-D-xylitol and 5-amino-4-benzyl-4,5-dideoxy-L-xylose, synth as potential glycosidase inhibitors, 6917
- bi- and tri-cyclic modified furanose sugars as constituents of nucleoside analogues, 4727
- bicyclic tetronate esters and furo-furanones related to goniofufurone, synth by intramolecular Wittig reactions, 4815
- 2-boronylphenylmethyl groups attached to binol system, a rigid saccharide acceptor, association constants, UV, CD, fluorescence effects, 8335
- 6C-butylglucoses, synth from D-glucuronolactone employing reduction of protected lactols, inhibitors of phosphogluconutase, 15135, 15147
- 2-O-(3-O-carbamoyl-α-D-mannopyranosyl)-L-gulopyranose, sugar moiety of bleomycin, synth from D-mannose by application of stannylene acetal methodology, 10993
- carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, synth by cycloisomerisation of butynols at a pentacarbonylmetal template, 5143
- carbohydrate-based non-peptide mimetics of peptidic antagonist of α_v, β_3 and α_v, β_5 pentapeptide cRGDFV, design and synth, 8751
- caryose, carbocyclic monosaccharide component of lipopolysaccharide from *Pseudomonas caryophylli*, synth from 3,4,5-tri-*O*-benzyl-1-deoxy-D-iditol derived ketoaldehyde by cyclisation, oxidation and allylation, 11767
- chain elongated 2,4-diuloses from aldonolactones by reaction with carbonyl compds, subsequent conversion to C-glycosides by deoxygenation, 1311 chiral auxiliaries in asymmetric allylation of aldehydes by 1-methylbut-2-enyl titanocenes, 16097

- 6-chloro-2-(5-chloro-2-hydroxyphenyl)quinazolin-4(3*H*)-one *O*-glucuronide, fluorogenic β-glucuronidase substrate, 7159
- congeners of CMP-NeuAc, substrates for enzymatic synth of natural and designed sialyl oligosaccharides, synth by coupling of cytidine phosphoramidite with the tertiary hydroxyl group of sialic acid, 11109
- cyclic sulfamidates derived from D-allosamine, treatment with S-, N-, O- and C-nucleophiles leading to nucleophilic displacement, 5863
- 2-deoxy-2-fluoro-D-glucose and 5-deoxy-5-fluoro-manno-γ-lactol, synth from *cis*-diols derived from microbial oxidation of halobenzenes with *E. coli*, 11541
- 3-deoxy-4-*O*-methyl-D-*manno*-oct-2-ulosonic acid, synth by methoxymercuration of ethyl *E*-5,6,7,8-tetra-*O*-acetyl-3,4-dideoxy-D-*arabino*-oct-2-ulos-3 -enoate, 3723
- 6-deoxy-allo- and gulo-nojirimycin, 6-deoxy-D,Ltalo-nojirimycin, D-fuconojirimycin and 6-deoxy-2-D,L-allosamine, synth by hetero-Diels-Alder cycloadditions, 13769, 13783
- 2-deoxy-β-glycosides, stereoselective synth from glycal precursors, 8825, 8837
- deoxy-hexoses, amino-deoxy- and O-methyl deoxyhexoses from chiral dihydropyran Diels-Alder adducts, 4763
- 5-deoxycarbahexofuranoses, synth from bromolactones by radical cyclisation, 6879
- N-deoxyribosides of agroclavine, lysergol and 9,10-dihydrolylsergol, prep by N-glycosylation of their TMS derivs with 1-chloro-3,5-di-O-toluoyl-2-deoxy-D-ribofuranose, 4503
- di- and tri-antennary lysine-based galactose- and N-acetylgalactosamine-containing ligands for the hepatic asialoglycoprotein receptor (ASGP-R), solid-phase synth, 759
- 6-dichloromethylheptose deriv, synth and conversion into carbohydrate α-azido-aldehyde deriv, 5493
- 1,4-dideoxy-1,4-imino-1-(S)-(substituted phenyl)-D-ribitols with OH, NH₂, NO₂, CO₂H and halogeno moieties, synth as transition state inhibitors for N-riboside hydrolases and transferases, 2915
- 2,3-dihydro-4*H*-pyran-4-ones (hex-1-en-3-uloses), reactions with C-nucleophiles, approach to thromboxane analogues, 7867
- enone —, addition of organolithium reagents, 6035 3,4-enuloses, Horner-Wadsworth-Emmons reaction
- using the enolate of dimethyl(methoxycarbonyl)methyl phosphonate and its ethyl analogue, synth of 3-O-phosphorylated products, 7397

- fructose, glucose and sucrose, extraction and competitive transport through dichloroethane facilitated by aryl boron acids, 3669
- D-galactose, conversion into 6-deoxy- and 3,6dideoxy-D-myo-inositol precursors of deoxymyo-inositol phosphate analogues, 16747
- glycinyl-NeuAc saccharopeptides, synth by ring opening of sialyllactones with glycine esters, 11039 glyconolactones from per-O-alkylated glycopyranosides using TMS-azide, and ring contraction of pyranoses, 3123
- α- and β-glycosides of novel isomeric 3-deoxy-hept-2-ulosaric acid diesters, synth, 10643 D-xylo-hexos-5-ulose and derivs, synth from D-galactose, 8665
- L-arabino-hexos-5-uloses, double reductive amination in synth of 1-deoxy-D-galactostatin derivs, 3407
- (+)-hydantocidin, synth of analogues which are modified in both the carbohydrate and the hydantoin rings, synth from acetylated 1-bromo-glycopyranosyl cyanides, 5813
- iodine as a reagent for per-O-acetylation, regioselective acylation and acetolysis in carbohydrate chemistry, 11753
- ketopyranose-5,6-glycals, synth from methyl β-D-fructopyranoside, subsequent utility for preparing C(6)-functionalised ketopyranosides, 16365
- lifetime of the glucosyl oxocarbenium ion in glycosidation of phenols with 1,2-anhydro-3,4,6-tri-*O*-methyl-α-D-glucopyranose, 10471
- D-mannosaldehyde derivs, condensation with ethyl diazoacetate, chain extension and an approach to KDO and 2-deoxy-β-KDO, 3325
- methyl 4-amino-4,6-dideoxygulopyranoside and *epi*tolyposamine, deoxy aminohexoses, synth from fully protected L-threonine deriv, 6473
- methyl α and β -glycosides corresponding to the amino sugar component of the E-ring of caliheamicin $\gamma 1^1$ and esperamicin A_1 , synth from methyl 2-deoxy- α and β -D-ribopyranoside, 14369 N-methyl glucamine and fatty acid methylesters, lipase-catalysed acylation in route to biosurfactants,
- 6R-, and 6S, -6C-methylglucose, synth from D-glucuronolactone involving a non-stereoselective reduction of an intermediate lactol, 15135, 15147 moenomycins A and A₁₂, synth of trisaccharide analogues, structure-activity relations, chemoenzymatic approach to synth, 1665, 1675, 1695,

7587, 7629

corrig. 5357

- monosaccharide components of the O-specific polysaccharide of the lipopolysaccharide of the enteropathogenic bacterium Shigella sonnei, synth, 4159
- oxazaphosphorinane derived from D-xylose, precursor to T-T phosphorothioate dimer, 16945
- poly(amido-amine) dendrimers with ethylenediamine core, terminally-attached oligo-glycopeptide units, formation of globular carbohydrate "sugar balls", enzyme inhibition by, 15415
- polygalloyl glucopyranoses, synth, 10725
- propargylation of sugar aldehydes, diastereoselection, 6-deoxyheptose synth, 2653
- pyranose glycals related to carbohydrate moieties of pluramycin and vancomycin, synth by tungsten pentacarbonyl-induced cyclisation of an acyclic alkynol via cyclic tungsten oxacarbene, 11061
- receptors for uronic acid salts, prep using a chiral bicyclic guanidinium unit and deoxycholic acid derivs as building blocks, 13119
- secologanin, monoterpene glucoside, formation of trioxadamantane type aglucones of 3-methoxy secologanin derivs by hydrolysis and transacetalation and deglucosylation, 11659
- α-substituted ulosonic acids, stereoselective synth by magnesio-Reformatsky reactions, 12947
- sulfated trisaccharide ligands for selectins, 16391
- swainsonine, mannosidase inhibitor and anticancer drug, synth of (3R)- and (3S)-3-(hydroxymethyl)-swainsonine from D-ribose. 11021
- synthetic studies with carbohydrate-derived chiral auxiliaries, 14823
- terminal tetrasaccharide from *Mycobacterium* gordonae str. 990, three rhamnoses and a xylose, synth, 8629
- (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, reactions with triphenylphosphine, 15041
- tetrahydrofuranyl-substituted long-chain carboxylic acids, synth and subsequent evaluation for alkali metal binding, 7403
- 1,3,5,7-tetraoxadecalins, synth from dimethyl glucarate and incorporation into metacyclophane host systems, 4821
- Tn and sialylTn building blocks for Fmoc solidphase synth of glycopeptide fragments from HIV gp120, 369
- tributylstannylalkenyl derivs, synth via Bu₃SnCu reactions, 10765
- tributylstannylalkenyl carbohydrate derivs, conversion into sugar-derived dienes, Diels-Alder reactions, 10775

tunable transmission of the aromatic character of the aglycone through the anomeric effect in C-nucleosides drives its own sugar conformation, thermodynamic study, 6433

see also Amino sugars, Cyclodextrins, Glycals, Glycolipids, Glycosides

Carbohydrate mimetics

- carba analogues of sugar moiety of nikkomycins and polyoxins, synth of azide precursor, 14635
- 5-deoxy-5-diethylphosphono-D-ribose, conversion into 2,3-aziridino-γ-lactone *via* cyclic sulfate and azide, 10743

Carbonates

organic carbonates from alcohols by carboxylation using the O₂ /CO₂ system, 167

Carbonyl compds

- by hydrolysis of cyclic and acyclic acetals by catalytic CBr₄ in CH₃CN/H₂O solvent mixture under different energy sources, 14255
- carbonyl conjugated vinylic selenides, 1,3 and 1,5-carbonyl transposition sequence through organometallic reagent addition reactions followed by acid hydrolysis, 7445
- α-fluoro-β-thio-α,β-unsaturated carbonyl compds, synth by fluorination of vinyl sulfides, 647
- G2 calculations on heats of reduction of compounds with C=C, C=O and C=S groups, conformations, 10123
- geminal diallylation of with allyl bromide in the presence of a low-valent vanadium complex and zinc: synth of asymmetric quaternary carbons, 9525 ketones and aldehydes, transformation to
- setones and aldehydes, transformation to gem-dihalides via hydrazones using copper(II) halides, 557
- α -silylcarbonyl compds by asymmetric alkylation of α -silylacetic esters and asymmetric metal-carbene insertion into the Si-H bond, 2855
- see also Aldehydes, Ketones, and other relevant compound classes. For metal carbonyls see Chromium, Iron, Manganese, Tungsten, and compds

Carbonvlation

- Rh-catalysed hydroformylation and of *N*-alkenyl-1,3-diaminopropanes, formation of perhydro-pyrido- and -pyrrolo-[1,2-*a*]pyrimidines, 17449
- tandem dealkoxycarbonylation-Michael addition reactions for the preparation of five- and sixmembered lactones and lactams, 9477

Carboranes

- 5-(p-carboranylalkyl)-3,8-diaminophenanthridinium salts, synth, 17519
- 2-(o-carboranylmethylthio)-3-cyanopyridines, synth,

7911

Carboxylation

O₂ '/CO₂ system as a mild and safe carboxylating reagent: organic carbonates by conversion of alcohols, 167

Carboxylic acids and derivs

- 3-amino-3-vinylpropanoic acid, synth from 4-acetoxyazetidin-2-one, subsequent conversion to 4-amino-5-hydroxy-4,5-dihydrofuran-2-one hydrochloride, 15807
- diethyl 1-fluoromethylphosphonocarboxylates and diethyl 1-fluoromethylphosphonocarboxylic acid, synth by reaction of chloroformates with 1-lithio-1-fluoro-1-(trimethylsilyl)methylphosphonate, 6391
- 5-hydroxycarbonylmethyl-1-phenyl-4,5-dihydro-1*H* -imidazole-4-carboxylic acid and 5-hydroxycarbonylmethyl-2-methyl- or butyl-1-phenyl-4,5-dihydro-1*H*-imidazole-4-carboxylic acid, synth, 2775
- alkali salts of diethyl malonate, mono- versus dialkylation with 1,2-bis-, 1,2,4,5-tetrakis- and 1,2,3,4,5,6-hexakis(halomethyl)benzenes, solvent and leaving group effects, 8195
- alk-3-enoic acids, synth from dilithium αβunsaturated acids, ozonolysis, synth of ketones and aldehydes, 10883
- 4-aminocarbonylmethoxy trinems, synth by opening of an epoxide intermediate with allyl glycolate followed by deallylation, activation of the free acid and reaction with a series of trimethylsilylamines, 15011
- aryl carboxylic acids, pentafluorophenyl ester activation of, synth of N,N'-diaroylhydrazines, 4219
- L-ascorbic acid, reaction with vanilmandelic acid and its esters, 6971
- brominated 2-alkyllevulinic acids, sulfuric acidcatalysed cyclisation to 3-alkyl-5-methylene-2(5H)-furanones, 15813
- camphor-based acrylates, Baylis-Hillman reaction of, formation of optically pure products, 16423
- conformationally restricted analogues of 2-O-methyl-3-isopropylmalate, interaction with 3-isopropylmalate dehydrogenase derived from *Thermus thermophilus*, 3537
- 2-cyano-3-(2-pyridyl)methylacrylates, electrochemical reduction of in the presence of chlorotrimethylsilane, synth of substituted indolizines, 81
- 2-cyclohexenonedicarboxylates by Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2*H*-pyran-5-carboxylates, 2241
- 3-deoxy-4-O-methyl-D-manno-oct-2-ulosonic acid,

synth by methoxymercuration of ethyl *E-5*,6,7,8-tetra-*O*-acetyl-3,4-dideoxy-D-*arabino*-oct-2-ulos-3 -enoate, 3723

- di-t-butyl ester of (R,R)-tartaric acid, aldol reactions of, synth of cinatrin C_1 and C_3 , inhibitors of phospholipase A_2 , 8779
- 5,6-dihydroxyindole versus 5,6-dihydroxyindole-2carboxylic acid units in integrated approach to structure of sepia melanin, 8281
- disodium 1,8-disulfonato-3,4,5,6-acridinetetracarboxylic acid, formation of a dimer in water that encloses a hydrophobic cavity, 10523
- gibberellic acid (GA₃), conversion to 12-hydroxy C₂₀-gibberellins, 2137
- α- and β-glycosides of novel isomeric 3-deoxy-hept-2-ulosaric acid diesters, synth, 10643
- ω-halo acid chlorides, conversion to the corresponding thiolactones using benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent, 11835, corrig. 16607
- α -hydroxy- carboxylic acids, esters, amides and ketones, synth from α -hydroxythioesters, 16213
- 5-hydroxyisophthalic acid, starting material for synth of a key intermediate and the aromatic and aliphatic segments of antitumour compd FR900482, 10229, 10239, 10253
- (S)-13-hydroxyoctadeca-(9Z,11E)-dienoic acid, synth from (E)-2-octenal using (S)-hydroxynitrile lyase cloned from *Hevea brasiliensis*, 617
- kainoids, pyrrolidine dicarboxylic acids, towards a synth of kainoids from trans-4-hydroxy-1-proline, 5233, 5255, 5273
- mercapto/amino substituted alkyl phenylglyoxylates, photochemical reactions induced by intramolecular electron transfer, 2751
- metal carboxylates, reactions with thioamides in organic solvents, selective prep of nitriles, imides or amides depending on the substitution pattern, 14463
- 2-methoxyalkanoic acids, decarbonylative α,αdiarylation reaction of in phosphorus pentoxidemethanesulfonic acid mixture, synth of 1,1-diarylalkane homologs, 14287
- methyl 2,2-dichlorocarboxylate addition to 1-alkenes promoted by ferrocene, 4419
- methyl 3-methyljasmonate and related derivs, molecular modelling, synth and biological activity, 8181
- α-methyl carboxylic acids, enantioselective synth using 1,3-dithiane 1-oxide (DiTOX) units as chiral auxiliary, 13149
- O₂-H₂O₂-vanadium complex-pyrazine-2-carboxylic acids as an oxidation reagent, 3603
- octadecatrienoic acid ethyl esters, 1,5-hydrogen shift

- and isomerisation reactions of, 4531
- phenylacetic acids, formation from α-chloroacetophenones by photo-Favorskii rearrangement, effect of solvent, 16789
- pyrazole, isoxazole and pyrimidine *ortho*dicarboxylic acid derivs, synth by reaction of βalkoxycarbonyl-β-enaminoketoesters with hydrazines, hydroxylamine and amidines respectively, 14497
- D-(—)-quinic acid as building block for formal synth of (—)-balanol and (—)-epibatidine, 17177
- racemic carboxylic acid derivs, resolution by Ti-TADDOLate mediated esterification reactions, 7539
- reaction with acrylamide to form 2-(2-pyridyl-sulfanyl)-carboxamides, desulfurisation to form primary amides: application to synth of 3-deoxy-D-arabino-2-heptulosonic acid, 12067
- reaction of acyl halides with Zn dust, formation of enol esters *via* proposed carbene intermediate, 17265
- selective esterification of aliphatic nonconjugated catalysed by NiCl₂.6H₂O₃, 7335
- series of methyl ester peracetate (5β)-bile acid derivs, tertiary hydroxylation using dimethyldioxirane, effect of a 7-acetyloxy substituent, 435
- α-substituted ulosonic acids, stereoselective synth by magnesio-Reformatsky reactions, 12947
- 4-substituted-3-hydroxy benzoic acids, synth from 3-aryl-2,3-unsaturated aldehydes and dimethyl succinate. 15029
- tetrahydrofuranyl-substituted long-chain carboxylic acids, synth and subsequent evaluation for alkali metal binding, 7403
- thiol acetic acid addition to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, synth of β -C-glycoside sulfoxides and sulfones, 16355
- two-armed receptor consisting of arms of oligomers of isophthalic acids and *trans*-1,2-diaminocyclohexane which binds certain peptides sequence-selectively in water, design and synth, 8739
- zaragozic acid, kinetics and thermodynamics of ketalisation of tetrahydroxyketones, application to synth of ketal core of zaragozic acid, 11179
- see also Amides, Esters, and other relevant compound classes

Carcerands

templation and encapsulation in supramolecular chemistry (report 434), 15911

Carcinogens

benz[a]anthracene, 9- and 10-fluoro-7-, -12-, and

-7,12-di-methyl derivs, synth of 1,2-epoxy-3,4-dihydroxy-1,2,3,4-tetrahydro- and 3,4-dihydroxy-3,4-dihydro- compds, putative metabolites, 7101

Carotenoids

- braunixanthins 1 and 2, carotenoids linked to alkylphenol and echinenone residues, from alga *Botryococcus braunii*, 11307
- deinoxanthin, bacterial from Deinococcus radiodurans, 919

Catalysis

- acceleration of reactivity of alkenes tethered to pyridyl groups compared with alkenes tethered to phenyl groups for Diels-Alder cycloaddition of enoate esters and hydrogenation of allylic and homoallylic ethers, 13063
- cage-shaped (1S,4S,5R)-4-hydroxy-2,6-diazabicyclo-[3.3.0]octane and (1S,4R,5R)-4-hydroxy-2-oxa-6-azabicyclo[3.3.0]octane as asymmetric catalysts, 1369
- hydroborations catalysed by transition metal complexes, 4957
- 3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl phosphine, ligand for chiral Pd allylation, 4035
- lithium perchlorate-diethyl ether (LPDE) acceleration of reactions explained by effect of Li⁺ ions, not by internal pressure effects, 4637
- palladium-catalysed cyclization of dienes containing pseudoglycal units, 3957
- Pd-mediated C-O and C-S bond forming reactions with vinylic halides or triflates and acetylenic halides, 1025
- rhodium-catalysed hydrogenation of *N*-t-butoxy-carbonylindoles, formation of the corresponding *N*-t-butoxycarbonyl-*cis*-2,3-dihydroindoles, 791
- 2-(1-p-tolylsulfinyl)alkylpyridines and the corresponding sulfide-pyridines as ligands for palladium catalysed allylic substitution and addition of diethylzine to benzaldehyde, 3843

see also Phase transfer

Catalysts

- bis(acetonitrile) palladium(II) chloride as catalyst for cyclisation of δ-alkenyl oximes to nitrones which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051
- AlFe-pillared montmorillonite as catalyst for acetal prep in CH₂Cl₂, 15899
- β-amino alcohols as for enantioselective Reformatsky reaction, 3787
- benzylchlorobis(triphenylphosphine)palladium as catalyst for reaction of 3-amino-4-arylisothiazole 1,1-dioxides with vinyl-, aryl-, heteroaryl- and alkynylstannanes, 15859

- n-butyltris(2-ethylhexanoate)tin as for reduction of imines to amines using stoichiometric polymethylhydrosiloxane, 16349
- cage-shaped(1S,4S,5R)-4-hydroxy-2,6-diazabicyclo[-3.3.0]octane and (1S,4R,5R)-4-hydroxy-2-oxa-6-azabicyclo[3.3.0]octane as asymmetric catalysts, 1369
- Candida antarctica lipase B (Novozym 435) as catalyst for regioselective acylation of 20R-hydroxyecdysone, 5855
- chiral copper complexes with 2-(2-aryl- or 2-alkyl-sulfonylamino)phenyl-4-phenyl-1,3-oxazol ines as catalysts for the cyclopropanation of olefins, 9599
- chiral oxazaborolidines as catalysts for 1,3-dipolar cycloaddition of Z- and E-nitrones with ethyl vinyl ether and 2,3-dihydrofuran, 11843
- chiral salen-titanium complexes as for the trimethylsilylcyanation of aldehydes, 14327
- Co(II) porphyrin and Co(II)-schiff base as catalysts for oxidation of organic substrates, 7641, 7649
- copper(I) bisoxazoline as for allylic oxidation of olefins with peresters, synth of allylic benzoate esters, 16229
- Cp₂(Cl)Zr⁺ as catalyst for epoxy ester-ortho ester rearrangement, protection of polyfunctionalised carboxylic acids, 16575
- Cu(II) complexes of chiral diamino alcohols as catalysts for cleavage of *p*-nitrophenylesters of phenylalanine and phenylglycine in surfactants solution, 357
- Cu(II)-tris(oxazoline) complex as for enantioselective allylic oxidation of cycloalkenes, 6337 epoxide hydrolases as asymmetric catalysts, 15617 manganese and iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxyphenyl)porphyrin as — for epoxidation and hydroxylation reactions, 4497
- montmorillonite KSF as catalyst for regioselective electrophilic alkylation of anilines with phenylacetylene, synth of 1,1-diarylethylenes, 3795 nickel-2,2' bipyridine complexes as catalysts for electroreductive coupling of organic halides in alcoholic solvents, synth of biaryls, 11569
- organotin perchlorates as Lewis acid catalysts in Mukaiyama reaction of ketone silyl acetal, 14275 bis(oxazoline)-magnesium perchlorate as catalyst for asymmetric Diels-Alder reactions, enantioselectivity, 7671
- phosphoramides derived from (S)-proline as for asymmetric allylation of aromatic aldehydes, synth of homoallylic alcohols, 3513

- polyethylene glycol as catalyst for Williamson reaction without solvent, 2119
- proline rubidium salts as catalysts for asymmetric Michael addition of nitroalkanes to prochiral acceptors, 11223
- TaCl₅-silicagel and TaCl₅ as Lewis acid systems for selective tetrahydropyranylation of alcohols and thioacetalisation, trimerisation and aldolisation of aldehydes, 14997
- titanium complex of (4S,6S,8S,9R)-8-hydroxymethyl-9-methyl-1,7-dioxaspiro[5.5]undecan-4-ohs catalyst for ring opening of cyclohexene oxide with TMSN₃, 16545
- 2-(1-p-tolylsulfinyl)alkylpyridines and the corresponding sulfide-pyridines as ligands for palladium catalysed allylic substitution and addition of diethylzine to benzaldehyde, 3843

see also Enzymes

Cephams/cephems

- 1-oxacephem structurally related to clavulanic acid, synth from D-glucuronolactone, 5883
- 1-oxacephems, synth from D-arabinal and L-rhamnal, 14153

Cerium and compds

cerium-mediated route to α,α-difluoro-β-keto-phosphonates, 10623

Cesium and compds

CsF as reagent for inversion of secondary mesylates and tosylates, 13633

Chalcones

- diarylheptanoids with moiety from Alpinia blepharocalyx seeds, 7833
- trans- and cis-dihydroflavonols, synth from oxy--, 14141

Chemiluminescence

and bioluminescence of coelenterazine analogues, isolated from luminescent jellyfish Aequorea victoria, 12903

see also Bioluminescence

Chlorins and derivs

- chlorophyll-a homologues, synth by Wittig and Knoevenagel reactions with methyl pyropheophorbide-d, UV/vis, fluorescence and CD spectra, 10677
- deoxophylloerythroetioporphyrin (DPEP), synth from chlorophyll A, unexpected methylation and propylation reactions of ring E by CH₂Cl/Br₂ and 1,5,7-triazabicyclo[4.4.0]dec-5-ene, 16107

Chromans

trans,trans2,3-dimethylchroman-4-ol, synth using dimethoxycoumarin, synthetic approach to anti-HIV-1 active Calophyllum coumarins, 14915

- (±)-neorautane, (±)-neorautanin and analogs, pterocarpans, synth, 12621
- spirofurochromanone derivs, synth by condensation of different cyclic ketones with visnaginone and khellinone, 15799
- α-tocopherol (vitamin E), formation of 5,6-tocopheryldione (α-tocored) from α-tocopherol via a 5-alkoxytocopherol intermediate, 3571

Chromatography

- HPLC, artificial proteins comprising helices with different amino acid sequences, 7479
- HPLC, dithiirane 1-oxide, 12203
- HPLC, GC, alamethicin F-30 and trichovirin I 4A, 567
- HPLC, kinetic isotope effect studies of 2S-[2-2H]kynurenine with kynureninase, 15761
- HPLC, N-methylglucamine acylation by oleic acid, 7587
- isomerisation of ethyl 5*Z*,10*Z*,12*Z*-octadecatrienoate, 4531
- reversed-phase HPLC of Δ^7 -PGA₁, 17009

Chromenes

- 8a-methoxy-2*H*,6*H*-chromen-6-ones and 2*H*-chromenes, synth by phenolic oxidation route, 3879 precocene II, acylation-dimerisation, 16177
- pterocarpan synth, 2H— by microwave-mediated cyclization of propargyl phenyl ethers, 12621

Chromium and compds

- carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, synth by cycloisomerisation of butynols at a pentacarbonylmetal template, 5143
- chromium carbene complex photochemistry in organic synthesis, 4105
- 1,3-dimethoxybenzene-Cr(CO)₃ complexes, metallation/deprotonation and alkylation, effect of conditions on selectivity, 9219
- Fischer carbene with intramolecular chelation of sulfoxide group replacing a carbonyl, formation, structure, 17297
- oxidation of sulfide to sulfoxide using Cr(V) reagent catalyzed by heterocyclic bases, 1131
- oxodiperoxo-Cr(VI) pyrazine complex, multifarious oxidations, deprotection of oximes, oxidative deprotection of silyl ethers, 7889

Chromones

[1]benzopyrano[2,3-b]pyrrol-4(1H)-ones, synth from 2-chloro- and α-aminoketone derivs, synth of 2-amino-, 16185

Circular dichroism

analysis of bicyclo[5.3.1]undecane-8,11-dione, 5339 artificial proteins comprising helices with different

- amino acid sequences, 7479
- bilirubin analogues lacking carboxylic groups, synth, helical conformation using exciton —, 14547
- 4,4-bis(trifluoromethyl)imidazoline—based ACAT inhibitors, absolute stereochemistry from —, 5359
- brassinosteroids, configurational assignment of side chain by exciton coupled CD spectroscopy in per-2-naphthoyl derivs, 11961
- bromobenzoate derivs of panaxytriol and panaxydol, polyacetylenic constituents of Ginseng Radix Rubra Panax ginseng, 15691
- calculation of CD spectra, application to absolute configuration of palmarumycins CP₃ and C₂, and CP_{4a} and CP₅, 1655, 3101
- chiral imidazolidinones and tetralones involved in synth of diphenacoum and brodifacoum, 4hydroxycoumarin rodenticides, 6045
- chlorophyll-a homologues, UV/vis, fluorescence and spectra, 10677
- ciguatoxin, absolute configuration of C2-OH group, CD of synthetic AB ring fragment, 3057
- 3,10-diaryl-5-deaza-flavins, atropisomers when 3-aryl group is o-substituted, 4601
- dithiirane 1-oxide, 12203
- exciton coupled circular dichroic spectroscopy for determination of the absolute configuration of the chiral biaryl system in the streptonigrin antibiotics, 15101
- free-radical cyclo-polymerisation of tartrate-derived dioxolane-dimethacrylates, high isotacticity, CD spectra, 15469
- oligonucleotides with 3-hydroxy-N-acetylprolinol as sugar substitute, 14957
- plorantinone A-C, protoilludane sesquiterpenes from basidiomycete *Russula delica*, 9735
- (-)-solavetinone, 603
- (R,R)-tartaric acid ester, amide and nitrile derivs, conformations by X-ray, CD, NMR, ab initio, 6113 of yaoundamine A, a naphthyldihydroisoquinoline alkaloid isolated from Ancistrocladus korupensis, absolute axial configuration, 2817
- yaoundamines A and B from Ancistrocladus korupensis, 8121

Classification

reaction —, application of "similarity" to reaction classes, 14085

Clavs and earths

- AlFe-pillared montmorillonite as catalyst for acetal prep in CH₂Cl₂, 15899
- bromination of alkylbenzenes in presence of montmorillonite, 2581
- K10-montmorillonite as media for Fries rearrange-

ment of phenyl and naphthyl esters, 17171

Messel shale kerogen, oxidation using ruthenium tetroxide, synth of a series of hopanoid triterpenes, 5767

montmorillonite, KSF, bentonite clay and cation-exchanged clays of K10-montmorillonite as supports for iodosylbenzene, the oxidising reagent for alkyl, aryl and diaryl sulfides, 7635

montmorillonite KSF as catalyst for regioselective electrophilic alkylation of anilines with phenylacetylene, synth of 1,1-diarylethylenes, 3795

see also Zeolites

Cleavage reactions

[3+2] cycloaddition and nucleophilic additions of aziridines under C-C and C-N bond cleavage, 14297

acid-catalysed cyclopropyl bond cleavage for construction of tricyclo[7.2.1.0^{1,6}]dodecan-10-one skeleton, 13053

of aromatic benzyl ethers located *ortho*- to a carbonyl group by magnesium bromide, 215

cleavage of p-nitrophenylesters of phenylalanine and phenylglycine in surfactants solution using copper(II) complexes of chiral diamino alcohols as catalysts, 357

α-nitro- and α-chloro-cumene, reductive cleavage by Na naphthalenide in THF, proposed formation of cumyl carbanion as common intermediate, 5397

α-nitrocycloalkanones, oxidative — by persulfate in methanol/acid to α,ω-diesters, 16131

ozonolytic cleavage of cyclohexene in the presence of methyl pyruvate, synth of tri-substituted ozonide containing three reactive centres which could be transformed to different functional groups, 5217

Cobalt and compds

allylic ethers, Co₂(CO)₈-catalysed polymerisation, 15167

Co(II) porphyrin and Co(II)-schiff base as catalysts for oxidation of organic substrates, 7641, 7649

enantioselective cyclopropanation of styrenes using chiral Co(III)-salen as catalyst, 7201

octacarbonyldicobalt for transformation of 1-(1,2-propadienyl)cyclopropanols into substituted hydroquinones: application to synth of vitamin E and K analogues, 11069

Colloids

see Micelles

Combinatorial chemistry

applications of solid-supported synth, symposiumin-print, 6573

screening a "library" of hydroxystilbenes for selective inhibition of B cell antigen receptor kinase cascade, 11995

Complexation

of acyl N-aminides with ZnCl₂, structures of complexes, 6411

of aromatic hydrocarbons with a macrocycle containing four tropolone units in water, 11913

bispyridine tetramide macrocycles, — of Ag⁺ and the role of preorganisation on selectivity, 10841

calix[5]arene-crown hosts, binding with cationic guests, — equilibria from NMR titrations, 4901

heteronuclear binding of oxime- and Schiff base-containing aza- and diazacrown ethers with hard and soft metal ions, 17595

hydrogen-bond mediated — of dihydrogen phosphate anion by bis-thiourea hosts, 1647

of ionoselective polymers bearing different pendant crown ethers, 1343

polyaza crown ether derivs of calix[4]arene, role as anion acceptors, 4669

polyaza-paracyclophanes, models of Zn-containing enzymes, role of a non-coordinated N atom in metal proximity, 4751

see also Inclusion, Molecular recognition

Complexes

N,N'-bis-(o-aminophenyl)malondiamide, Al^{3+} — at different acidities, 16721

chelate — of cyclohexadiene and cyclohexadienyl Fe(CO)₂ with phosphinite- and phosphine—containing bridges from Fe to ring, synth, reactivity, 12553

di-μ-chlorobis[1-[1-(dimethylamino)ethyl]-2-naphthalenyl-C,N]dipalladium, interconversion between diastereomers, 4083

 η^{5} -[4-methoxy-1-(1-methoxycarbonylvinyl)cyclohexadienyl] dicarbonyl triphenylphosphine iron(I) hexafluorophosphate, synth, reactivity, structure, 4095

Computer-assisted methods

clerodane diterpenoids and an ursane triterpenoid from Salvia haenkei, — structure elucidation, 14719

Condensations

acid-catalysed — in synth of porphyrins, effect of salts on reaction efficiency, 12339

of different cyclic ketones with visnaginone and khellinone, synth of spirofurochromanone derivs, 15799

of 2-hydroxytryptamine with a chiral C9 lactone, asymmetric synth of the pentacyclic ring system of *Aspidosperma* alkaloids, 14247

ion assisted *ortho*-specific phenol-formaldehyde condensation incorporating selective protecting-deprotecting methodology for prep of a range of novolac resins, 13915

- Knoevenagel of O, S-diethyl monothiomalonate and S, S'-diethyl dithiomalonate with ethyl pyruvate, effect of $ZnCl_2$, 7097
- low-temperature Schiff base condensation for synth of hetero-polytopic cryptands, 10517
- of N-methyl-glucamine with oleic acid, synth of glycamide surfactants by amidification reaction, 5185
- of methylene-substituted azaheterocycles on 1-amino-2-naphthols in the presence of an oxidising agent, synth of photochromic spirooxazines, 9669
- Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2*H*-pyran-5-carboxylates, synth of highly functionalised2-cyclohexenonedicarboxylates, 2241
- of α-oxoketene *O,N*-acetals and maleic anhydride, synth of *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, 17643
- of a C-pentyl resorcarene with long chain aliphatic diamines and formaldehyde, synth of tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, 17691
- Suzuki polycondensation, catalyst-derived phosphorus incorporation; reproducibility of molecular weights, 15459
- of titanium enolates derived from β-hydroxy ketones with phosgene iminium chloride or trimethylorthoformate, synth of 5,6-dihydro-4*H*-pyran-4-ones, 11211
- of 1,1,1-trifluoro-3-(isobutoxymethylene)-2propanones with o-aminophenols, synth of 2- and 4-trifluoromethyl-1*H*-arylo-1,5-oxazepines, 5847
- of 1,1,1-trifluoro-3-(isobutoxymethylene)-2-propanones with *o*-aminothiophenols, synth of 2- and 4-trifluoromethyl-1*H*-arylo-1,5-thiazepines, 5847
- of 1,1,1-trifluoro-3-(isobutoxymethylene)-2propanones with o-arylenediamines, synth of 2- and 4-trifluoromethyl-1*H*-arylo-1,5-diazepines, 5847
- of trifluoroacetyl ketene diethyl acetal with o-aminophenols, synth of 2-(1,1,1-trifluoroacetonyl)oxazoles, 5847
- of trifluoroacetyl ketene diethyl acetal with o-aminothiophenols, synth of 2-(1,1,1-trifluoroacetonyl)thiazoles, 5847
- of trifluoroacetyl ketene diethyl acetal with o-arylenediamines, synth of 2-(1,1,1-trifluoroacetonyl)imidazoles, 5847
- of 1,2,4-trimethoxy-benzene and 2-methyl-pyridine 4,5-dicarboxylic acid anhydride under Friedel-Crafts conditions, key step in synth of tolypocladin and isotolypocladin, 109

see also Aldol reactions, Mannich reactions Configuration

- absolute of the chiral biaryl system in the streptonigrin antibiotics by exciton coupled circular dichroic spectroscopy, 15101
- absolute of dithiirane 1-oxides, 12203
- absolute of halisulfate 3, terpenoid from sponge *Ircinia* sp., absolute configuration, 5373
- absolute of plorantinone A-C, protoilludane sesquiterpenes from fruit bodies of basidiomycete *Russula delica*, 9735
- absolute axial configuration of yaoundamine A, a naphthyldihydroisoquinoline alkaloid isolated from *Ancistrocladus korupensis*, 2817
- absolute configuration of (+)-agelasimine A and B, adenine-related bicyclic diterpenoids from the orange sponge Agelas mauritiana, 16977
- absolute configuration of herboxidiene by degradation and synthetic studies, 2785
- alcohols, absolute by NMR, anisotropic effects on remote positions, 8541
- brassinosteroids, assignment of side chain by exciton coupled CD spectroscopy in per-2-naphthoyl derivs, 11961
- (-)-carnavaline, synth of both 11'-epimers and assignment of (S) to natural compd, 7255
- ciguatoxin, absolute of C2-OH group, 3057
- palmarumycins CP₃ and C₂, and CP_{4a} and CP₅, absolute and conformation, calculation of CD spectra, 1655, 3101
- perhydrooxazolo[3,4-c]oxazoles (-3,7-dioxa-1-azabicyclo[3.3.0]octanes), synth and stereo-chemistry, 1891
- secondary alcohols, by PMR/CMR, the fucofuranoside method, 5973
- xestokerols A and B, absolute by chemical conversion, 5403

Conformation

- ab initio calculations to study effect of angular-group-induced bond alteration, 13027
- analysis of bicyclo[5.3.1]undecane-8,11-dione, 5339 of 4-aryl-dihydropyrimidine calcium channel modulators by *ab initio*, semiempirical and X-ray crystallographic methods, 2803
- of 2-aryl-1,3-dihydroxy-4,4,5,5-tetramethylimidazolidines by semiempirical calculations, 16911 bicyclo[6.1.0]nonane-2,6-dione chiral 2-ketal, longrange shielding of C=O face in nucleophilic additions, 9043
- bilirubin analogues lacking carboxylic groups, synth, helical — using exciton CD, 14547
- 1,2-bridged calix[4]arene-biscrowns in the 1,2-

- alternate conformation, synth, 3767
- chiral spiro-1,3-dioxanes, synth and stereochemistry, 6215
- conformation and intramolecular hydrogen bonding in bilirubin solution by nOe analysis, 2697
- conformational control in the synth of mixed tetraethers of calix[4]arene, 10503
- conformationally restricted serine derivs through ruthenium(II)-catalysed ring closing metathesis, 5925
- cycloalkadiynes, 10-, 11-, 13-, 14- and 16-membered, synth and —, 3111
- diethyl 2-oxo-8-oxa-6,7-diazabicyclo[3.2.1]oct-3-ene-6,7-dicarboxylate, dynamics of — changes by NMR, 9313
- AB-cis-4aβ,6β-dimethyl-5α,6α-epoxyperhydroquinoline, by ¹H NMR, 11237
- 1,2,5-dithiazocan-6-ones, synth, with *trans* amide bond by NMR, 16859
- hexaspiro[2.0.4.0.2.0.4.0.2.0.4.0]tetracosane (alternately cyclopropa-cyclopenta-fused cyclohexane), synth, conformation and dynamics, 6011
- β-isopropyl phenylalanines (β-phenyl isoleucines), synth of all diastereoisomers and conformational investigation, 16645
- medium-dependent flexibility of β compared with α -D-nucleosides, experimental data from NMR, 14043
- methyl 3-methyljasmonate and related derivs: molecular modelling, synth and biological activity, 8181
- mixed tetraethers of calix[4]arene, control, 16195 N-terminal domain of DNA polymerase β, catalyst of β-elimination in β-phosphoryloxy-deoxyribose, mechanism of action, 12057
- palmarumycins CP₃ and C₂, and CP_{4a} and CP₅, absolute configuration and —, calculation of CD spectra, 1655, 3101
- N-pertosylated polyaza-9,10-anthracenophanes, synth and by MM2* and x-ray, 2629
- 10-phenyl-11-oxa-1-azabicyclo[6.3.0]undecane and congeners, synth, barriers to inversion at N, 5581 protein of nitrogenase from "A. vinelandii", effect of
- cofactor binding on —, 11971 solution — of 1,5-dithiacyclooctane, 1-phenyl-1phospha-5-thiacyclooctane and *trans*-1,5-diphenyl-

1,5-diphosphacyclooctane, 7461

- solution state of cycloleonurinin, a cyclic dodecapeptide from the fruits of *Leonurus heterophyllus*, 7469
- (R,R)-tartaric acid ester, amide and nitrile derivs, conformations by X-ray, CD, NMR, ab initio, 6113

- tautomeric and conformational preferences in 2-nitraminopyridine, comparison of theoretical and experimental data, 17211
- taxinine, taxinine B, crystal and solution state -, 4621
- 1,1':8',1''-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by Suzuki coupling, barriers to rotation, —, AM1 and PM3 calculations. 5379
- meso-tetraalkyl porphyrin-Co(III), axially (substituted-imidazole)-coordinated, barriers to rotation, 12487
- of tetraalkylated dihomooxacalix[4]arenes by NMR, 11791
- of 8,8,13,13-tetramethyltetraspiro[2.0.3.1.3.1.3.0]-heptadecane, 7529
- 1,2,10,12-tetrathia[3.3]metacyclophanes, conformational and geometrical isomerism, 3155
- tunable transmission of the aromatic character of the aglycone through the anomeric effect in C-nucleosides drives its own sugar conformation, thermodynamic study, 6433
- unexpected stability of δ-lactones with axial substituents rather than equatorial: conformational evaluation by molecular mechanics and molecular orbital calculations, 2013
- yunnanin A, cyclic heptapeptide, study by X-ray, NMR and MM calculations, 1607

Copper and compds

- chiral copper complexes with 2-(2-aryl- or 2-alkyl-sulfonylamino)phenyl-4-phenyl-1,3-oxazol ines as catalysts for the cyclopropanation of olefins, 9599
- copper-catalysed phenylation of amines using pentavalent organobismuth reagents, 4137
- copper(I) bisoxazoline catalysts for allylic oxidation of olefins with peresters, synth of allylic benzoate esters, 16229
- Cu(II) complexes of chiral diamino alcohols as catalysts for cleavage of *p*-nitrophenylesters of phenylalanine and phenylglycine in surfactants solution, 357
- Cu(II)-tris(oxazoline) complex as catalyst for enantioselective allylic oxidation of cycloalkenes, 6337
- cyclohexane, adamantane, functionalisation using Cu(II)/H₂O₂ and Cu(I)/H₂O₂ systems in pyridine, mechanism, 16017
- Gif-type reactions, evaluation of stereoselectivity using *trans*-1,4-dimethylcyclohexane as a probe, 2997
- tributyltin cuprate, use in synth of tributyl-

stannylalkenyl carbohydrates, 10765

vitamin D, C-ring functionalisation at C-11 by Cu-mediated alkylation, 10851

Coronands

- macrocyclic diamides and tetramides containing phenol ether units, synth, 7957
- triazolium-crown-formazans, formation of hexachloroantimonate salts, 8507
- tricyclic cryptands by high-pressure linking of two coronand diamines, 7967

Coumarins

- dimethoxycoumarin (limettin), starting material for prep of *trans*, *trans*-2,3-dimethylchroman-4-ol, 14915
- diphenacoum and brodifacoum, 4-hydroxycoumarin rodenticides, asymmetric synth, 6045
- furanocoumarins derived from alkylation-cyclisation of iodo-umbelliferone, transfer-hydrogenation to yield deuterium-labelled marmesins, 17699
- 7-methoxy-3,4-dihydro-, dimethyl ortho-ester formation and reactions, 3863

Coupling reactions

- N-acetyl propargylglycine amide, Pd-catalysed forming arylethynylalanine derivs, and 3-Boc-4-ethynyl-2,2-dimethyloxazolidine and its 4-[(2-tributylstannyl)ethenyl] analogue in similar —, 17489
- ambient temperature, unsymmetrical, biaryl coupling reaction for hindered systems based on Suzuki methodology, description, 15123
- of the aromatic and aliphatic segments of antitumour compd FR900482, total synth, 10229, 10239, 10253
- aryl(difluoro)methanephosphonates, synth by Cu-promoted — of diethyl difluorozincomethanephosphonate with iodoarenes, 815
- of aziridinium salts derived from homochiral 2,3-epoxy amines with α-amino ester nucleophiles, key step in synth of bestatin related aminopeptidase inhibitors, 15729
- chiral bridged 1,2,3,4,5,6,7,8-octahydroanthracenes with outer rings derived from nopinone, formation of central ring by 5+1 Heck benzannelation, 7753
- cross- of carbapenem-2-yl triflates with alkylborane, synth of 2-alkylcarbapenems, 539
- diaryl and aryl styryl iodonium salts, Pd-catalysed cross— with organo-fluorosilanes, and extension to carbonylative—, 3027
- diphenylacetylenes, diphenyldiacetylenes, tri- and tetra-(phenylethynyl)benzenes containing alanine residues, synth by —, 2475
- dynemycin analogs lacking ring N atom, cross-coupling approach to synth, 9159

- electroreductive coupling of organic halides in alcoholic solvents, 11569
- functionalised poly- and oligo-phenylenes, Suzuki of 1,4-phenylenediboronic esters with aryl dibromides, 15553
- metal-substituted (Sn, Hg) diazo-esters as substrates for cross-coupling reactions; arylation, acylation, 2371
- mycophenolic acid, convergent synth using Pd-catalysed coupling, 3395
- organo-Zn heterocycles, synth and with Pd(0) and Cu(I) catalysis, application to imidazoles, thiazoles, pyridines, quinolines, uracils, purines, 7231
- palladium(0)-catalysed cross-coupling of vinyl triflates, key step in introduction of the C-4 aryl substituents in synth of kainoids, 5233, 5255, 5273
- palladium-catalysed coupling of biological labels with acetylenic linker arms to biological molecules, 1505, 1523
- palladium-catalysed cross-coupling reactions using triflic enolates, synth of ethynyladenosine, 6747
- poly(dialkoxy-p-phenylene-vinylene-2,5-pyridinylene-vinylene) and related systems, synth by Heck —, UV, protonation and quaternisation, solid-phase organisation, 15487
- of polyhalo compds with aldehydes and ketones, direct electroreduction and use of electroregenerated base, 1721
- quinolines and dihydroquinolinones, synth by Pd-catalysed of acetylenic carbinols with o-iodoanilides, 13397
- sexithiophenes, synth by Stille of T1-SnR₃ and T2-Br, using Pd with (AsPh₃)₃ and other ligands, 9401
- Sonogashira and Suzuki coupling in synth of 2,3and 2,4-disubstituted furans and 2,3,4- and 2,3,5trisubstituted furans from silylated furans, 3497
- Stille between 1,8-diiodonaphthalene and 3-trimethylstannylpyridine or 2-methyl-4-trimethylstannylpyridine, synth of 3,3'-(1,8-naphthylene)bispyridine or 4,4'-(1,8-naphthylene)bis(2methylpyridine), 3557
- Stille—of9-[2-[bis(2-propoxy)phosphonylmethoxy]-ethyl]-6-chloropurines and 1-(ethoxyvinyl)tributyltin followed by acid hydrolysis, synth of nucleotide analogues derived from *N*-substituted 6-(1-amino-ethyl)purines, 2291
- Suzuki cross-coupling reaction of arylboronic acids or sodium tetraphenylborate with aryl halides, synth of polyfunctional biaryls, 14437
- transition metal coupling reactions using arylcadmium chloride for synth of oligomers

constructed from benzene and thiophene rings, 10357

(Z)-2-triflyloxymethylenecyclopentanone, ketoenyne formation by Sonogashira reaction, 9107

6-vinylpurine nucleoside derivs, synth by -, 3035

2-zincated2-cyclohexen-1-one,1-benzyl-2,3-dihydro-pyridin-4(1*H*)-one-5-ZnI, 1,3-dibenzyluracil-6-ZnI, synth, —, 16711

see also Suzuki reactions

Crown ethers

bis(4-alkyl-2-hydroxyphenoxy) alkoxy ethers, precursors to alkylbenzo-substituted crown ethers, synth from catechol, 13557

1,2-bridged calix[4]arene-biscrowns in the 1,2-alternate conformation, synth, 3767

cage-functionalised 17-crown-5 and 17-crown-6 ethers, synth and alkali metal picrate extraction capabilities of, 3467

calix[4]arenes capped by diamide bridges in 1,3-position on the lower rim; synth, alkylation and NMR investigation, 9799

calix[4]crowns containing an ester group in the crown ether segment, synth from calixarene and polyethylene glycol ditosylate: nitration allowed investigation of their recognition ability with alkylamines, 10345

calix[5]arene-crown hosts, binding with cationic guests, complexation equilibria from NMR titrations, 4901

15-crown-5 complex of the sodium salt of 2-nitroimidazole, synth and structure, 13177

diester crowns containing 1,1'-trimethylenebis-(pyrazole-3,5-dicarbonyloxy-) units, enzymecatalysed synth, 11481

double armed diaza-12-crown-4 derivs, enhanced Li⁺ ion-selective ionophoric properties of, 3487

ester crowns and dipyrazolic podands, synth of intermediates by regioselective lipase catalysed hydrolysis of 1,3-bis[3,5-bis(ethoxycarbonyl)-1*H*-pyrazol-1-yl]propane, 2907

ionoselective polymers bearing different pendant crown ethers, synth and complexation behaviour, 1343

oxime- and Schiff base-containing aza- and diazacrown ethers which can be used for heteronuclear binding with hard and soft metal ions, synth from aza-15-crowns, 17595

polyaza — derivs of calix[4]arene, role as anion acceptors, 4669

poly(ester crown ether)s, polyrotaxanes by *in situ* self-threading during polymerisation of functional macrocycles, 15197

pyrazole-containing azacrown ethers by intramolecular cycloadditions of functionalised nitrilimines, 3005

Tröger's base-crown ether composites, synth and cation binding studies, 11859

Cryptands

hetero-polytopic cryptands, low-temperature synth through Schiff base condensation, 10517

meta-cyclophanes with polyether loop and 1,3,5,7tetraoxadecalin component, synth, stereochemistry, conformations, 4821

tricyclic — by high-pressure linking of two coronand diamines, 7967

Cubanes

tetracyclo[6.3.0.0^{2,6}.0^{3,10}]undecane and tetracyclo-[6.4.0.0^{2,6}.0^{3,10}]dodecane-5,9-dione derivs, synth by chromium trioxide oxidation of alcohols, 14991

Cumulenes

reaction with 1,3-diaza-2-azoniaallene salts, synth of triazolium salts, 5755

trithiocarbonate oxides, synth by reaction of trithiocarbonates with *m*-chloroperoxybenzoic acid, subsequent addition reaction with oranolithiums provides trithioorthoester oxides, 1323

N-vinylic heterocumulenes, cycloaddition with 1-(N,N-diethylamine)prop-1-yne, synth of pentasubstituted pyridines, 4521

Cyano compds

1-alkyl-1-cyanohydrazines and enolisable ketones, formation of 5-aminopyrazoles, 1729

N-cyanation of indoles and benzocarbazoles, 16835 O-β-cyanoethyl-O-octyl-N,N-diisopropyl phosphoramidite (Lipocap) as a capping reagent in the automated solid phase synth of oligonucleotides, 9629

2-(2-cyanoethyl)sulfanyl-1*H*-isoindole-1,3-(2*H*)-dione and 4-[(2-cyanoethyl)sulfanyl]morpholine-3,5-dione, synth from 2-cyanoethyl disulfide derived from *S*-(2-cyanoethyl)isothiouronium chloride, 14411

decacyanooctatetraene dianion, model for poly(dicyanoacetylene) polymers, 15593

1,1-dicyanoalkenes, addition of Reformatsky reagents catalysed by Cp₂TiCl₂, 2899

4,5-dicyanopyridazine, Diels-Alder reactions with alkenes, structures of the resulting dicyanocyclohexa-1,3-dienes, aromatic phthalonitriles and polycyclic bis-adducts, 11711

effect of γ -cyano substituent in allylic bridgehead solvolyses: evidence for cyano π conjugation in carbocations, 8155

organoselenocyanate reduction to diselenides and selenolates by reaction with metal hydrides, 12147

- (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, reactions with triphenylphosphine, 15041
- trimethylsilylcyanation of aldehydes catalysed by chiral salen-titanium complexes, 14327

see also Cyanohydrins, Nitriles

Cyclic ketones

- 2-(acetoxymethyl)-2-cyclohexenone, regiospecific replacement of acetoxy group by stabilised carbanions, synth of S_N2 type products, 15711
- (1R,4S)-N-t-butoxycarbonyl-7-azabicyclo[2.2.1]-heptan-2-one, synth from D(-)-quinic acid, 17177
- (+)-trans-carvone, starting material for synth of (+)-agelasimine A and B, adenine-related bicyclic diterpenoids from the orange sponge Agelas mauritiana, 16977
- chiral cyclic ketones, cycloaddition to nitrosoketene, synth of chiral spiro 3-oxazolin-5-one 3-oxides for use in EPC synth of modified amino acids, 5725
- condensation with visnaginone and khellinone, synth of spirofurochromanone derivs, 15799
- cis-5-cyclodecenone and cis fused hydronaphthalenols, synth by oxy-Cope rearrangement of a trans-1,2-divinylcyclohexanol, 14235
- 2-cyclohexenonedicarboxylates by Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2*H*-pyran-5-carboxylates, 2241
- cyclopropyl ketones, opening with samarium(II) iodide followed by intramolecular trapping of an electrophile, synth of spirocyclic and bicyclic ketones, 8067
- cyclotryprostatins A-D, diketopiperazine derivs from Aspergillus fumigatus, inhibitors of mammalian cell cycle at G2/M phase, isolation and structure, 59
- 2'-(dimethoxymethyl)-1'-(cyclopenten-1'-yl)-4-hydr oxy-2-cyclobuten-1-one, ring expansion in synth of [4.4]spirononene dimethyl gloiosiphone A, 8913
- electrochemical oxidation of in methanol in an undivided cell in the presence of sodium halides, effect of ring size, mediator and supporting electrolyte, 4427
- galtamycinone, a common aglycon of C-glycosyl naphthacenequinone angucyclines, synth based on $O \rightarrow C$ -glycoside rearrangement and cycloaddition of α -alkoxybenzyne and α -oxyfuran, 16533
- 6-(3-indolyl)-2-piperidones, prep by amidoalkylation of piperidones with indole, subsequent conjugate addition to a 3,4-didehydro deriv, 719
- kobusone, caryophyllene derived epoxy ketone, base treatment yields two ketols, one of which reduces to a diol, 7035

- N, N'-linked 1,2-ethanediyl-poly(benzimidazoline-2-ones), prep and characterisation, 7689
- cis-3,5 and trans-3,5-substituted β-alkoxy-δ-valerolactones, synth from 8-oxabicyclo[3.2.1]oct-6en-3-one, 14929
- 5-substituted cyclohexenones, asymmetric synth from an O-metalated lactam via α-cycloenamine, 8795
- tetracyclo[6.3.0.0^{2.6}.0^{3.10}]undecane and tetracyclo-[6.4.0.0^{2.6}.0^{3.10}]dodecane-5,9-dione derivs, synth by chromium trioxide oxidation of alcohols, 14991
- tetracyclo [6.4.0.0^{3.5}.0^{4.8}] dodecan-6-ones, synth from tricyclic precursors by photoinduced oxa-di-pi-methane rearrangements, 13053
- 5,6,7,8-tetrahydro-2*H*-1-benzopyran-2,5-diones and 5-acetyl-2*H*-pyran-2-one, reactions with hydrazines, synth of 5-hydrazono-2*H*-1-benzopyran-2-ones and quinoline-2,5-diones, 1383
- N,N-unsaturated dialkyl- and N-unsaturated alkyl-N-alkyl-β-ketoamides, thermal rearrangement to yield spirolactams, 5775

Cyclisation

- 5-exo-trig— of homoallylsilanes leading to 2,4- and 2,4,5-substituted tetrahydrofurans, application to synth of (±)-kumausyne, 2835
- alkali induced intramolecular of 2-(3-chloropropyl)- and 2-(4-chlorobutyl)-4-substituted benzimidazoles bearing 4-nitro-, 4-amino-, and 4-methyl groups; ambident heterocyclic reactivity, 6937
- alkenyl α -sulfinyl and α -sulfonyl radicals, generation and —, 7805
- of δ-alkenyl oximes to nitrones which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051
- alkenyl phenylhydrazones, PhSeBr-promoted —, synth of 1-anilino-piperidines, -pyrrolidines, tetrahydropyridazines, 7311
- alkylation-cyclisation of iodo-umbelliferone to yield furanocoumarins which on transfer-hydrogenation gave deuterium-labelled marmesins, 17699
- o-allyl- and o-prop-1-enyl-phenoxyacetic acids, photoelectron transfer induced decarboxylation across a liquid-liquid interface with to dihydrobenzopyrans and dihydrobenzofurans, 16817 of amino-cyclohexadienone, synth of perhydropyrrolo[1,2-a]indole, 8871
- of 3-aryl-2,3-unsaturated aldehydes and dimethyl succinate, synth of 4-substituted-3-hydroxy benzoic acids, 15029
- aryne cyclisation and Horner reaction of o- (and m-) halogeno-N-phosphorylmethylbenzamide derivs, synth of 3-(aryl and alkyl)methylene-1H-

- isoindolin-1-ones, 10313
- of 1-azatriene as a route to annelated pyrido[4,3-b], 4447
- bi— of biphenyl acetamides promoted by (COCl)₂/SnCl₄, synth of 4,5-dioxoaporphines, 14397
- of 6-cyanomethyl-5-nitropyrimidines, synth of 7-alkyl-5*H* and 6-amino-7,7-dialkyl-7*H*-pyrrolo[3,2-*d*]pyrimidines, intermediates to 9-deaza analogues of DHPA, 391
- [3+2]-cycloaddition, radical cyclisation/ionic cyclisation and reductive Pauson-Khand for synth of amino azanoradamantane hexahydro-2,5b-methano-1*H*-3a*S*,3aa,6aa-cyclopenta-[*c*]-pyrrole-4a -amine, 1
- of 2-2'-deselenobis(N-methylbenzenesulfonamide) into 2-methyl-1,3,2-benzothiaselenazole 1,1-dioxide using 3-chloroperoxybenzoic acid, 17751
- 2,3-dialkynyl pyrazines, synth, Bergman -, 14655
- of diazoesters derived from (1R,2S,5R)-menthol and (R)-pantolactone, synth of 1,2-disubstituted mitosenes following oxidation, 16521
- dihydro-benzofurans and -benzopyrans from 2-cinnamylphenols by photo— via singlet excited state proton transfer, 14729
- of (Z)- or (E)-6,7-dihydroxy-3,7-dimethyl-oct-2-enyl carbonate, synth of *cis* and *trans*-linalyl oxides, 4353
- of 1,5-dinitrile systems with hydrogen halides, search for the undetected tautomer, 4487
- electrophilic 5-endo-trig of 2-silyl-3-alkenols, stereoselective route to polysubstituted tetrahydro-furans, 4339
- 4-ethyl-1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]qu inolizine-2-carbaldehydes, synth by *N*-indolylethyl tetrahydropyridine—, 9407
- free radical involving nitrogen, 17543
- of hexynyl and heptynyl iodides by Unimolecular Chain Transfer (UMCT) reactions, 5679
- intramolecular of α-phenylsulfenyl and α-alkylsulfenyl radicals, 4291
- intramolecular of β -alkoxycarbonylallylsilanes with enones, formation of 1-methylenehydrindan-2-ones, 839
- intramolecular carboradical of 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, synth of 2-azabicyclo-[3.3.1]nonanes, 1391
- intramolecular palladium(0)-catalysed metallo-enetype cyclisations, faciality of, synth of trisubstituted exocyclic alkenyl pyrrolidine, 3577
- intramolecular Ugi 4CC reaction in synth of 5-oxopyrrolidine- and 6-oxopiperidine-2-carboxamides on

- solid phase, 6653
- manganese(III)-promoted free radical of enamides leading to β -lactams, 13129
- organozinc/Ni(COD)₂-mediated of alkynyl enones, synth of a series of monocyclic and bicyclic heterocycles with exocyclic alkenes, 16449
- palladium catalysed tandem cyclisation-anion capture processes involving organoboron anion transfer agents, 11803
- palladium-catalysed of dienes containing pseudoglycal units, 3957
- phenyl 4,6-dihydro-2*H*-pyran-4-yl sulfoxides, acid-catalysed to 3,4-dihydro-1*H*-[1]benzothieno-[3,2-*c*]pyrans, 12651
- phenylselenenyl sulfate induced of allylhydrazines, synth of pyrazole derivs, 4441
- radical of N-(2'-iodophenyl)pyrrole-3-carboxamides, synth of tricyclic pyrrolo[3,2-c]quinoline core of martinelline alkaloid, 8287
- radical of N-vinylic α-bromo amides, synth of a chiral 1β-methylcarbapenem key intermediate, 9611 radical of unsaturated bromolactones, synth of functionalised cyclopentanes, 6879
- radical cascades based on cyclisations: design of a radical translocation step through 1,n (n=5-7) hydrogen transfers for incorporation into new radical cascades, 13797
- radical cyclisations of acyclic α-haloesters to γbutyrolactones using polymer-supported distannane, 1301
- selenium-induced of alkenyl hydrazines to pyridazine or pyrrolidinamine derivs, factors affecting, 10591
- SET induced cyclisation reactions of malonic acid esters of *trans*-1-substituted-3-trifluoromethyl-2-butene-1-ols, synth of cyclopropane lactones containing a trifluoromethyl group, 13001
- sulfuric acid-catalysed of brominated 2-alkyl-levulinic acids to 3-alkyl-5-methylene-2(5*H*)-furanones. 15813
- tandem radical cyclisations triggered by *O*-stannyl ketyls from ketone and aldehyde precursors, 13583 tandem radical nitrile transfer-cyclisation of 1,3-dioxane-nitriles, synth of spirocyclic systems, 16489 tin-mediated radical cyclisation of a bispropargyl compd and a mono-propargyl compd to form functionalised bicyclo[4.4.0] and spiro[5.4] compds, 11685
- transannular of (Z,E)-cyclodeca-1,5-diene derivs, model systems for melampolides, 11425
- tributyltin chloride-sodium cyanobotohydride mediated tandem radical cyclisation-reductive

- demethoxylation of bromoketals, 10479
- tungsten pentacarbonyl-induced of an acyclic alkynol, synth of a cyclic tungsten oxacarbene which could be converted to pyranose glycals, 11061
- of unsymmetrical bis-1,2-(3-indolyl)ethanes, synth of (—)-tjipanazole F1, an indolocarbazole glycoside, 16553

Cyclitols

1-carboxylic ester and -ketone analogues of 1deoxynojirimycin and castanospermine, synth from 1-amino-1-deoxy-D-glucitol, 12739

Cycloadditions

- [3+2]-, radical cyclisation/ionic cyclisation and reductive Pauson-Khand for synth of amino azanoradamantane hexahydro-2,5b-methano-1*H*-3aS,3aa,6aa-cyclopenta-[c]-pyrrole-4a-amine, 1 addition of methoxy(methoxycarbonyl)ketene to cyclopentadiene, 10019
- of the adduct of tri-n-butylphosphine and carbon disulfide, direct conversion of strained double bonds to 2-alkylidene-1,3-dithiolanes, 2261
- aldimines, Lewis acid promoted [4+2] with 2-silyloxy-1,3-butadienes, synth of 4-piperidinones, 5423
- [4+2]— of 3-[(1S)-2-alkoxy-1-apocamphanecarbonyl]-2-oxazolones with dialkyl azodicarboxylates, 1275
- 3-aminopyrido[1,2-a]pyrazin-4-imines, giving 2-pyridyl aza- and diaza-anthraquinones, 5455
- asymmetric [4+2] heterocycloaddition of a styrene with benzylidenepyruvic ester of an α -O-silyl deriv of (D)-erythronolactone, synth of (—)-O-dimethylsugiresinol, 9679
- asymmetric cycloaddition reactions with carbohydrate-derived chiral auxiliaries, 14823
- 3,3'-bipyrazolines by of cyanogen di-N-(arylimine)s to 3-aryl-2-(2-benzotriazolyl)acrylonitriles, bipyrazoles by base-promoted loss of HCN, 9293
- of Bu₃P.CS₂ with norbornene, norbornadiene, norbornadiene ester and aromatic di- and trialdehydes, formation of extended bis- and tris-1,3-dithiolanes and dithiolane-containing esters, 10441
- 2-t-butyl 6-(dimethylamino and acetoxy)- and 6,6dimethyl fulvene, — to mesoionic heterocycles, formation of pseudo-heteroazulenes, 9921
- cephalotaxine, 1,3-dipolar approach to indolic aza-analogues, 3269
- [4+1] cheletropic of methyl(trimethylsilyl)germylene to dienes, 10179
- of chiral cyclic ketones to nitrosoketene, synth of chiral spiro 3-oxazolin-5-one 3-oxides for use in EPC synth of modified amino acids, 5725

- [2+2]— of chlorosulfonyl isocyanate to 3-O-vinyl ethers derived from D-glucose and D-glucuronolactone, synth of azetidin-2-ones and subsequent conversion to 1-oxacephem related to clavulanic acid, 5883
- combination of LiClO₄ and high pressure effective in [4+2] -, 4637
- diastereoselective dipolar cycloaddition for synth of 3-amino-3,6-L-talopyranose monosaccharide, the carbohydrate segment of antifungal agent Sch 38516, 16377
- 1,3-diazabutadienes, [4+2] and [2+2] with ketenes, formation of azetidinones and dihydropyrimidinones, 14107
- of diazomethane to homochiral amino pentenoates, synth of optically pure pyrazolines, stereospecific photodecomposition to cyclopropanes, 3777
- dibenzo[b,d]thiopyrylium tetrafluoroborate, with 1,3-dienes, action of base on adducts, 4611
- Diels-Alder of dienes covalently connected to a Lewis acid such as 1-dimethylaluminium dienolates, thermochemistry, 9637
- Diels-Alder reaction of 3-benzyloxy-2,3-dihydropthiophene-1,1-dioxide in synth of breynolide sesquiterpene, 8997
- [4+2] of 1,2-difluorovinylphenylsulfone with cyclopentadiene, 17127
- of 3,4-dihydro-2*H*-pyrrole 1-oxide to olefins, subsequent sequence of oxidation-cycloaddition, 2979 3,4-dihydropyrrolo[1,2-*a*]pyrazine, ylid formation
- and —, 9341 of 2,2-dimethyl-3,4-dihydro-2*H*-pyrrole *N*-oxide and *N*-(benzylidene)methylamine *N*-oxide with α,β-unsaturated lactones and esters, 7057
- 1,3-dipolar of C-(1-methylindol-3-yl)-N-methylnitrone with carbonyl substituted dipolarophiles, formation of indolyl-isoxazolidines which could be further reduced to pyrrolidinones, 707
- 1,3-dipolar of cyclic nitrones to C₆-αβ-unsaturated esters and lactones, diastereoselection, 16803
- 1,3-dipolar of diazomethane, a nitrone, and two nitrile oxides with methyl *cis* and *trans*-3,4-dimethylcyclobutene-1-carboxylate, facial selectivity, 9279
- 1,3-dipolar of diazomethane to chiral azlactones, experimental and theoretical studies, 4479
- 1,3-dipolar of nitrones to afford isoxazolidine derived heterocycles, 15051
- 1,3-dipolar of substituted 3,4-dihydroisoquinoline *N*-oxides with allenes, synth of 5-methylene isoxazolidines, 9575
- 1,3-dipolar of Z- and E-nitrones with ethyl vinyl

ether and 2,3-dihydrofuran catalysed by chiral oxazaborolidines, 11843

- [4+2] and [8+2] of electron-deficient heptafulvenes with electron-rich pentafulvenes, effects of substituents on stereo-, peri-, and regio-selectivity, 17275
- enantiopure cycloadducts from oxime-nitroneisoxazolidine cascades, 14339
- enantioselective intramolecular allene/enone photocycloadditions using 1,3-disubstituted allene, 16253 enone-alkene 2+2 photocycloadditions, experimental results and FMO analysis of substituent effects on regiochemistry of, 3545
- of ethene onto several cyclic nitrones, synth of [n.3.0]heterobicyclicalkanes devoid of substituents in the ring skeleton, 11869
- of 3-ethoxycarbonyl-2*H*-cyclohepta[*b*] furan-2-one with 6,6-dialkyl, cycloalkyl and diaryl pentafulvenes, competing [8+2] and [4+2] modes of addition, 15903
- to [60]fullerene using microwave irradiation, [4+2], [3+2] and [2+1] reactions, 2599
- [4+3] of 2-functionalised furans with oxyallyl cations, steric and electronic effects, 11669
- hetero Diels-Alder for synth of 6-deoxy-allo- and gulo-nojirimycin, 6-deoxy-D,L-talo-nojirimycin, D-fuconojirimycin and 6-deoxy-2-D,L-allosamine, 13769, 13783
- 3,4,5,6,7,8-hexahydroazocine 1-oxide, formation, cycloadducts, polymerisation, 5581
- high-pressure promoted tandem [4+2]/[3+2] of nitroalkenes and enol ethers, 11929
- homoadamantane-incorporated nitrones, with olefins, formation of 3-oxa-2-azatetracyclo-[7.3.1.1^{7,11}.0^{2,6}]tetradecanes, 5413
- intramolecular 1,3-dipolar of substituted α and β -sulfonamides, synth of isoxazole and pyrazole annulated sultams, 13855
- intramolecular [2+2] of ketenimines with imines, synth of dihydroazeto[2,1-b]quinazolines and 1H-2,8-dihydroazeto[2,1-b]quinazolin-1-ones, 13449
- intramolecular [3+2] of N-benzylnitrone group to cinnamic and crotonic ester residues, diastereoselective formation of 4-benzylamino-5-(fluoromethyl)-3-(1-hydroxy-ethyl/benzyl)dihydrofuran-2-ones, 17513
- intramolecular of functionalised nitrilimines, synth of pyrazole-containing azacrown ethers, 3005
- intramolecular cationic [5+2] promoted by trimethylsilyl triflate in lithium perchlorate-ethyl acetate, application to synth of (±)-isocomene, 8975 intramolecular cycloaddition reactions of allylic

cations, 6235

- intramolecular photocycloadditions of 2-acyloxy-3hexenoyl cyclohexenones, diastereoselectivity of, 8963
- isomunchnones (4-oxidooxazolium betaines), generation and trapping by N-phenylmaleimide, 7777
- mesitonitrile oxide to 2-(αβ-unsaturated acyl)-1,3-dithiane 1-oxides, reversal of stereoselectivity in presence of Lewis acids, 7365
- 5-methoxy- and -methylthio-pyrrole-2,3(1*H*)-diones, to diazomethane and photo— to olefins, 1813
- methylene-γ-butyrolactones, to 3,4-dihydro-2*H*-pyrrole 1-oxide, 14763
- 1,4-naphthoquinone to αβ-unsaturated aldehyde dimethylhydrazones, synth of benzo[g]quinoline-5,10-quinones, 6001
- nitrile oxide of acryloyl derivs of the Rebek imide benzoxazole, effect of aromatic ring on reactions of a nearby unsaturated imide, 1971
- nitrile oxide to 2-crotyl-1,3-dithiane 1-oxides, regioselectivity, stereoselectivity, 1061
- of nitrones with alkenes, synth of optically active isoxazolidines, 403
- [3+2] and nucleophilic additions of aziridines under C-C and C-N bond cleavage, 14297
- nucleophilic substitution-1,3 dipolar cycloaddition reactions of oximes with epoxides and dipolarophiles, 13165
- 5-phenyl-1,4-oxazin-2-one, generation and trapping of azomethine ylid from 4-t-butyloxycarbonyl-methyl deriv; other potential 4-aminal-derived ylid sources, 12671
- of 2-phenylthio-3,3,3-trifluoropropene and its sulfoxide and sulfone with various dienes, 6861
- phthalimidoketene, [2+2]— to silyl *N*-cinnamylidene-2-amino-1-phenylpropane-1,3-diol derivs, 7985
- 4-pyrrolidino-1-(1,2,3-triazol-4-yl)-2-aza-1,3-butadienes, reactions with N-phenylmaleimide, diazonium ions, tosyl azide, diethyl azodicarboxylate, 9393
- reactions of chromium carbene complexes with imines, olefins, azoarenes and with aldehydes, 4105 regioselective [4+2] cycloaddition versus nucleophilic reactions of N-arylamino substituted 1,3-diaza-1,3-butadienes with ketenes, synth of pyrimidinone and fused pyrimidinones, 13829, 13841
- of 4-substituted protoanemonin with non-stabilised azomethine ylids, 10633
- thermally and chemically induced retro of 5,6,7,7a-tetrahydroimidazo[1,5-b][1,2,4]oxadiazol-2(H)-ones, 13873

- thione S-sulfide to thiones and activated acetylenes, 939
- (S)-2-p-toluenesulfinyl butenolide, reactions with dienes, 14115
- tosylmethyl isocyanide (TOSMIC), to aldimines, synth of monosubstituted imidazoles, 11355
- [1,2,3]triazolo[1,5-a]quinolines, ylids derived from 2-phenacyl and 2-methoxycarbonylmethyl quaternary salts, reactivity towards dipolarophiles, 12765
- U-shaped cavity molecules, and rigid molecular racks, synth using isobenzofuran, cyclopentadiene and cyclopentadienone —, 3975, 3991
- of α,β-unsaturated bicyclic lactams prepared from (S)-pyroglutamic acid, synth of functionalised pyrrolidinones, 11731
- of N-vinylic heterocumulenes with 1-(N,N-diethylamine)prop-1-yne, synth of pentasubstituted pyridines, 4521

Cycloalkanes

diazoacetyl —, Rh-catalysed decomposition, intramolecular CH insertions, Wolff rearrangements, ketene dimer and nor-acid products, 8501

Cycloalkenes

- enantioselective allylic oxidation under Kharash-Sosnovsky conditions using Cu(II)-tris(oxazoline) complex as catalyst, 6337
- ozonolytic cleavage in the presence of methyl pyruvate, synth of tri-substituted ozonide containing three reactive centres which could be transformed to different functional groups, 5217

Cycloalkynes

- cycloalkadiynes, 10-, 11-, 13-, 14- and 16-membered, synth. 3111
- cyclopentyne formed from different precursors, comparison of products, 9891

Cyclobutanes

- alkenyl silanes and germanes, synth from cyclobutyl ketones and R₃MLi/ZnX₂, 8349
- cyclobutane-1,2,3-tricarboxylic acids, phenyl and methyl subst, synth by photocyclization, 14701
- 7-desmethylasteriscanolide, synth by photocycloaddition and aza-de Mayo cleavage of aminocyclobutane ring, 12319
- 3-ethoxy-1,1,2,2-cyclobutanetetracarbonitrile or dimethyl 3-ethoxy-2,2-dicyanocyclobutane-1,1-dicarboxylate, copolymerisation with 2-oxazolines, formation of regular terpolymers, 15603
- head-to-head photo-dimers of 3-[2-furyl-, 2-thienyl-, and (3,4,5-trimethylphenyl)]-acrylonitriles, 17307
- 1,2- and 1,2,4,5-paddlanes with cyclophane shaft and

cyclobutane blades, photo-dimerization of o- and p-divinyl and 1,2,4,5-tetravinyl benzenes, 4593

trisubstituted cyclobutane nucleoside analogue by nucleophilic substitution between adenine and a mesylate; unexpected C4-C3 ring contractions in related reactions, 5797

Cyclobutenes

- cyclobutene-containing substrates, ring-opening metathesis to form ruthenium alkylidenes, 16511
- cyclobutenic ester from thermal [2+2] cycloaddition of the silyl enol ether derived from cyclopentanone with ethyl propynoate, starting material for synth of (±)-silphinene sesquiterpene, 2103
- 1,3-dipolar cycloadditions of diazomethane, a nitrone, and two nitrile oxides with methyl *cis* and *trans*-3,4-dimethylcyclobutene-1-carboxylate, and with tri- and tetra-methylene analogues, facial selectivity, 9279

Cyclodecanones

bromoacetylenic oxy-Cope rearrangements, formation of reduced bromo-indenes, -naphthalenes, -benzo-cyclooctenes, -cyclodecadienones, 12637

Cyclodextrins

solid state polycondensation within — channels, water soluble polyamide rotaxanes, 15575

Cycloheptatrienes

[4+2] and [8+2] cycloadditions of electron-deficient heptafulvenes with electron-rich pentafulvenes, effects of substituents on stereo-, peri-, and regio-selectivity, 17275

Cycloheptenes

- (±)-lamoxirene, gamete-releasing/attracting pheromone of *Laminaria digitata* with 1,4-cycloheptadienyl oxirane structure, synth, 14651
- 3β,5β,7β-trihydroxy —, Pd-mediated asymmetric synth *via* endoperoxides, 5433

Cyclohexanes

- trans-1,4-dimethylcyclohexane as a probe to evaluate the stereoselectivity of Gif-type reactions, 2997
- methylenecyclohexane siloxy acetals, Prins-pinacol spiroannulations of, synth of spiro[4.5]decan-6-ones, 8927
- 8,8,13,13-tetramethyltetraspiro[2.0.3.1.3.1.3.0]hepta decane, synth from tetraspirane, conformation and dynamics of, 7529
- two-armed receptor consisting of arms of oligomers of isophthalic acids and *trans*-1,2-diaminocyclohexane which binds certain peptides sequenceselectively in water, design and synth, 8739

Cyclohexanols

tetrabenzoyl - from Michael reaction of aceto-

phenones and *trans*-dibenzoylethylene, 1045 Cyclohexanones

- t-butyl —, enantioselective deprotonation by chiral bidentate Li amides, NMR study of base, solvent dependence, 7191
- cyclohexadienones from oxidation of substituted phenols with phenyliodonium diacetate, annulation with the anion of 3-cyanophthalide affords anthraquinones, 4387
- enantioselective deprotonation of prochiral 4-substituted — by chiral chelated lithium amides, 5963
- hydride reduction, origin of π -facial stereoselectivity, theoretical study by analysis of Exterior Frontier Orbital Extension, 9057
- 3,4-O-isopropylidene-3(R),4(S)-dihydroxycyclohexanone, synth from D(—)-quinic acid, intermediate to (—)-balanol and (—)-epibatidine, 17177 α-nitrocycloalkanones, oxidative cleavage by
- persulfate in methanol/acid to α,ω-diesters, 16131 2-phenylcyclohexanone, addition to chalcone, structure and stereochemistry of the products, 11693
- 4-substituted cyclohexanones, catalytic deprotonation using chiral bidentate amines in the presence of achiral tridentate lithium amides, 16987
- 4-substituted cyclohexanones, deprotonation by chiral bidentate lithium amides having an alkylor a fluoroalkyl substituent at the amide nitrogen, 13641

Cyclohexenes

- A-seco-mevinic acid, synth of B-ring deriv, 1003 cis-cyclohex-4-ene-1,2-dimethanol, stereochemistry of epoxidation and of mono- and di-O-protected compds, Li amide/KOBu-t elimination forming trans-5-hydroxycyclohex-3-ene-cis-dimethanol, 17527
- cyclohexene oxide, ring opening with TMSN₃ using a titanium complex of (4S,6S,8S,9R)-8-hydroxymethyl-9-methyl-1,7-dioxaspiro[5.5]undecan-4-ohs catalyst, 16545
- 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, intramolecular carboradical cyclisation of, synth of 2-azabicyclo-[3.3.1]nonanes, 1391
- 1,3,3-trimethyl-2-vinylcyclohexene, Diels-Alder reactions with conjugated ketones, regio- and stereoselective formation of bicyclic adducts which are intermediates to labdanes, abietane and spongian diterpenoids, 2185

Cyclohexenones

2-(acetoxymethyl)-2-cyclohexenone, regiospecific replacement of acetoxy group by stabilised carbanions, synth of S_N2 type products, 15711

- 2-acyloxy-3-hexenoyl cyclohexenones, synth and intramolecular photocycloadditions of, diastereoselectivity of, 8963
- 2-cyclohexenonedicarboxylates by Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2*H*-pyran-5-carboxylates, 2241
- 5-substituted cyclohexenones, asymmetric synth from an *O*-metalated lactam *via* α-cycloenamine, 8795

Cyclooctanes

- diepoxycyclooctanes and epoxycyclooctenes, base-induced rearrangements, 1855, corrig. 5357
- 1,5-dithiacyclooctane, 1-phenyl-1-phospha-5-thiacyclooctane and *trans*-1,5-diphenyl-1,5-diphosphacyclooctane, solution conformation of, 7461

Cyclooctenes

bond shift in monohalo-cyclooctatetraenes, kinetics, energetics, 10093

Cyclopentanes

- by radical cyclisation of unsaturated bromolactones, 6879
- (S,S)-1,2-dicyclopentylethane-1,2-diol, synth and appplication to asymmetric allylboration, 17395
- oxasilacyclopentane acetals, synth by insertion of formamides into a C-Si bond of *trans*-silirane, synthetic utility of, 16597
- (+)-(1S)-1-pyrophosphoryl-(2R,3R)-2,3-dihydroxy-(4S)-4-(phosphoryloxymethyl)—, carbocyclic analogue of PRPP, synth, 7077
- thianinhydrin (5,5-dihydroxy-5,6-dihydrocyclopenta[b]thiophen-4,6-dione), synth from 3-methylthiophene, 4239

Cyclopentenes

- 2-cyclopenten-1,4-diol derivs, synth from furfuryl alcohol, 1983
- diarylperfluorocyclopentenes having thiophene oligomers as the aryl groups, synth and photochromic reactivity, 12263

Cyclopentenones

- α,β-disubstituted *via* zircona-cyclopentenes from alkynes, EtMgBr and CO, synth of arenebis(cyclopentenones), 9123
- synth of (±)-didehydro-α-cuparenone, via Wittig reaction, Claisen rearrangement, and Wacker oxidation, 3167

Cyclophanes

- (±)-4-acetoxy[2.2]paracyclophane, enzymatic kinetic resolution by *Candida cylindracea* lipase, prep of (+)-*R*-4-hydroxy- and (+)-*S*-4-acetoxy[2.2]paracyclophane, 11853
- 2,3-anthracene-[3.3]-ortho-benzenophane and -2,3naphthalenophane derivs, diastereoselectivity in

- Diels-Alder additions to anthracene moiety, 885 bicyclo[10.2.1]pentadec-13-en-3-ones, formation by free-radical macrocyclization, 14807
- bis-orthocyclophanes with dioxymethylene-bridged 10-membered rings between benzenoid units; synth, stacking of aromatic rings, 3015
- condensation of aldehydes with 1,3-benzenedithiol, formation of 1,2,10,12-tetrathia[3.3]-metacyclophanes, conformational and geometrical isomerism. 3155
- 3r,4,5,6(E),7,8-hexahydro[2.2]paracyclophane,synth, pmr, 16123
- octahydroxyorthocyclophane and octamethoxydiketoneorthocyclophane, conformational study, 17633
- 1,2- and 1,2,4,5-paddlanes with cyclophane shaft and cyclobutane blades, photo-dimerization of o- and p-divinyl and 1,2,4,5-tetravinyl benzenes, 4593
- N-pertosylated polyaza-9,10-anthracenophanes, synth and conformation by MM2* and x-ray, 2629
- N-(4-picolyl) 2,6,9,13-tetraaza[14]paracyclophanes, selectivity in N-functionalisation, 16169
- polyaza-paracyclophanes, models of Zn-containing enzymes, role of a non-coordinated N atom in metal proximity, 4751
- polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105

Cyclopropanation

- amino— and C-H insertion reaction based on the Sm/I₂-induced deoxygenation of amides, 12865
- asymmetric of olefins with diazoacetate using chiral copper complexes with 2-(2-aryl- or 2-alkyl-sulfonylamino)phenyl-4-phenyl-1,3-oxazolines as catalysts, 9599
- chemo- and enantioselective of monoprotected bis(allylic alcohol) using a chiral dioxaborolane-derived ligand and Zn(CH₂I)₂ as key step in synth of (+)-bicyclohumulenone, 16277
- diastereoselective intramolecular in synth of 6-methyl-2-oxobicyclo[3.1.0]hexane-1-carboxylic ester, vitamin D₃ CD ring synthons, 13307
- enantioselective of styrenes using chiral Co(III)-salen as catalyst, 7201
- hexaspiro[2.0.4.0.2.0.4.0.2.0.4.0]tetracosane (alternately cyclopropa-cyclopenta-fused cyclohexane), synth, conformation and dynamics, 6011 oxonium ylid formation when methylene is trapped by 3-methoxycyclohexene, 9823

Cyclopropanes

(1S,2R)-2-aminocyclopropanecarboxylic acid, incorporation into pseudo-peptides, 17417

- amphimic acids, long-chain alkylidenecyclopropane fatty acids, isolation, structure, synth involving Wittig reaction, 16699
- cis-2-(dimethylsulfonio)cyclopropanecarboxylate (gonyauline), biogenetic incorporation of labelled methionine, 9067
- cyclopropane lactones containing a trifluoromethyl group, synth by SET induced cyclisation reactions of malonic acid esters of *trans*-1-substituted-3-trifluoromethyl-2-butene-1-ols, 13001
- cyclopropane-1,2-bis(glycine) derivs, synth using (S)-4-benzyl-2-oxazolidinone as chiral auxiliary and trisyl azide as the electrophilic source of amine nitrogen, 10459
- 9-[2-(difluorophosphonomethyl)cyclopropylmethyl] guanine, synth of enantiomers, 11297
- (2S,3R,4S)-3,4-methanoproline and analogues, synth by intramolecular cyclopropylidene insertion into an *N*-benzyl or *N*-allyl group, 14773
- methyl 2-methyl-3-phenyl-2*H*-azirine-2-acrylate, reaction with diphenylketene, formation of 3,4-dihydro-2*H*-pyrrol-2-ones and of cyclopropane derivs, 7089
- methylene-gem-difluorocyclopropanes, synth by selenoxide elimination reaction derived from gem-difluorocyclopropylmethanols, 9497
- 3-oxo-2-phenyliodonio-dihydrobenzothiophene 1,1-dioxide ylid, reactions with olefins, formation, 9365
- photocyclization of β-aminoketones, formation of 2-aminocyclopropanols and oxidative ring-opening to enaminones, 7855
- 1-(1,2-propadienyl)cyclopropanols, transformation into substituted hydroquinones using octacarbonyl-dicobalt: synth of vitamin E and K analogues, 11069
- reaction of CF with olefins, generation and electrocyclic ring-opening of α -fluorocyclopropyl radicals, 10071
- 2-(p-substituted phenyl)cyclopropane-1,1-dicarbonitriles, anionic ring-opening polymerisation, 15157 thermolabile bis-alkenylcyclopropanes from female gametes of marine brown algae (Phaeophyceae), Cope rearrangement of, 13681

Cyclopropenes

- acetylene, ethylene and cyclopropene cycloadditions to benzo[b]- and benzo[c]-fused heterocycles, theoretical study, 13285
- tris-1,2,3-p-nitrophenylcyclopropene, synth from the tosylhydrazone of an enone, use as a precursor of the corresponding cyclopropyl anion, 4129
- unsaturated fatty acid cyclopropene analogues, synth

as potential inhibitors of Δ^6 , Δ^{12} and Δ^{15} fatty acid desaturases, 1089

Cytotoxins

activity of 2-debenzoyl-9-dihydro-1,2,9,10-*O*-acetonide-7-deoxydocetaxel and 2-debenzoyl-1,2-*O*-acetonide-7-deoxy-10-acetyldocetaxel, 5169

activity of cyclolignans with an isoxazoline ring fused to the cyclolignan core, synth by reaction of 7-ketolignans with hydroxylamine, 6555

activity of paclitaxel analogues modified in ring C against tubulin polymerisation, 3441

coronalolide methyl ester, coronalolide and coronalolic acid, cytotoxic ring-A seco-cycloartane triterpenes from Gardenia coronaria and Gardenia sootepensis, cytotoxic activity against human cancer cell lines, 529

(+)-curacin A, cytotoxic agent from marine cyanobacterium *Lyngbya majuscula*, synth utilising geraniol and serine, 11087

1*H*-cyclopenta[*b*]benzofuran lignans, cytotoxins from stems and fruits of *Aglaia elliptica*, 17625

cytohalasins from the fermentation broth of *Xylaria* hypoxylon, 6485

dolastatin I, cytotoxic cyclic hexapeptide from the Japanese sea hare *Dolabella auricularia*, isolation and stereostructure, 8149

FR900482, antitumour compd from *Streptomyces* sandaensis, synth of the aromatic segment and enatiomerically pure aliphatic segment from 5-hydroxyisophthalic acid: total synth by assembly of the segments, 10229, 10239, 10253

maesaquinone (2,5-dihydroxy-3-(Z)-10'-penta-decenyl-6-methyl-1,4-benzoquinone) from fruit of East African plant *Maesa lanceolate*, synth from 1,4,5-trimethoxymethyloxy-2-methoxybenzene, 16969

ma'ilione and *allo*-isoobtusol, chamigrane sesquiterpenes from Hawaiian red alga *Laurencia* cartilaginea, cytotoxicity towards colon, lung, prostrate and melanoma cell lines, 521

mycalazols 1-12 and mycalazal 1-2, 5-acyl-2-hydroxymethylpyrroles and 5-alkylpyrrole-2-carbaldehydes from *Mycale micracanthoxea* Atlantic sponge, structures, 331

norsiphonarienone A, isosiphonarienolone, 2-deoxysiphonarienfuranone and isopectinatone, polypropionates from *Siphonaria pectinata*, cytotoxic activity against mice P388, human A549, human HT29 and human Mel28, 2303

phenanthrene derivatives from *Domohinea perrieri*, structures and cytotoxic activity, 15663

podophyllotoxin derivs lacking the lactone ring, prep

from naturally occurring lignans, cytotoxic activity, 15743

sesterterpenes from the New Caledonian marine sponge *Patrosaspongia nigra* (Bergquist), structures and cytotoxic activity, 10451

3,7,11,15-tetramethyl-hexadecan-1,19-sodium disulfate and heneicosane-1,21-sodium disulfate, antiproliferative sulfated metabolites from the Mediterranean tunicate *Ascidia mentula*, activity, 5877

De-esterification

see Esterification

Decarboxylation

oxidative — of ketoacids derived from proteinogenic amino acids by α-ketoisocaproate dioxygenase, 6993

photoelectron transfer induced — across a liquidliquid interface, 16817

Degradation

degradation and synthetic studies to determine absolute configuration of herboxidiene, 2785

of 5,6-dihydroxyindole-2-carboxylic acid units, measurement in integrated approach to structure of sepia melanin, 8281

Dehalogenation

perfluoro-xylenes and -p-cymene, hydro-dehalogenation and other reactions using Zn(Cu)/DMF/H₂O, 1797

Dendrimers

dendritic and hyper-branched polyphenylenes, synth by Diels-Alder route using tetracyclone analogues, 15349

phenylacetylene tridendrons of asymmetric polarity, synth, formation of polar domains, characterisation, 15331

polyamide — based on 5-(2-aminoethoxy)-isophthalic acid, convergent approach to perfect branching, 15535

poly(amido-amine) — with ethylenediamine core, terminally-attached oligo-glycopeptide units, formation of globular carbohydrate "sugar balls", enzyme inhibition by, 15415

poly(thioether) —, amplified, "genealogically-directed" divergent synth giving de Gennes dense packed state, 15495

Deoxygenation

of amides by a Sm/SmI2 mixed system, 12895

Deprotonation

of 4-substituted cyclohexanones by chiral bidentate lithium amides having an alkyl- or a fluoroalkyl substituent at the amide nitrogen, 13641

of 4-substituted cyclohexanones using chiral

bidentate amines in the presence of achiral tridentate lithium amides, 16987

Depsipeptides

- kailuins A-D, marine bacterial cyclic —, structures by NMR and HRFABMS, 1577
- lysobactins, katanosins, cyclic —, monitoring solid-phase synth using *in situ* MALDI-TOF MS, 14021
- peptoids and —, secondary effects in flexible hydrogen bonding networks, 9881

Design

- use of similarity in organic synthesis planning, 3729

 Desulfurisation
- aliphatic C-H bond formation on solid support, Raney nickel — of alkyl aryl thioethers, 6645
- reductive of secondary alcohols using a Raney-nickel/sodium hypophosphite combination, 12883

Diamines

- 1,2-phenylenediamine, reaction with dimeric nitrosochlorides, synth of hexahydrophenazines, 9761
- N,N'-diacylated 1,2-phenylenediamines, treatment with p-toluenesulfonic acids, synth of benzimidazoles, 457
- diamino alcohols, lipophilic ligands whose copper(II) complexes are catalysts for cleavage of *p*-nitrophenylesters of phenylalanine and phenylglycine in surfactants solution, 357
- 3,4-diaminothiophene, starting material for synth of alkyl (4-aminothien-3-yl)carbamates *via* alkylation on the thiophene nucleus, 10331
- long chain aliphatic diamines, reaction with C-pentyl resorcarene and formaldehyde, synth of tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, 17691
- Rh-catalysed hydroformylation and carbonylation of *N*-alkenyl-1,3-diaminopropanes, formation of perhydro-pyrido- and -pyrrolo-[1,2-*a*]pyrimidines, 17449
- rhizoferrin (N, N-bis(1-oxo-3-hydroxy-3,4-dicarboxy-butyl)diaminobutane), siderophore isolated from the fungus *Rhizopus microsporus* var. *rhizopodiformis*, synth and absolute configuration, 427, corrig. 2667

Diastereoselection

- 2-acyl-N-tosyl oxazolidines, diastereoselective addition of nucleophiles to C=O, 1759
- addition of allyl organometallics to N-tosyl and N-benzyl-N-tosyl L-alaninal, 13373
- 2-(alkylthio)thiolane 1-oxides, synth, metallation at C-2, alkylation and hydroxyalkylation, 2459, corrig. 5641

- asymmetric allylboration, application of (S,S)-1,2-dicyclopentylethane-1,2-diol as chiral auxiliary, 17395
- bicyclo[6.1.0]nonane-2,6-dione chiral 2-ketal, nucleophilic additions to 6-oxo group, conformational effects, 9043
- carbohydrate-attached 1-methylbut-2-enyl titanocenes, asymmetric reaction with aldehydes, 16097
- chiral β-trifluoromethyl ethenesulfonamides, synth, conformation study, Michael additions, 823
- chiral β-keto-α-thioxo-esters, asymmetric hetero-Diels-Alder reactions, formation of 2,3-dihydro-1,4oxathiins (with enes) and 2-acyl-3,6-dihydro-2*H*thiopyran-2-carboxylates (with dienes), 17383
- cycloadditions of 2,2-dimethyl-3,4-dihydro-2Hpyrrole N-oxide and N-(benzylidene)methylamine N-oxide with α , β -unsaturated lactones and esters,
 7057
- cis-cyclohex-4-ene-1,2-dimethanol, stereochemistry of epoxidation and of mono- and di-O-protected compds, Li amide/KOBu-t elimination forming trans-5-hydroxycyclohex-3-ene-cis-dimethanol, 17519
- diastereoselective reduction of acyclic hydroxyketones and diketones with an indium hydride reagent, synth of *meso*-diols, 15685
- diastereoselective reduction by 1-benzylDABCO borohydride of β-enamino-sulfoxides to the corresponding β-amino-sulfoxides, 16883
- Diels-Alder reactions of chiral 1-alkoxy-1,3-butadienes, in reactions with maleic anhydride and 4-phenyl-4*H*-1,2,4-triazole-3,5-dione, 13427
- 1,2-dihydro-2,4-dimethyl-6*H*-pyrazino[2,1-*b*]-quinazoline-3(4*H*),6-dione, regio- and diastereoselective dialkylation reactions of anion at C-1, 16795
- 1,3-dipolar cycloadditions of cyclic nitrones to C_6 - $\alpha\beta$ -unsaturated esters and lactones, 16803
- 1,3-dipolar cycloadditions of diazomethane, a nitrone, and two nitrile oxides with methyl *cis* and *trans*-3,4-dimethylcyclobutene-1-carboxylate, facial selectivity, 9279
- epoxidation of allylic alcohols by TBHP in the presence of zeolites, in secondary alcohol reactions, 11369
- hydride reduction of cyclohexanones, origin of π -facial stereoselectivity, theoretical study by analysis of Exterior Frontier Orbital Extension, 9057
- intramolecular Diels-Alder reactions in synth of taxol ring C precursor, 9253
- of intramolecular photocycloadditions of 2-

acyloxy-3-hexenoyl cyclohexenones, 8963

modified Horner-Wadsworth-Emmons olefination of base-sensitive chiral β-hydroxy-α-aminoaldehydes, Z-selective using trifluoroethyl phosphonates, 1707 nitrile oxide cycloaddition to 2-crotyl-1,3-dithiane 1-oxides, regioselectivity, stereoselectivity, 1045 nucleophilic addition to C=O of rubanone (quinidine derivative), 9145

of oxygen transfer reactions from an oxaziridinium tetrafluoroborate salt to olefins, 13727

N-(4-picolyl) 2,6,9,13-tetraaza[14]paracyclophanes, selectivity in N-functionalisation, 16169

propargylation of sugar aldehydes, 2653

3-spiro-fused and 3,3-disubstituted indolines by distereoselective photocyclizations, 16083

stereocontrolled thio-Claisen rearrangement of S-allylic ketene aminothioacetals with adjacent hydroxy stereogenic centre, 17253

(S)-2-p-toluenesulfinyl butenolide, cycloadditions with dienes, 14115

vinyl W(CO), Fischer carbenes, cycloadditions with chiral dienes, synth of cyclohex-3-enyl and 4oxocyclohexyl Fischer carbenes, and corresponding esters. 9323

see also Stereoselection

Diaza compds

N-arylamino substituted 1,3-diaza-1,3-butadienes, regioselective [4+2] cycloadditions with ketenes, synth of pyrimidinone and fused pyrimidinones, 13829, 13841

cage-shaped (1S,4S,5R)-4-hydroxy-2,6-diazabicyclo[3.3.0]octane, synth from 1,2-epoxy-4penten-3-ol, 1369

1,3-diaza-2-azoniaallene salts, reaction with 1,3-butadienes and cumulenes, synth of triazolium salts, 5755

double armed diaza-12-crown-4 derivs, enhanced Li⁺ ion-selective ionophoric properties of, 3487

7-oxo-1,6-diazaphenalene, synth by transformation of 5,8-dimethoxy-4-one, 4511

Diazepines

2- and 4-trifluoromethyl-1*H*-arylo-1,5-diazepines, synth by condensation of 1,1,1-trifluoro-3-(isobutoxymethylene)-2-propanones with o-arylenediamines, 5847

Diazo compds

arenediazonium salts, reaction with 4-pyrrolidino-1-(1,2,3-triazol-4-yl)-2-aza-1,3-buta-dienes, 9393

aryldiazonium fluoroborates, protodediazoniation by DMF, radical pathway, labelling study, 10009 t-butyl diazoacetate in enantioselective cyclo-

propanation of styrenes using chiral Co(III)-salen as catalyst, 7201

diazinium ylids, reaction with diazonium salts, formation of C-disubstituted ylids, 4411

diazo transfer from tosyl azide to 2-(trimethylsilyl)-1,3-dithiane, carbenoid reactivity of 2-diazo-1,3-dithiane, 9269

1-diazo-2-oxo-(2-N,N-disubstituted aminophenyl)ethylphosphonates, Wolff rearrangement on thermolysis giving rise to 2-oxoindolinium enolate derivs, 7557

diazoacetyl cycloalkanes, Rh-catalysed decomposition, intramolecular CH insertions, Wolff rearrangements, ketene dimer and nor-acid products, 8501

of diazoesters derived from (1R,2S,5R)-menthol and (R)-pantolactone, synth of 1,2-disubstituted mitosenes following oxidation, 16521

diazomethane, 1,3-dipolar cycloaddition to chiral azlactones, experimental and theoretical studies, 4479

dimethyl diazomalonate and bis(methoxycarbonyl)carbene, two furanone dimers from these, and addition of methoxy(methoxycarbonyl)ketene to cyclopentadiene, 10019

1,3-dipolar cycloadditions of diazomethane with methyl 3,4-dimethyl-(trimethylene-, tetramethylene-)cyclobutene-1-carboxylates, facial selectivity, 9279

ethyl diazoacetate, condensation with D-mannosaldehyde derivs, approach to KDO and 2-deoxyβ-KDO, 3325

lithium trimethylsilyldiazomethane and diazomethane, reactivity toward the 5,6-double bond of uracil and uridine derivs, synth of annulated and fused heterocyclic systems, 7045

metal-substituted (Sn, Hg) diazo-esters as substrates for cross-coupling reactions; arylation, acylation, 2371

phenyldiazomethanes with 2-phenethyl side chain and hetero analogues, generation, addition and insertion reactions, 9935

Diazo transfer

see Transfer reactions

Diels-Alder reactions

ab initio study of ester group conformation and endo/exo preferences of acrylates in —, with and without BF₃ catalysis, 6057

addition of silyloxydienes to 2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, 7715

2,3-anthracene-[3.3]-ortho-benzenophane and -2,3-naphthalenophane derivs, diastereoselectivity in —

- to anthracene moiety, 885
- arylidenemalonic ester, with cyclopentadiene in CH₂Cl₂ catalysed by Mg(ClO₄)₂, kinetics, structure of reactive dienophile-Mg²⁺ complex, 13495
- asymmetric catalysed by bis(oxazoline)-magnesium perchlorate, enantioselectivity, 7671
- chiral 1-alkoxy-1,3-butadienes, diastereoselection in with maleic anhydride and 4-phenyl-4*H*-1,2,4-triazole-3,5-dione, 13427
- chiral dihydropyran adducts, synth of deoxyhexoses, amino-deoxy- and O-methyl deoxyhexoses, 4763
- chiral β-keto-α-thioxo-esters, asymmetric hetero—, formation of 2,3-dihydro-1,4-oxathiins (with enes) and 2-acyl-3,6-dihydro-2*H*-thiopyran-2-carboxylates (with dienes), 17383
- cycloaddition of enoate esters, use of catalytic chiral auxiliaries, 13063
- cycloadditions of dienes covalently connected to a Lewis acid such as 1-dimethylaluminium dienolates, thermochemistry, 9637
- cycloadditions of tricyclic dienes to MTAB, PTAD and N-methylmaleimide, 14895
- cycloocta-1,5-diene, *ab initio* study of sequential pericyclic reactions with 2-pyrone, 12415
- diaryl thioketones, with dienophiles, formation of 1*H*-2-benzothiopyrans, 961
- of 4,5-dicyanopyridazine with alkenes, structures of the resulting dicyanocyclohexa-1,3-dienes, aromatic phthalonitriles and polycyclic bis-adducts, 11711
- Diels-Alder approach to 2,3-substituted anthracenes using 2,3-dimethoxybutadiene as a key intermediate, 6377
- Diels-Alder reaction of 3-benzyloxy-2,3-dihydrothiophene-1,1-dioxide in synth of breynolide sesquiterpene, 8997
- 2-ferrocenylmethylene-3-methylenequinuclidine, synth, -, 12369
- furan Diels-Alder chemistry, synthetic applications of, 14179
- hetero— cycloadditions for synth of 6-deoxy-alloandgulo-nojirimycin,6-deoxy-D,L-talo-nojirimycin, D-fuconojirimycin and 6-deoxy-2-D,L-allosamine, 13769, 13783
- heterocycle-linked [60]fullerenes by o-quinodimethane cycloaddition, 9067
- intramolecular reactions in diastereoselective synth of taxol ring C precursor, 9253
- of 14-membered trans-cis-cis macrocyclic triene, synth of an A.B.C[6.6.6] trans-syn-cis tricycle, 14937
- α-methacraldehyde dimethylhydrazone cycloadducts

- with quinoline-5,8-quinones, synth of 1,8-anthrazolines, 3231
- of pentacyclo[8.2.1.1^{2,5}.1^{4,7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv, hyperstable pyramidalized dienes, 9727
- of [3.3]orthoanthracenophanes with N-(p-substituted phenyl)maleimides, substituent effects on the selectivity, 6817
- of 2-phenylthio-3,3,3-trifluoropropene and its sulfoxide and sulfone with various dienes, 6861
- quantum chemical and MM-approach to endo/exo selectivity of Diels-Alder reactions in polar media, 119
- 4(1H),5,8-quinolinetriones, hetero-Diels-Alder reactions with 1-azadienes, synth of pyrido[3,2- and 2,3-g]quinoline-4(1H,5,10-triones, 11465
- reaction of indol-3-yl-carbaldehyde oximes with electrophilic alkenes/alkynes, synth of nitrones or γ-carbolines, 747
- reaction of silylketenes with acyl isocyanates followed by hetero Diels-Alder reaction with acetylene, theoretical studies, 225
- retro— in synth of β -carboxy- α -methylene- γ -lactones, (\pm)-methylenolactocin and (\pm)-protolichesterinic acid synths, 17335
- 6-styrylfulvene [1-(3-phenylprop-2-en-1-ylidene)-cyclopenta-2,4-diene], as 2π addend with o-quinones, tetraphenylcyclopentadienone, 4π with maleimides, maleic anhydride, dibenzoylacetylene, 17361
- of 3,3',4,4'-tetrahydro-1,1'-binaphthalene, synth of pentahelicenebenzoquinone, 6873
- tributylstannylalkenyl carbohydrate derivs, conversion into sugar-derived dienes and their intramolecular —, 10775
- of 1,3,3-trimethyl-2-vinylcyclohexene with conjugated ketones, regio- and stereoselective formation of bicyclic adducts which are intermediates to labdanes, abietane and spongian diterpenoids, 2185
- 6-vinyl purines, ZnCl₂-mediated Diels-Alder diene addition, 1777
- vinyl tungsten Fischer carbenes, cycloadditions with achiral and chiral dienes, synth of cyclohex-3-enyl and 4-oxocyclohexyl Fischer carbenes, 9323

Dienediynes

see Diynes

Dienes

- 1-(alkyl- and dialkyl-amino)-4-methylthio-2-nitro-1,3-butadienes, formation from 3-nitrothiophene, structure, 8531
- N-arylamino substituted 1,3-diaza-1,3-butadienes,

- regioselective [4+2] cycloadditions with ketenes, synth of pyrimidinone and fused pyrimidinones, 13829, 13841
- bromocyclohexadiene cis-diol obtained by microbial oxidation of bromobenzene with *P. putida*, transformation into 5-deoxy-5-fluoro-myo-inositol and 3-deoxy-3-fluoro-L-chiro-inositol, 8807
- 2,3-bis(bromomethyl)-1,3-butadiene, photooxygenation of, synth of unsaturated cyclic peroxides which rearrange to 3,4-disubstituted furans, 13867
- (1Z,3Z)-butyltelluro-1,3-butadienes and (1Z,3Z)-1,4-bis(butyltelluro)-1,3-butadienes, Te/Liexchange reactions, synthof(1Z,3Z)-buta-1,3-dienyl-1-lithium and tellurophenes, 4199
- chiral 1-alkoxy-1,3-butadienes and 4-alkyl analogues, diastereoselection in — with maleic anhydride and 4-phenyl-4*H*-1,2,4-triazole-3,5-dione, 13427
- cycloadditions to 6-vinylpurines, 1777
- (Z, E)-cyclodeca-1,5-diene derivs, model systems for melampolides, 11425
- cycloocta-1,5-diene, *ab initio* study of sequential pericyclic reactions with 2-pyrone, 12415
- 1,3-diazabutadienes, [4+2] and [2+2] cycloadditions with ketenes, formation of azetidinones and dihydropyrimidinones, 14107
- dibenzo-7-silabicyclo[2.2.1]hepta-2,5-dienes,chargetransfer complex formation and photo-induced electron-transfer reaction of, 1265
- 1,5-dimethylhexa-2,4-diene, addition of nitric oxide to, synth of (*E*)-2,5-dimethyl-2,5-dinitrohex-3-ene, 17221
- 1,6-disubstituted 1,5-dienes with an aldol substitution pattern, thermal Cope rearrangements of, 133
- (4,6-heptadien-3-one)- and (methyl 3,5-hexadienoate)Fe(CO)₃, alkylation of, model studies for prep of protomycinolide IV, 4185
- herboxidiene herbicide, determination of absolute configuration by degradation and synthetic studies, 2785
- norbornadiene, reaction with dimethyl (trifluoromethanesulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), synth of sulfur derivs of nortricyclane, 8173
- pentacyclo[8.2.1.1^{2.5}.1^{4.7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv, hyperstable pyramidalized dienes, reactivity, 9727
- 1-(1,2-propadienyl)cyclopropanols, transformation into substituted hydroquinones using octa-carbonyldicobalt: synth of vitamin E and K analogues, 11069
- silyloxydienes, addition to 2-substituted

- 1,4-benzoquinones and 1,4-naphthoquinones, 7715 tetracyclo[7.3.1.0^{2.8}.0^{4,12}]trideca-5,10-diene, synth and degenerate Cope rearrangement, 9903
- tributylstannylalkenyl carbohydrate derivs, conversion into sugar-derived —, Diels-Alder reactions, 10775
- tricyclic dienes, cycloadditions to MTAB, PTAD and N-methylmaleimide, 14895

Dienones

- amino-cyclohexadienone, cyclisation of, synth of perhydropyrrolo[1,2-a]indole, 8871
- cyclohexadienones from oxidation of substituted phenols with phenyliodonium diacetate, annulation with the anion of 3-cyanophthalide affords anthraquinones, 4387
- 6,7-diazaphencyclone, synth and cycloadditions, synth of rigid molecular racks with end 1,10phenanthroline units, 3991
- (-)-periplanones C and D, germacrene-related cockroach pheromones, synth and activity in *Periplaneta* spp., 7209

Dienynes

stereoselective synth of $1\alpha,24(R)$ -dihydroxy-vitamin D_3 by the dienyne route, 4703

Dihydroxylation

see Hydroxylation

Dimerisation

electrohydro— of *trans*-cinnamaldehyde, synth of (±)-c-4-phenyl-t-, (±)-t-4-phenyl-c-, (±)-t-4-phenyl-t- and (±)-c-4-phenyl-c- -5-[(E)-styryl]tetra-hydrofuran-r-ol, 5831

precocene II, acylation and -, 16177

Dimers

disodium 1,8-disulfonato-3,4,5,6-acridinetetracarboxylic acid, formation of a dimer in water that encloses a hydrophobic cavity, 10523

Diols

- acyclic diols by reaction of cyclic enol ethers with titanium(III) tetrahydroborate, 2973
- (1S,2S)-2-amino-1-phenyl-1,3-propanediol, Mitsunobu thioesterification with thioacids, regioand stereochemistry, 10615
- aminodiols from addition of phenylmagnesium bromide to 2,3-di-O-benzyl-D-glyceraldehyde and 2,3-di-O-isopropylidene-D-glyceraldehyde, subsequent transformation to enantiomers of phenylglycine, 1411
- asymmetric desymmetrization of 2,2',6,6'-tetrahydroxybiphenyl using *l*-menthone, synth of resolved 2,2'-biaryldiols, 16663
- (1,1'-bi(dibenzofuranyl)-2,2'-diol (BIFOL), resolution and sulfonation reactions of, 5899

- bromocyclohexadiene *cis*-diol obtained by microbial oxidation of bromobenzene with *P. putida*, transformation into 5-deoxy-5-fluoro-*myo*-inositol and 3-deoxy-3-fluoro-L-*chiro*-inositol, 8807
- cycloalkenediol, reaction with methoxyhydroquinone, 2,6-, 2,5- and 2,3-dialkoxyhydroquinone, synth of cycloalkenobenzofurans and monoalkoxybenzofurans, 9789
- cis-cyclohex-4-ene-1,2-dimethanol, stereochemistry of epoxidation and of mono- and di-O-protected compds, Li amide/KOBu-t elimination forming trans-5-hydroxycyclohex-3-ene-cis-dimethanol, 17527
- 2-cyclopenten-1,4-diol derivs, synth from furfuryl alcohol, 1983
- (S,S)-1,2-dicyclopentylethane-1,2-diol, synth and appplication to asymmetric allylboration, 17395
- meso-diols by diastereoselective reduction of acyclic hydroxyketones and diketones with an indium hydride reagent, 15685
- α-diols and hemiketals by addition of water or alcohol to 3-halopyruvamides, 13739
- 3,4-epoxy- and 3,4-epimino-alcohols, regioselective nucleophilic ring-opening, formation of 1,3- vs 1,4- and amino-alcohols, 16139
- fluvistatin analogues, asymmetric synth of (*E*)-3,5-dihydroxyhept-6-enoates and (*E*)-3-hydroxypent-4-enoates, 10659
- pinacol rearrangements and other reactions of 1,1,2-triphenyl-1,2-ethanediol, brought about by aminium salts and protic acids, solvent effects and mechanisms, 10817
- see also Glycerol, Shikimic acid and analogs Diones
- *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, synth by condensation of α -oxoketene *O*,*N*-acetals and maleic anhydride, 17643
- 5-amino and 5-glycosylaminopyrrolo[3,4-c]-pyridin-1,3(2H)dione derivs and 7-amino and 7-glycosylaminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-amino and 2-glycosylaminopyridines, 8225
- bicyclo[5.3.1]undecane-8,11-dione; conformational analysis, enantiomer separation, CD-spectroscopy and enolisation, 5339
- 2-(2-cyanoethyl)sulfanyl-1*H*-isoindole-1,3-(2*H*)-dione and 4-[(2-cyanoethyl)sulfanyl]morpholine-3,5-dione, synth from 2-cyanoethyl disulfide derived from *S*-(2-cyanoethyl)isothiouronium chloride, 14411 dialkynyl-α-diketones, synth and reactions, 14655 6-*N*-formylamino-12,13-dihydro-1,11-dihydroxy-13

-(β-D-glucopyranosyl)-5*H*-indolo[2,3-*a*]-pyrrolo-

- [3,4-c]carbazole-5,7(6H)-dione (NB-506), anti-cancer agent, synth, 585
- tetracyclo[6.3.0.0^{2.6}.0^{3.10}]undecane and tetracyclo-[6.4.0.0^{2.6}.0^{3.10}]dodecane-5,9-dione derivs, synth by chromium trioxide oxidation of alcohols, 14991
- 5,6,7,8-tetrahydro-2*H*-1-benzopyran-2,5-diones, reactions with hydrazines, synth of 5-hydrazono-2*H*-1-benzopyran-2-ones, 1383
- thianinhydrin (5,5-dihydroxy-5,6-dihydrocyclopenta-[b]thiophen-4,6-dione), synth from 3-methylthiophene, 4239
- $\alpha'\beta'$ -unsaturated 1,3-diketones and enaminones, synth, 2585

Dioxanes

- 5-amino-4-(4-nitrophenyl)-1,3-dioxan, sythesis and stereochemistry of Schiff bases, 1909
- chiral spiro-1,3-dioxanes, synth and stereochemistry, 6215
- 2,2-dimethyl-5-phenyl-1,3-dioxane-4,6-dione (3-phenyl-Meldrum's acid), Pd-catalysed addition of 2-methylbut-1-en-3-yne, 9097
- 1,3-dioxane-nitriles, tandem radical nitrile transfer-cyclisation of, synth of spirocyclic systems, 16489

Dioxiranes

- dimethyl—, concentration by solvent extraction from aqueous acetone solution and removal of acetone by phosphate buffer washing, *cis*-stilbene epoxidation kinetics, 8643
- dimethyldioxirane for oxyfunctionalisation of activated methylenes; conversion of isochromans into isocoumarins, 9755
- dimethyldioxirane, reaction with aromatic amines and anilines, synth of amine N-oxides, 15877
- dimethyldioxirane as reagent for tertiary hydroxylation of a series of methyl ester peracetate (5β)-bile acid derivs, effect of a 7-acetyloxy substituent, 435 reactions of dimethyl with flavonoids, epoxides and further products, 8491

Dioxolanes

- (S)- and (R)-3-(2,2-dimethyl-1,3-dioxolan-4-yl)-cis-2-propenoate, addition of lithium salt of cyanohydrin in synth of (+)-fargesin and (—)-picropodophyllone, 9585
- 1,3-dioxolanes, sonochemical hydrolysis of, 14255 free-radical cyclo-polymerisation of tartrate-derived dioxolane-dimethacrylates, high isotacticity, CD spectra, 15469

Disulfides

artificial proteins comprising helices with different amino acid sequences, synth by assembling a α-helical peptide unit *via* selective disulfide

cross-linking, 7479

1,2,5-dithiazocan-6-ones, synth, conformation by NMR. 16859

Dithianes

2-crotyl-1,3-dithiane 1-oxides, cycloaddition of nitrile oxides, regioselectivity, stereoselectivity, 1061

cycloaddition of mesitonitrile oxide to 2-(αβ-unsaturated acyl)-1,3-dithiane 1-oxides, reversal of stereoselectivity in presence of Lewis acids, 7365 diazo transfer from tosyl azide to 2-(tri-

methylsilyl)-1,3-dithiane, carbenoid reactivity of 2-diazo-1,3-dithiane, 9269

1,3-dithiane 1-oxide (DiTOX) as chiral auxiliary for enantioselective synth of α-methyl carboxylic acids, 13149

trans-1,3-dithiane-1,3-dioxide, a chiral acyl anion equivalent, reaction with aromatic aldehydes to produce α-hydroxythioesters, 16213

substituted dithianes by reduction of ketene dithioacetals, 17151, 17163

Dithiazocines

1,2,5-dithiazocan-6-ones, synth, conformation by NMR, 16859

Dithioacetals

see Thioacetals

Dithiolanes

2-alkylidene-1,3-dithiolanes by direct conversion of strained double bonds: cycloaddition of Buⁿ₃P.CS₂, 2261

bis- and tris-1,3-dithiolanes and dithiolane-containing esters, synth by cycloaddition of Bu₃P.CS₂ with norbornene, norbornadiene, norbornadiene ester and aromatic di- and trialdehydes, 10441

2-methyl-2-t-butyl-1,3-dithiolane and corresponding oxathiolane, deprotection by photosensitisation using catalytic aromatic nitriles, role of SET, 2219

Dithiols

synth of biphenyl- and 1,1'-binaphthyl-2,2'-dithiols by Newman-Kwart rearrangements, 6073

Diynes

caliheamicin $\gamma 1^{\rm I}$ and esperamicin A_1 , synth of methyl α - and β -glycosides corresponding to the amino sugar component of the E-ring, synth from methyl 2-deoxy- α - and β -D-ribopyranoside, 14369

cycloalkadiynes, 10-, 11-, 13-, 14- and 16-membered, synth, 3111

cyclodecenediyne conjugates of dibenz[e,g]indole, DNA intercalative delivery template, 14599

dynemycin analogs lacking ring N atom, cross-coupling approach to synth, 9159

lactendiynes, 10-membered enediynes fused to β -lactam ring, synth and reactivity, 3249

polymers by thermolysis of enediynes and

o-dialkynyl aromatics, Bergman cycloaromatisation, 15515

Drugs

Aminoglutethimide, synth of (R) and S) forms by resolution of 4-cyano-4-(4-nitrophenyl)hexanoic acid, 7917

Capsazepine, use of lithiated β-aminoalkyl sulfones in synth, 4791

(+)-diltiazem, formal synth using 2-aminothiophenol addition to chiral αβ-unsaturated 3-acyloxazolidinones, 2421

fluoxetine, tomoxetine and nisoxetine; serotonin and norepinephrine uptake inhibitors, asymmetric synth from a haloester, 6739

Sanfetrinem, synth of precursor by microbial reduction of 2-benzylidenecyclohexanone, 2617

verapamil, drug to lower blood pressure, baker's yeast-mediated approach to verapamil's optically active intermediates, 10555

see also Alkaloids, Biologically active compds, Cannabinoids

Dyes

benzoylperylenedicarboximides, fluorescent dyes, synth from bromonaphthylimide and bromobenzanthrone, optical and electronic properties, 6847

methylene blue analogues, synth from 3,7dibromophenothiazinium bromide by substitution reactions, 10083

6-methylene-3,7-dihydro-6*H*-purine cyanine — containing other heterocyclic rings, fluorescent stains for parasites and DNA markers, synth, UV/vis spectra, structure, applications, 12595, 12605

1,3-selenazoles, synth from isoselenocyanates and isocyanides, 13667

Eicosanoids

heneicosane-1,21-sodium disulfate from the Mediterranean tunicate *Ascidia mentula*, structure, 5877

see also Leukotrienes, Prostacyclins, Prostaglandins, Prostanoids

Electrochemical reactions

anodic oxidation of methylnaphthalenes and 9-methylanthracene, formation of quinone acetals, 8613

catalytic electrogenerated zinc, allylation of carbonyl compounds and unusual regioselectivity of a trifluoro-prenyl bromide, 6027

electrochemical methodology for the protection of o-hydroxy-p-benzoquinones, 469

electrohydrodimerisation of trans-cinnamaldehyde,

- synth of (\pm) -c-4-phenyl-t-, (\pm) -t-4-phenyl-c-, (\pm) -t-4-phenyl-t- and (\pm) -c-4-phenyl-c- -5-[(E)-styryl]tetrahydrofuran-r-ol, 5831
- electroreduction of an organic halide-metal carbonyl mixture using a Ni-bpy catalytic system, synth of ketones, 17089
- electroreductive coupling of organic halides in alcoholic solvents catalysed by nickel-2,2' bipyridine complexes, synth of biaryls, 11569
- role of Al³⁺ cation in detosylation of N,N'bis-(o-tosylaminophenyl)malondiamide, 16721
- uracil-5- and 6-acetic acids, and 5,6-dihydrouracil-1-acetic acids, anodic decarboxylative oxidation, formation of acetoxymethyl and trideuteriomethyl derivs, 2609

Electrochemical synthesis

coupling of polyhalo compds with aldehydes and ketones, direct electroreduction and use of electroregenerated base, 1721

Electrochemistry

- bistetraphenylphosphonium decacyanooctatetraenediide, cyclic voltammetry 15593
- 1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, dissociation in polar solvents, PMR, cyclic voltammetry, UV/vis/near IR spectra, 9965
- 4,5-diazafluoren-9-one, synth, electronic, electrochemical and spectroscopic properties of derived imine and diimine ligands, 12377
- electrochemical properties of alkoxylated p-phenylenevinylene oligomers, 13811
- electrochemical trifluoromethylation of acrylonitrile and crotonitrile, prep of 2,3-bis(2,2,2-trifluoroethyl)succinonitrile and 3,4-dicyano-2,5-bis-(trifluoromethyl)-n-hexane, 4437
- oxidation of cyclic ketones in methanol in an undivided cell in the presence of sodium halides, effect of ring size, mediator and supporting electrolyte, 4427
- reduction potentials of benzoylperylenedicarboximides, 6847

Electrocyclic reactions

10,10a-dihydropyrido[1,2-a]azepines, formation by [1,7] — of 1-(penta-2,4-dien-1-yl)pyridinium 1-ylids, 14687

see also Cyclization, Photochemistry

Electron spin resonance

- adenosylcobalamin-dependent ribonucleotide reductase inactivation by 2'-ara-2'-azido-2'-deoxyadenosine triphosphate, detection of paramagnetic intermediates, 12005
- decacyanooctatetraene radical monocation, 15593 donor-acceptor olefin polymerisation, spin-

trapping/ESR study, 15297

EPR technique to detect free radical intermediate in Schiff base reduction by formic acid, 6907

ESR study of Reformatsky reagent addition to 1,1-dicyanoalkenes, 2899

- photolysis of cyclopentyl nitrites, formation and ESR of δ-valerolactam N-oxyl radicals, 3205
- study of radical intermediates from cycloalkyl nitrite esters, 6401
- thianthrenium radical cation studied by in acid zeolites, 4947

Electron transfer

- CIDNP study of rigid vinylcyclopropane radical cations from sabinene, α and β -thujene, from irradiated chloranil, 10051
- 1,4-dicyanobenzene and 2,3-dimethyl-2-butene, SET photoreaction in presence of nucleophiles, 2573
- energy and electron transfer properties of methyl pheophorbide-a in zinc porphyrin-pheophorbide dyads, 13657
- intramolecular of N-alkylcyclopropyl phthalimides, synth of spiro lactams, 3475
- intramolecular electron transfer induced photochemical reactions of mercapto/amino substituted alkyl phenylglyoxylates, 2751
- photo-induced electron-transfer reaction of dibenzo-7-silabicyclo[2.2.1]hepta-2,5-dienes, 1265 photoinduced — of benzyl phenyl sulfides promoted by 9,10-dicyanoanthracene, 4469
- photoinduced electron transfer (PET) for functionalisation of [60]fullerene, synth of 1-substituted 1,2-dihydro[6]fullerenes, 3587
- SET in deprotection of 2-methyl-2-t-butyl-1,3dithiolane and corresponding oxathiolane by photosensitisation using catalytic aromatic nitriles, 2219

Electronic effects

- benzylation of ketone enolates under PTC conditions, effect of π - π interaction between substrate and reactant, 11437
- on [4+3] cycloaddition of 2-functionalised furans with oxyallyl cations, 11669
- electronic properties of 2,5-distyryl-heteroarylenes and 1,4-bis[2-(hetero-aryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, 15069

Electronic spectra

- absorbance, 5,10-dihydro-5,10-dimethyl-2,5,10-triazadibenzo[a,e]pentalene and 5,10-dihydro-2,5,10-trimethyl-2,5,10-triazadibenzo[a,e]-pentalenium iodide, 479
- absorption, benzoylperyleneimides and perylene-3,4:9,10-tetracarboxdiimides, 6847

absorption, diarylperfluorocyclopentenes having thiophene oligomers as the aryl groups, 12263

absorption, 3,3'-(1,8-naphthylene)bispyridine, 4,4'-(1,8-naphthylene)bispyridine, 3-(1-naphthyl)-pyridine and 2-methyl-4-(1-naphthyl)pyridine, 3557 absorption, photodecomposition of optically pure pyrazolines to cyclopropanes, 3777

absorption spectra of zinc porphyrin-pheophorbide dyads, 13657

absorption, thieno[3,2-c] anellated and dithieno[3,2-c:2,3-e]anellated 1,2-dithiins, 7509

2-boronylphenylmethyl groups attached to binol system, a rigid saccharide acceptor, association constants, UV, CD, fluorescence effects, 8335

1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, UV/vis/near IR spectra, 9965

chlorophyll-a homologues, UV/vis, fluorescence and CD spectra, 10677

chromogenic pyridinium derivs of calix[4]arenes, solvato- and halo-chromism, 16867

4,5-diazafluoren-9-one, spectroscopic properties of derived imine and diimine ligands, 12377

diffuse reflectance — of thianthrenium radical cation in acid zeolite, 4947

1,2-dithienylethynes, other bis(five-membered heterocyclyl) ethynes, synth, electronic structure, PE spectra, 13339

PE - of monocyclic olefins, 14713

poly(dialkoxy-p-phenylene-vinylene-2,5-pyridinylene-vinylene) and related systems, synth by Heck coupling, UV, protonation and quaternisation, solid-phase organisation, 15487

UV, 3-buten-2-one, 3-pentanone, 2-butanone and 2-propanone, 3757

UV, alkoxylated *p*-phenylenevinylene oligomers, 13811

UV, streptonigrin derivatives, 15101

UV, substituted indolizines derived from 2-cyano-3-(2-pyridyl)methylacrylates, 81

UV-vis, amine oxidation of 3-methyl-5-ethyllumiflavinium perchlorate, 5027

UV-vis, free and complexed oxime- and Schiff base-containing aza- and diazacrown ethers, 17595 UV/vis, homo- and heteroorganometallic tripodaphyrins, 6835

UV/Vis, sterically constrained phenyleneethynylenes and dioxapropylphenylethynylene oligomers, 11881, 11899

Elimination reactions

base-induced β-elimination of chloroform from allylic and benzylic trichloromethyl sulfoxides, synth of thioaldehyde and thioketone S-oxides, 13933

criticism of explanations of Saytzev rule based on electromeric effects, unified rule of elimination proposed, 7947

DNA polymerase β, catalyst of β-elimination in β-phosphoryloxy-deoxyribose, mechanism, 12057 lithiation and fluoride ion-induced elimination-addition reaction of 1-(triisopropylsilyl)gramine derivs, synth of clavicipitic acids, 51

of the selenoxide derived from gem-difluorocyclopropylmethanols, synth of methylene-gem-difluorocyclopropanes, 9497

tandem cyclopropyliminium ion rearrangement-Hofmann elimination affording 3-vinyl D²pyrrolines and subsequent onter- and intramolecular [4+2]cycloaddition reactions, 8941

Enamides

N-acetyl enamines, nitration by acetyl nitrate, formation of nitro-enamides and fused 1,2,5-oxadiazoles, 16161

manganese(III)-promoted free radical cyclisation leading to β-lactams, 13129

Enamines

addition of Grignard reagents to cyclic enaminones, cyclohexenone synth, 1547

β-alkoxycarbonyl-β-enaminoketoesters, reaction with hydrazines, hydroxylamine and amidines respectively, synth of pyrazole, isoxazole and pyrimidine *ortho*-dicarboxylic acid derivs, 14497

β-(benzofur-2-yl)- and -(indol-2-yl)enamines, reaction with benzoquinone leads to formation of 3-heteroarylbenzofurans, 177

N,N-dimethylcarbamoylenaminones by acylation of enaminone lithium dianions with N,N-dimethylcarbamoyl chloride, 6893

β-enamino-sulfoxides (β-arenesulfinyl —; β-iminosulfoxides), diastereoselective reduction by 1-benzylDABCO borohydride to the corresponding β-amino-sulfoxides, 16883

enaminones, aza-annulation with α,β -unsaturated acid chlorides bearing hydrogen atoms on the γ -carbon, reversal of regiochemistry when triethylamine is used as mediator, 11827

phosphonate enamines and β-phosphine oxide as starting materials for synth of 3-phosphorylated 4-aminoquinolines, 2931

photocyclization of β -aminoketones, formation of 2-aminocyclopropanols and oxidative ring-opening to enaminones, 7855

 $\alpha'\beta'$ -unsaturated 1,3-diketones and enaminones, synth, 2585

see also Enamides, Enamino esters

Enamino esters

α-arylaminoalkylidene esters and lactams, photocyclization to 3,3-disubstituted (spiro) indolines, 16083

Enantioselection

cis and trans 2-aminocyclopentanecarboxylic acid enantiomers, synth, 7975

2-amino-1-phenylpropane-1,3-diol, application as chiral auxiliary to synth of styrylazetidinones, 7985 arene-Mn(CO)₃ complexes, nucleophile additions promoted by chiral auxiliary, 3849

asymmetric Diels-Alder reactions catalysed by bis(oxazoline)-magnesium perchlorate, 7671

asymmetric hydroformylation of conjugated dienes using chiral phosphine-phosphite-Rh(I) catalyst, 7795

Baker's yeast reduction of β -ketoesters in organic solvents and water, 935

catalytic Baylis-Hillman reactions with methyl vinyl ketone, effect of pressure, 1015

chiral bidentate Li amides for enantioselective deprotonation, NMR study and solvent dependence, 7191

cycloaddition of mesitonitrile oxide to 2-(αβunsaturated acyl)-1,3-dithiane 1-oxides, reversal of stereoselectivity in presence of Lewis acids, 7365 cyclopropanation of styrenes using chiral Co(III)-salen as catalyst, 7201

deprotonation of prochiral 4-substituted cyclohexanones by chiral chelated lithium amides, 5963

enantioselective alkylation of benzaldehyde with diethylzinc catalysed by chiral titanate complexes with helical ligands, 4145

enantioselectivity of the conjugate addition of silylketene acetals to 2-carboxycyclopentenones promoted by TADDOL.TiCl₂ complexes, 13009

epoxidation catalysed by D₄-symmetric metalloporphyrins, 11257, 11277

group-selective aldolization of a meso-dialdehyde in synth of denticulatins, 9169

 β -isopropyl phenylalanines (β -phenyl isoleucines), synth of all diastereoisomers, 16645

lipase-catalysed ester hydrolysis, interpretation of kinetic results in terms of frontier orbital localisation, 4889

methyl (R)-6-[2-(triphenylmethylthio)-1hydroxyethyl]pyridine-2-carboxylate (Ro 25-8210), synth by oxazaborolidine-catalysed keto group reduction, 12405

3-pyridyl p-tolyl sulfoxide, dihydro(pyridine) and 2-methyl analogues, and deuteriated derivs,

reduction of ketones using, 3073

ring-opening of an oxirane and oxetane by organo-Li controlled by external chiral ligand, 10699

synthesis of nonracemic phosphonates (report), 16609 C-(2-thiazolyl) nitrones, cycloaddition to chiral acrylates, synth of 2-(α-aminoalkyl)thiazoles and 5-formylpyrrolidin-2-ones, 3301

see also Asymmetric induction, etc.

Ene reactions

ene-like reaction of aldehydes with vinyl ethers displaying the oxygen functionality at the central carbon of an allylic system, key reaction in synth of chlorovulone II—mitomycinoids and phyllanthocin, 16299

maleimides with allyl aromatics, potential cross-linking reaction in polymerisation, 13473

Enediynes

see Diynes

Enol ethers

addition of 1-, 2- and 3-phosphonyl-substituted radicals derived from corresponding iodoalkane-phosphonates, 7291

cyclic enol ethers, reaction with titanium(III) tetrahydroborate, synth of the corresponding acyclic diols, 2973

enol ethers and nitroalkenes, high-pressure promoted tandem [4+2]/[3+2] cycloaddition of, 11929

(Z)- and (E)-2-ethoxyvinyllithiums and diethoxyvinyllithiums, formation, comparison of stabilities, reactivity, 1735

silyl — incorporated into vinyl polymers, reactivity with electrophiles, 15429

Enolates

ambiphilic allenyl enolates: report, synth and reactivity, 10197

benzylation of ketone — under PTC conditions, effect of π - π interaction between substrate and reactant, 11437

derived from β -phenylselanyl silyl enol ethers, allylation and benzylation of, synth of α -phenylselanyl γ -unsaturated ketones, 6365

enantioselective deprotonation of prochiral 4-substituted cyclohexanones by chiral chelated lithium amides, 5963

titanium enolates derived from β-hydroxy ketones, condensation with phosgene iminium chloride or trimethylorthoformate, synth of 5,6-dihydro-4*H*-p yran-4-ones, 11211

Enols and derivs

N-t-butoxycarbonylphenylalanyl enol family of HIV-1 protease inhibitors, NMR and molecular modelling characterisation, 4231

enol borinates, aldol-type addition to imines, ab initio MO study, 7705

oxazolidinone enoates, Lewis acid promoted Michael addition of 2-(trimethylsilyloxy)furans to — in the presence of hexafluoroisopropanol, synth of 4-substituted butenolides, 17015

(Z)-2-triflyloxymethylenecyclopentanone, isolation and keto-enyne formation by Sonogashira reaction, 9107

see also Enol ethers, Enolates

Enones

addition of Grignard reagents to cyclic enaminones, cyclohexenone synth, 1547

alkynyl enones, organozinc/Ni(COD)₂-mediated cyclisation of, synth of a series of monocyclic and bicyclic heterocycles with exocyclic alkenes, 16449 bicyclo[10.2.1]pentadec-13-en-3-ones, formation by free-radical macrocyclization, 14807

¹⁴·C labelled enones, synth of carbon labelled cholesterol absorption inhibitor CP-148,623, 11007 carbohydrate —, addition of organolithium reagents, 6035

catalytic Baylis-Hillman reactions with methyl vinyl ketone, effect of pressure, 1015

chiral Pauson-Khand reactions with acetylenic thioethers, synth of alkylthio-cyclopentenones, 8651 copper catalysed conjugate addition of *n*-butyl Grignard reagents to — in the presence of chiral ferrocenyl phosphine oxazoline ligands, 16503

cyclohex-3-en-1-one chiral acetals, amination via aziridines using ethyl N-nitrobenzenesulfonyloxy-carbamate, 4779

cyclopentenone synth by modified Borchardt method, 7077

2,3-dihydro-4*H*-pyran-4-ones (hex-1-en-3-uloses), reactions with C-nucleophiles, approach to thromboxane analogues, 7867

 α,β-disubstituted cyclopentenones via zirconacyclopentenes from alkynes, EtMgBr and CO, synth of arene-bis(cyclopentenones), 9123

enone-alkene 2+2 photocycloadditions, experimental results and FMO analysis of substituent effects on regiochemistry of, 3545

Li homoenolates, formation by Li reduction of — and $\alpha\beta$ -unsaturated esters, synth of 2-hydroxytetra-hydrofurans and butanolides, 2641

ketalised α - and β -lithiated $\alpha\beta$ -unsaturated ketones, new masked acylvinyl anion equivalents, 4921

malyngamides J, K and L, novel cyclohexenone metabolites from *Lyngbya majuscula*, cyanobacterium, 15983

tetracyclone analogues, formation of dendritic and

hyper-branched polyphenylenes by Diels-Alder route, 15349

β-thioketones, solid-phase combinatorial synth from -, 6595

 $\alpha'\beta'$ -unsaturated 1,3-diketones and enaminones, synth, 2585

see also Chalcones, Cycloalkenones

Enynes

alken-1-yn-3-ols, Ru-catalysed hydration/ esterification forming 2-oxoalken-3-yl esters, 9241 1,4-diarylbut-3-en-1-ynes, synth *via* 5-styrylsulfonyl-1,2,3-selenadiazoles, 17351

prelaureatin conversion into laurallene by enzymatic and chemical bromo-etherification, 8371

ruthenium-catalysed enyne metathesis in stereoselective prep of cyclic 1-amino-1-carboxylic acids, 10603

scanlonenyne, halogenated C₁₅ acetogenin from the red alga *Laurencia obtusa*, structure, 4271

synth of allenes by Pd-catalysed addition of C pronucleophiles to conjugated —, 9097

tandem 5-exo-trig, 6-endo-dig radical cyclization, stereoselectivity, α-trimethylsilyl effect, reaction scope, 8401

tandem radical cyclizations of — glycosides forming glycoconjugates with fused cyclohexene rings, 8383 (Z)-2-triflyloxymethylenecyclopentanone, isolation and keto-enyne formation by Sonogashira reaction, 9107

Enzymes and enzyme reactions

Candida antarctica lipase B (Novozym 435) as catalyst for regioselective acylation of 20R-hydroxyecdysone, 5855

Candida antarctica lipase for enzymatic amidification of secondary amines with oleic acid, synth of glycamide surfactants, 5185

Candida cylindracea lipase for kinetic resolution of (±)-4-acetoxy[2.2]paracyclophane, prep of (+)-R-4-hydroxy- and (+)-S-4-acetoxy[2.2]paracyclophane, 11853

Candida cylindracea lipase and porcine pancreatic lipase for deacetylation of peracetates of methyl and ethyl esters of polyphenolic acids, 2163

chemoenzymatic synth of rengyoside A, B, and isorengyoside, 4693

clavaminic acid synthase of the iron(II) αketoglutarate-dependent dioxygenase family, as catalyst for synth of bicyclic γ-lactams from proclavaminic acid, 7011

DNA aptamer targets translating editing motif in a t-RNA synthetase, 11985

DNA methyltransferase, binding enhancement by

selective base-pair destabilisation, 12041

DNA polymerase β , catalyst of β -elimination in β -phosphoryloxy-deoxyribose, mechanism, 12057 enzymatic synth of natural and designed sialyl oligosaccharides using congeners of CMP-NeuAc, 11109

epoxide hydrolases as asymmetric catalysts, 15617 glucosidases on solid support, formation of 4-hydroxybutyl α - and β -glucosides in dry media, 17247

β-glucuronidase, fluorescent probe for enzymic activity site, 6-chloro-2-(5-chloro-2-hydroxy-phenyl)quinazolin-4(3*H*)-one *O*-glucuronide, 7159 glutathione *S*-transferase, model for the monodealkylation of parathion by, 17241

L-α-glycerophosphate oxidase/catalase co-immobilised system, application to dihydroxyacetone phosphate synth, 14645

(S)-hydroxynitrile lyase cloned from *Hevea* brasiliensis for chemoenzymatic synth of (S)-13-hydroxyoctadeca-(9Z,11E)-dienoic acid from (E)-2-octenal, 617

4-hydroxyphenylpyruvate dioxygenase, stereochemistry of enzymic conversion of α-ketoisocaprate to β-hydroxyisovalerate, 10827

α-ketoisocaproate dioxygenase [α-KICD] from rat liver, isolation and purification, sequence determination shows hom, ology to rat liver 4-hydroxyphenylpyruvate dioxygenase [4-HPPD], 6993

kynureninase, pyridoxal 5'-phosphate dependent enzyme which catalyses β , γ -cleavage of kynurenine, synth of 2S-[2- 2 H]-kynurenine and use in kinetic isotope effect studies, 15761

lipase AP6-catalysed kinetic resolution of α -acyloxyphosphonates, 4627

lipase B of Candida antarctica as catalyst for aminolysis of Block-L-Glu(OEt)-OEt, effect of the blocking group, 11745

lipase from Candida antarctica (Novozym[®] 435) as catalyst for kinetic resolution of racemic 2-hydroxymethyl-1-phenylthioferrocene and 2-hydroxymethyl-1-t-butylthioferrocene, 1361

lipase from *Rhizomucor miehei* and *Candida* antarctica as catalyst for acylation of amino sugar derivs, synth of surfactants, 7587, 7629

lipase-catalysed enantioselective ester hydrolysis, interpretation of kinetic results in terms of frontier orbital localisation, 4889

lypoxygenase for enzymatic approach to furylhydroperoxides, 17139

Mucor miehei lipase as catalyst for hydrolysis of 1,3-bis[3,5-bis(ethoxycarbonyl)-1H-pyrazol-1-yl]-

propane, 2907

Mucor miehei lipase, in synth of diester crowns containing 1,1'-trimethylenebis(pyrazole-3,5-dicarbonyloxy-) units, 11481

nitrogenase Fe-Mo cofactor binding site, changes in protein conformation associated with cofactor binding, 11971

P. putida for microbial oxidation of bromobenzene to produce bromocyclohexadiene cis-diol, transformation into 5-deoxy-5-fluoro-myo-inositol and 3-deoxy-3-fluoro-L-chiro-inositol, 8807

peroxidases, oxidations catalysed by (Report), 13183 phospholipase D, use in chemoenzymatic synth of phospholipids containing acetylenic fatty acids, 14627

protein kinase C, minimal structural requirements for diglyceride-site directed activators, 10041

Pseudomonas fluorescens lipase, resolution of 2,5-dihydrothiophene-2-methanol, 6019

RNAase active site, synth of model system on a steroid template, 8421

selenosubtilisin, artificial selenoenzyme derived from subtilisin, contribution of the oxyanion hole to the peroxidase activity, 12311

sialic acid aldolase and other enzymic conversions in synth of N-glycolylneuraminic acid, 2387

subtilisin Carlsberg, synth of α-hydroxyglycine peptides in optically pure form by enzymic resolution, 7267

trypanothione reductase, synth of polyamineaminoacid conjugates on solid phase, 17317

L-tryptophan 2',3'-oxidase from *Chromobacterium* violaceum, application to synth of methyl N-acetyl-(Z)-α,β-didehydrotryptophan-(L-phenylal aninate, 16107

Zn-containing enzymes, polyaza-paracyclophane models, role of a non-coordinated N atom in metal proximity, 4751

Enzyme inhibitors

(—)-panclicin D, pancreatic lipase inhibitor, synth using tandem Mukaiyama aldol-lactonisation employing thiopyridylsilylketene acetals and various aldehydes, 16471

adenosylcobalamin-dependent ribonucleotide reductase inactivation by 2'-ara-2'-azido-2'-deoxyadenosine triphosphate, paramagnetic intermediates, 12005

4-amino-5-hydroxy-4,5-dihydrofuran-2-one hydrochloride as potential inhibitor of pyridoxal-5'-phosphate-dependent4-aminobutyrate: 2-oxoglutarate aminotransferase, 15807

1-aza-2-deoxy-L-carbafucose (2-C-methyl-1,2,5-

- trideoxy-1,5-imino-L-ribitol), inhibitor of α-fucosidase, synth from L-arabinose, 697
- balanol, protein kinase C -, synth of azepane moiety, 4857
- 2-benzyl-N-t-butoxycarbonyl-1,5-imino-1,2,5-trideoxy-D-xylitol and 5-amino-4-benzyl-4,5-dideoxy-L-xylose as potential glycosidase inhibitors, 6917
- bestatin related aminopeptidase inhibitors by rearrangement of 2,3-epoxy amines and nucleophilic trapping of aziridinium ion intermediates with α-amino esters, 15729
- 4,4-bis(trifluoromethyl)imidazoline—based acyl-CoA cholesterol acyltransferase—, asymmetric synth and absolute stereochemistry, 5359
- N-t-butoxycarbonylphenylalanyl enol family as HIV-1 protease inhibitors, NMR and molecular modelling characterisation, 4231
- 6C-butylglucoses, inhibitors of phosphogluconutase, synth from D-glucuronolactone employing reduction of protected lactols, 15135, 15147
- 1-carboxylic ester and -ketone analogues of 1-deoxynojirimycin and castanospermine, synth from 1-amino-1-deoxy-D-glucitol, 12739
- cholecystokinin-B —, synth of 3-ureido-1,5-benzo-diazepine-2,4-diones, 7347
- cinatrin C_1 and C_3 , inhibitors of phospholipase A_2 , synth by aldol reaction of di-t-butyl ester of (R,R)-tartaric acid, 8779
- circinamide, a papain inhibitor from cyanobacterium Anabaena circinalis Rabenhorst (NIES-41), structure and activity, 5747
- bis-(3→5)-cyclic bis(1,4-anhydro-2-deoxy-Derythro-pentitol-3-phosphate), bis-abasic cyclic dinucleotide inhibitor of HIV-1 integrase, synth from 2-deoxy-D-ribose, 11033
- DAB-1 and LAB-1, pyrrolidine type aza sugar glucosidase inhibitors, synth from diethyl tartrate,
- 6-deoxy-allo- and gulo-nojirimycin, 6-deoxy-D,L-talo-nojirimycin, D-fuconojirimycin and 6deoxy-2-D,L-allosamine, synth by hetero-Diels-Alder cycloadditions, 13769, 13783
- 1-deoxy-D-galactostatin derivs, galactosidase—, synth by double reductive amination of L-arabino-hexos-5-uloses, 3407
- derivs of 4-amino-2,3-dihydroisothiazole 1,1-dioxides and 4-amino-1,2-oxathiole 2,2-dioxides as potential inhibitors of HIV-1 reverse transcriptase, 17795
- 1,4-dideoxy-1,4-imino-1-(S)-(substituted phenyl)-D-ribitols with OH, NH₂, NO₂, CO₂H and halogeno moieties as transition state inhibitors for N-riboside

- hydrolases and transferases, 2915
- DNA topoisomerase I—, amphimic acids, long-chain alkylidenecyclopropane fatty acids, isolation, structure, synth, activity, 16699
- Δ^6 , Δ^{12} and Δ^{15} fatty acid desaturases, synth of cyclopropene analogues, potential inhibitors, 1089 [18 F]fluoro aromatic α -methyl-L-amino acids, radiopharmaceuticals for Positron Emission Tomography (PET), inhibitors of enzymatic functions, 5785
- (±)-5-fluoro-4-hydroxy-3-hydroxymethylhexahydro pyridazine and 3-fluoromethyl-4,5-dihydroxy analogue, synth of 1-azafagomine analogues, hydrazino-defluorination reactions, 9357
- 6-N-formylamino-12,13-dihydro-1,11-dihydroxy-13
 -(β-D-glucopyranosyl)-5*H*-indolo[2,3-*a*]-pyrrolo[3,4-*c*]carbazole-5,7(6*H*)-dione (NB-506) as inhibitor of topoisomerase I, 585
- frondosins A-E, sesquiterpene hydroquinone derivs from the sponge *Dysidea frondosa*, inhibitors of interleukin-8 receptors and protein kinase C, 5047 GI147211C, topoisomerase I inhibitor, asymmetric synth utilising Heck, Sharpless asymmetric dihydroxylation and Mitsunobu reactions, 10953
- β-C-glycoside sulfoxides and sulfones, synth as potential inhibitors of glycosyl transferase, 16355 guanosine analogues, 9-[2-(difluorophosphono-
- guanosine analogues, 9-[2-(diffuorophosphonomethyl)cyclopropylmethyl] guanine, synth of enantiomers, inhibition of purine nucleoside phosphorylase by, 11297
- HIV protease —, synth of C₂-symmetric and -pseudo-symmetric 1,4-diamino-2,3-diols, 4769
- HMG-CoA reductase —, fluvistatin analogues, asymmetric synth of (E)-3,5-dihydroxyhept-6-enoates and (E)-3-hydroxypent-4-enoates, 10659
- 3-hydroxy-3-(1,2,4-triazol-3-yl)cyclobutylphosphonic acid, inhibitor of imidazole glycerol phosphate dehydratase, synth from diethyl 3-oxocyclobutylphosphonate by addition of 5-lithio-1-trityl-1,2,4-triazole, 10289
- konbu'acidin A, bromopyrrole alkaloid with cdk4 inhibitory activity from *Hymeniacidon* sponge, structure and enzyme inhibitory activity, 15681
- metallo-β-lactamase —, synth of α-amido trifluoromethyl alcohols and ketones, 7275
- 2-O-methyl-3-isopropylmalate, inhibitor of 3-isopropylmalate dehydrogenase derived from *Thermus thermophilus*, synth of conformationally restricted analogues of, 3537
- 6R-, and 6S, -6C-methylglucose, inhibitor of glucose-6-phosphatase and glucokinase, synth from D-glucuronolactone involving a non-stereoselective

- reduction of an intermediate lactol, 15135, 15147 microginins 299-A and -B, leucine aminopeptidase inhibitors from the cyanobacterium *Microcystis aeruginosa*, structures, 10281
- moenomycin A derivs as inhibitors of transglycosylase, 17669
- NO synthase -, activity of sponge sesterterpenes, 7305
- 1-oxacephem structurally related to clavulanic acid with anti-cephalosporinase activity, synth from D-glucuronolactone, 5883
- peptidylglycine α-amidating monooxygenase, synth of tripeptide inhibitors containing D- and L-styrylglycine, 8295
- poly(amido-amine) dendrimers with ethylenediamine core, terminally-attached oligo-glycopeptide units, formation of globular carbohydrate "sugar balls", wheat-germ agglutinin —, 15415
- quinazolin-4-one-based antifolates with modified glutamate side-chains, potential thymidylate synthase inhibitors, 13383
- swainsonine, mannosidase inhibitor and anticancer drug, synth of (3R)- and (3S)-3-(hydroxymethyl)-swainsonine from D-ribose, 11021
- synth of neoglycopolymer inhibitors of selectins, use of ring-opening metathesis, 11937
- synth of thiosugars as weak of glycosidases, 16731 α-thiobestatin, aminopeptidase —, synthetic approach to analogues through thiiranium ions, 3383

Epimerisation

of 1-, 2- and 3-monosubstituted 1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizine alkyl derivs, 5349

see also Deracemisation

Epoxidation

- of alkenes catalysed by manganese and iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxy-phenyl)porphyrin, 4497
- asymmetric using a combination of achiral (salen)manganese(III) complex with chiral amine, 9541
- of bromocyclohexadiene *cis*-diol derived from microbial oxidation of bromobenzene with *P. putida*, key step in transformation into 5-deoxy-5-fluoro-*myo*-inositol and 3-deoxy-3-fluoro-L-*chiro*-inositol, 8807
- catalytic of alkenes by $H2O_2$ using perfluoroacylaminoaryl Mn(III)-porphyrins, synth of these, 6145 chiral porphyrins as ligands for chiral epoxidation, D_4 -symmetric tetraaryl porphyrin with two octahydroanthracene units the outer rings of which are derived from (+)-nopinone, 7753

epoxidation of allylic alcohols by TBHP in presence of zeolites, diastereoselection in secondary alcohol reactions, 11369

- kinetics of of *cis*-stilbene by dimethyldioxirane in acetone-free solutions, 8643
- of pentacyclo[8.2.1.1^{2,5}.1^{4,7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv with *m*-chloroperbenzoic acid, 9727
- of olefins with oxaziridinium tetrafluoroborate salt, 13727
- perfluoroacylaminoaryl Mn(III)-porphyrins, synthand catalytic activity in of olefins, 6145
- reactions of dimethyl dioxirane with flavonoids, epoxides and further products, 8491
- tetrakis(-meso-trans-1,4:5,8-dimethano-1,2,3,4,5,6,7,8-octahydroanthracen-9-yl) porphyrin,other D₄-symmetric metallotetraarylporphyrins, synth for asymmetric catalysis, 11257, 11277

Epoxides

- brassinosteroids with epoxy functions, synth, effect on regioselectivity of Baeyer-Villiger reaction, 11347
- chiral in synth of azepane moiety of balanol, 4857 cyclohexene oxide, ring opening with TMSN₃ using a titanium complex of (4S,6S,8S,9R)-8-hydroxymethyl-9-methyl-1,7-dioxaspiro[5.5]undecan-4-obs catalyst, 16545
- 2,3-di(boc-aminoalkyl)oxirans, use in synth of C₂-symmetric and -pseudo-symmetric 1,4-diamino-2,3-diols, protease inhibitor design, 4769
- epoxide intermediate in prep of 4-aminocarbonylmethoxy trinems involving ring-opening, 15011
- α,β-epoxy ketones, esters, and congeners, organo-Se mediated reduction to β-hydroxy carbonyl compds, 12469
- 3,4-epoxy- and 3,4-epimino-alcohols, regioselective nucleophilic ring-opening, formation of 1,3- vs 1,4-diols and amino-alcohols, 16139
- erythro N-protected α-amino epoxides, stereocontrolled synth involving reduction of the corresponding haloketone, 5325
- functionalised 3,3-disubstituted 2,3-epoxy-1-ols, regioselective methylation of, synth of C1-C3, C10 and C7-C9 fragments of briarian diterpenes, 7429 (E,E)-germacra-1(10),4-diene 4,5-epoxides, 6,8-disubstituted, reactions with oxyphilic reagents, 4681
- hexahydrophenanthrene 9,10— and dihydronaphthalene 3,4— (2-aryloxirans), stereoselectivity of methanolysis in gas and condensed phases, Hammett-Brown ρσ⁺ plots, 5515
- kobusone, caryophyllene derived epoxy ketone, base

- treatment yields two ketols, one of which reduces to a diol, 7035
- nucleophilic substitution-1,3 dipolar cycloaddition reactions of oximes with and dipolarophiles, 13165
- oxime-nitrone-isoxazolidine cascade reactions involving nucleophilic opening of with oximes followed by 1,3-dipolar cycloaddition reactions with dipolarophiles, 14339
- rearrangement of brought about by lithium dialkylamides or t-butoxide, 1855, corrig. 5357
- rearrangement of to allylic alcohol in 4,5-epoxycyclohexane-1,2-dimethanol and derivs by lithium amide and KOBu-t, 17527
- regioselective opening to β -amido alcohols under solid-liquid PTC, 4787
- thiiranes from using NH₄NCS/RuCl₃, (S)-styrene episulfide formation from (R)-—, 11377

see also Oxiranes

Esterification

- crotonic and cinnamic esters of 3-fluoro-2hydroxypropyl p-tolyl sulfoxide, use of 1,1'carbonyldiimidazole as coupling reagent, 17513
- de—, enzymatic deacetylation of peracetates of methyl and ethyl esters of polyphenolic acids using *Candida cylindracea* lipase and porcine pancreatic lipase, 2163
- selective of aliphatic nonconjugated carboxylic acids catalysed by NiCl₂.6H₂O₂, 7335
- thio— of (1S,2S)-2-amino-1-phenyl-1,3-propanediol under Mitsunobu conditions, regio- and stereochemistry, 10615
- Ti-TADDOLate mediated esterification reactions for resolution of racemic carboxylic acid derivs, 7539

Esters

- allylic benzoate esters by allylic oxidation of olefins with copper(I) bisoxazoline catalysts and peresters, 16229
- 2-aryloxy esters, synth by coupling reaction between haloacids and aryloxides, application to synth of fluoxetine, tomoxetine and nisoxetine, 6739
- α-chloro α-(phenylsulfinyl) ketones (RCOCHCl SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843
- cycloalkyl nitrite esters, photolysis, study of the radical intermediates by EPR spectroscopy, 6401
- of diazoesters derived from (1R,2S,5R)-menthol and (R)-pantolactone, synth of 1,2-disubstituted mitosenes following oxidation, 16521
- diethyl 1-fluoromethylphosphonocarboxylates and diethyl 1-fluoromethylphosphonocarboxylic acid, synth by reaction of chloroformates with 1-

- lithio-1-fluoro-1-(trimethylsilyl)methylphosphonate, 6391
- α , β -epoxy —, organo-Se mediated reduction to β -hydroxy carbonyl compds, 12469
- generation of acylals and reaction with Grignard and organo-Li reagents, formation of -, 12679
- lipase-catalysed enantioselective hydrolysis, interpretation of kinetic results in terms of frontier orbital localisation, 4889
- malonic acid esters of *trans*-1-substituted-3-trifluoromethyl-2-butene-1-ols, SET induced cyclisation reactions of, synth of cyclopropane lactones containing a trifluoromethyl group, 13001
- ortho esters, formation by Cp₂(Cl)Zr⁺ catalysed rearrangement of epoxy esters, 16575
- phenyl and naphthyl esters, Fries rearrangements of in montomorillonite clays, 17171
- α -polychloroesters, halogen atom transfer radical addition to olefins promoted by Fe⁰ fillings, 17761 γ -silylated α , β -unsaturated esters, amination of, synth of β , γ -unsaturated α -amino ester derivs, 15853

Etherification

of C-6 allylated pyranosides containing an allylic benzyloxy substituent and their acyclic 5-hexen-1,2,4-triol analogues, synth of *syn*, *syn*-2,5-dialkyl-3-oxy-tetrahydrofuran, 5711

Ethers

- alcohol prop-1- and 2-enyl ethers, deprotection by PdCl₂/CuCl-catalysed Wacker reactions, 17501
- bis(4-alkyl-2-hydroxyphenoxy) alkoxy ethers, precursors to alkylbenzo-substituted crown ethers, synth from catechol, 13557
- allylic —, Co₂(CO)₈-catalysed polymerisation, 15167 aromatic benzyl ethers located *ortho* to a carbonyl group, selective cleavage by magnesium bromide, 215
- α-arylalkyl methyl —, reductive lithiation, synth of benzylic organolithium compds, 16205
- 9a-azalide iminoethers, rearrangement to 9,11-iminoethers, 16923
- o-bromobenzylphenylethers and n-tributyltin hydride, treatment with AIBN, C_{aryl} - C_{aryl} bond formation, 285
- diaryl -, synth of L,L-N,N-dimethylcycloisodityrosine, 10753
- 1,3-dimethoxybenzene-Cr(CO)₃ complexes, metallation/deprotonation and alkylation, effect of conditions on selectivity, 9219
- formation of ylids from and methylene (carbene), 9823
- trans-fused seven-membered cyclic ethers corresponding to subunits of brevetoxin B and hemibrevetoxin B, synth based on 6-endo

cyclisation and ring expansion, 12917

mixed tetraethers of calix[4]arene, conformational control, 16195

phenylcarbenes with 2-phenoxymethyl and 2benzyloxy side chains, generation, addition and insertion reactions, 9935

propargyl phenyl —, 2*H*-chromene synth by microwave-mediated cyclization, 12621

see also Oxygen heterocycles

Exchange reactions

Li/Te — on (1Z,3Z)-butyltelluro-1,3-butadienes and (1Z,3Z)-1,4-bis(butyltelluro)-1,3-butadienes, synth of (1Z,3Z)-buta-1,3-dienyl-1-lithium and tellurophenes, 4199

Extrusion reactions

arylethynyl styryl sulfones, synth and catalytic SO₂
-, synth of 1,3-enynes, 17351

3r,4,5,6(E),7,8-hexahydro[2.2]paracyclophane, synth using SO_2 —, 16123

2,6,7,8,9,9a-hexahydro-1-thiabenz[cd]azulene 1,1-dioxide, 6,7,8,8a-tetrahydro-2H-naphtho-[1,8-bc]thiophene 1,1-dioxide, synth, SO₂ — and trapping, 15957

Ferrocenes

chiral ferrocenyl phosphine oxazoline ligands, role in copper catalysed conjugate addition of *n*-butyl Grignard reagents to enones, 16503

ferrocene promoted Karasch addition of methyl 2,2-dichlorocarboxylates to 1-alkenes, 4419

ferrocenecarbaldehyde, condensation with 1,3benzenedithiol, formation of 1,2,10,12-tetrathia[3.3]metacyclophanes, conformational and geometrical isomerism, 3155

2-ferrocenylmethylene-3-methylenequinuclidine, synth, Diels-Alder reactions, 12369

2-hydroxymethyl-1-phenylthioferrocene and 2-hydroxymethyl-1-t-butylthioferrocene, kinetic resolution by lipase catalysed acetylation, subsequent oxygenation of the enantiopure thioethers to yield ferrocenyl sulfoxides, 1361

synth of C_2 -symmetric ferrocenylalkylamines, diferrocenyl pyrrolidines and piperidines, 7219

Flavanoids and isoflavanoids

cleavage of acetal function in A-type proanthocyanidins, 2591

Flavins

3,10-diaryl-5-deaza-—, atropisomerism when 3-aryl group is o-substituted, 4601

3-methyl-5-ethyllumiflavinium perchlorate, kinetic aspects of the amine oxidations, 5027

Flavones/flavanones

diarylheptanoids with flavanone moiety from Alpinia

blepharocalyx seeds, 7833

flavones by reaction of 2-hydroxy-α-bromoacetophenones with piperidine or morpholine aminals of benzaldehydes, 9813

reactions of dimethyl dioxirane with flavonoids, epoxides and further products, 8491

Flavonoids

trans- and cis-dihydroflavonols, synth via epoxy-chalcones, 14141

Flavours and fragrances

(+)-ambrein, the major constituent of Ambergris, synth from (+)-drimane-8,11-diol, 3527

(+)-bicyclohumulenone, humulane-type sesquiterpene from liverwort *Plagiochila siophila*, synth from diethyl 3,3-dimethylglutarate, 16277

cis- and trans-linally oxides, synth from (Z)- or (E)-6,7-dihydroxy-3,7-dimethyl-oct-2-enyl carbonate, 4353

Fluorescence

benzoylperylenedicarboximides, fluorescent dyes, synth from bromonaphthylimide and bromobenzanthrone, optical and electronic properties, 6847

2-boronylphenylmethyl groups attached to binol system, a rigid saccharide acceptor, association constants, UV, CD, — effects, 8335

6-chloro-2-(5-chloro-2-hydroxyphenyl)quinazolin-4(3*H*)-one *O*-glucuronide, fluorogenic βglucuronidase substrate, 7159

chlorophyll-a homologues, UV/vis, — and CD spectra, 10677

fluorescent labels based on acridone, pyrene, fluorescein, dimethylaminonaphthalenesulfonamide and tris-1,10-phenanthroline ruthenium, synth and attachment to biological molecules, 1505, 1523

2-o-(p-methoxycinnamyl)phenol, — spectrum at different excitation wavelengths, 14729

6-methylene-3,7-dihydro-6*H*-purine cyanine dyes containing other heterocyclic rings, fluorescent stains for parasites and DNA markers, synth, structure, applications, 12595, 12605

oligonucleotide derivs having a dansyl fluorescence label at the 2'-position of a ribonucleoside, synth using 5'-dimethoxytrityl 2'-(dansylamino)uridine 3'-phosphorobisdiethylamidite, 4265

polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105

spectra of 3-methyl-5,7,8-trihydroxy-2-aza-anthraquinone, 109

spectra of substituted indolizines derived from 2-cyano-3-(2-pyridyl)methylacrylates, 81

sterically constrained dioxapropylphenylethynylene oligomers, 11899

- O-substituted hydroxylamines as fluorescent probes for detection of abasic sites in DNA, 5485
- synth of 1α-(3'-carboxypropyl)-4-androsten-17βol-3-one, a deriv of testosterone, application to the prep of immunogens and fluorescent tracers, 12855

Fluorine and compds

- aryl fluorides, criticism of S_{RN}1 mechanism of fluoride displacement, 9835
- aryl(difluoro)methanephosphonates, synth by Cu-promoted coupling of diethyl difluorozincomethanephosphonate with iodoarenes, 815
- bis(2,2'-biphenylylene)difluoropertelluranes, synth by reaction of bis(2,2'-biphenylylene)tellurane with xenon difluoride, structure, 12183
- CsF as reagent for inversion of secondary mesylates and tosylates, 13633
- 5-deoxy-5-fluoro-*myo*-inositol and 3-deoxy-3-fluoro-L-chiro-inositol, synth from bromocyclohexadiene cis-diol obtained by microbial oxidation of bromobenzene with *P. putida*, 8807
- diarylperfluorocyclopentenes having thiophene oligomers as the aryl groups, synth and photochromic reactivity, 12263
- diethyl 1-fluoromethylphosphonocarboxylates and diethyl 1-fluoromethylphosphonocarboxylic acid, synth by reaction of chloroformates with 1-lithio-1-fluoro-1-(trimethylsilyl)methylphosphonate, 6391
- α,α-difluoro β-hydroxy esters, synth by asymmetric aldol addition to a difluoroketene silyl acetal catalysed by chiral Lewis acids, 10271
- α,α-difluoro-β-ketophosphonates, synth by addition of diethyldifluoromethylphsophonate to LDA containing cerium(III) chloride followed by reaction with esters and DMF, 10623
- 9-[2-(difluorophosphonomethyl)cyclopropylmethyl] guanine, synth of enantiomers, inhibition of purine nucleoside phosphorylase by, 11297
- 3,3-difluorovinyl-1-ethylprop-2-enol derivs, monodefluorination, 3-lithiation and applications of obtained 3-fluoro-3-lithioallylic alcohol derivs, 14749
- 1,2-difluorovinylphenylsulfone, synth from chlorotrifluoroethylene, dienophilic reactivity of, 17127
- [18F]fluoro aromatic α-methyl-L-amino acids, radiopharmaceuticals for Positron Emission Tomography (PET), asymmetric synth, 5785
- fluoro analogues of adenine nucleotides, unsaturated products from elimination reactions; difluoroallyl and fluorobutadienyl phosphonic acids, 5389

- α -fluoro- β -thio- α , β -unsaturated carbonyl compds, synth by fluorination of vinyl sulfides, 647
- fluoro-carbocyclic nucleosides, adenosine and guanosine analogues, synth, 1861
- fluoro-dechlorination of α , α -dichlorosulfides, synth of α -fluoro-thioethers, 12565
- p-fluorobenzyl methyl ether, lithiation under various conditions, 16205
- (±)-5-fluoro-4-hydroxy-3-hydroxymethylhexahydro pyridazine and 3-fluoromethyl-4,5-dihydroxy analogue, synth of 1-azafagomine analogues, hydrazino-defluorination reactions, 9357
- 4'-C-(fluoromethyl) nucleosides, synth as antineoplastic agents, 13315
- imidazoles bearing 1-fluorinated substituents with potential application as probes for intracellular pH determination; synth, acidity and ¹⁹F NMR, 8211
- methylene-gem-difluorocyclopropanes, synth by selenoxide elimination reaction derived from gem-difluorocyclopropylmethanols, 9497
- partially and fully fluorinated primary alkyl radicals, generation, experimental and theoretical studies, 9857
- pentafluorophenyl ester activation of aryl carboxylic acids, synth of N,N'-diaroylhydrazines, 4219
- 2-phenylthio-3,3,3-trifluoropropene and its sulfoxide and sulfone, Diels-Alder reactions with various dienes, 6861
- reaction of CF with olefins, generation and electrocyclic ring-opening of α -fluorocyclopropyl radicals, 10071
- reaction with water, anhydrous alcohols and 1,2-diols, synth of oxidants for *in situ* oxidation of ketones, 15833
- trans-1-substituted-3-trifluoromethyl-2-butene-1-ols, SET induced cyclisation reactions of the malonic acid esters of, synth of cyclopropane lactones containing a trifluoromethyl group, 13001
- 2,2,2-trifluoroethyl t-butyl sulfoxide, reactions as a trifluoroethyl sulfenylating or sulfinylating agent, 15717
- 2,3-bis(2,2,2-trifluoroethyl)succinonitrile and 3,4-dicyano-2,5-bis(trifluoromethyl)-n-hexane, synth by trifluoromethylation of acrylonitrile and crotonitrile, 4437
- 2- and 4-trifluoromethyl-1H-arylo-1,5-diazepines, oxazepines, thiazepines, 2-(1,1,1-trifluoroacetonyl)imidazoles, oxazoles and thiazoles, synth, 5847
- (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, synth by reaction of [ArI*-F*OTf] with acetylenes, 13139

Formazans

1,2,4-triazolium-3-formazans, synth, formation of triazolium-crown-formazans, 8507

Fragmentation reactions

addition of silyloxydienes to 2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, 7715 N-chloro-alkylamines and N-chloro-N-alkylethanolamines, decomposition in water, kinetics, 2565

reductive Beckmann — of cyclic α-amino-oximes, formation of amino-nitriles, 2535

trimethylsilyl halide-induced cyclopropane fragmentation of a spirofused cyclopropyl carbox-aldehyde. 16341

Friedel-Crafts reactions

Friedel-Crafts approach to 2,3-substituted anthracenes, 6377

Frogs

Dendrobates alkaloids: synth involving Michael reaction of didehydropiperidinecarboxylate to afford trans(2,3)-cis(2,6)-trisubstituted piperidine, 9553

Fullerenes

t-butyl-C₆₀, generation and reaction with tropylium ions, dissociation in polar solvents, PMR, cyclic voltammetry, UV/vis/near IR spectra, 9965

cycloaddition to [60]— using microwave irradiation, [4+2], [3+2] and [2+1] reactions, 2599

[60] fullerene, functionalisation of [6] fullerene by photoinduced electron transfer (PET), synth of 1-substituted 1,2-dihydro [6] fullerenes, 3587

heterocycle-linked [60]— by o-quinodimethane cycloaddition, self-sensitised photo-oxidation of furan and oxazole products, 9075

Fulvenes/fulvalenes

2-t-butyl 6-(dimethylamino and acetoxy)- and 6,6dimethyl fulvene, cycloadditions to mesoionic heterocycles, formation of pseudo-heteroazulenes, 9921

[4+2] and [8+2] cycloadditions of electron-deficient heptafulvenes with electron-rich pentafulvenes, effects of substituents on stereo-, peri-, and regio-selectivity, 17275

6,6-dialkyl, cycloalkyl and diaryl pentafulvenes, cycloaddition with 3-ethoxycarbonyl-2*H*-cyclohepta[*b*]furan-2-one, competing [8+2] and [4+2] modes of addition, 15903

bis(ethylenedithio)tetrathiafulvalene (BEDT-TTF) and dithiophenetetrathiafulvalene (DTTTF) π-donors, synth, 11627

6-styrylfulvene [1-(3-phenylprop-2-en-1-ylidene)-cyclopenta-2,4-diene], Diels-Alder reactions with o-quinones, tetraphenylcyclopentadienone, male-

imides, maleic anhydride, dibenzoylacetylene, 17361

Fungi

Aspergillus fumigatus, isolation of cyclotryprostatins A-D, diketopiperazine derivs which inhibit mammalian cell cycle at G2/M phase, 59

Beauveria bassiana fungus together with Rhodococcus erythropolis and Agrobacterium bacteria for hydroxylation of pyrimidine heterocycles, 6421

Beauveria bassiana, microbiological oxidant for oxygenation of cycloheptyl-N-phenylcarbamate and (±)-trans-2-fluorocycloheptyl-N-phenylcarbamate, 17055, 17067

Cunninghamella echinulata NRRL 3655, A. niger and B. sulfurescens for microbiological transformations, 9695, 9707

Cunninghamella echinulata, use in Baeyer-Villiger oxidations in synth of pheromones of marine brown algae, 145

Lachnum papyraceum, ascomycete, reactivity of papyracillic acid, spiro-butenolide antibiotic, 6209 Lactarius vellereus, synth of 2(3)-8(9)-bisanhydro-lactarorufin A, originally isolated from, 13703

Pseudomonas caryophylli, synth of caryose, the monosaccharide component of lipopolysaccharide of, from 3,4,5-tri-O-benzyl-1-deoxy-D-iditol derived ketoaldehyde by cyclisation, oxidation and allylation, 11767

Pseudomonas syringae pv. tomato, synth of syringolide I, trioxa-triquinanone elicitor, 16029

Rhizopus microsporus var. rhizopodiformis, absolute configuration of rhizoferrin isolated from, 427, corrig. 2667

Trichoderma viride, isol and structure of isoharziandione, tetracyclic diterpenoid, 3135

Xylaria hypoxylon, isolation of six new cytohalasins from the fermentation broth of, 6485

Fungicides

(S)-(—)-3-(4-t-butyl)phenyl-1-N-(cis-2,6-dimethyl)morpholinyl-2-methylpropane, enantiomer of racemic systemic fungicide fenpropimorph, synth via Mannich reaction, 689

Furanones

- 3-alkyl-5-methylene-2(5H)-furanones, synth by sulfuric acid-catalysed cyclisation of brominated 2-alkyllevulinic acids, 15813
- 5-alkylidene-3-amidofuran-2(5*H*)-ones from 4-(acylmethylene)azlactones by translactonization, acid and base effects, 1843
- 4-benzylamino-5-(fluoromethyl)-3-(α-hydroxy-ethyl /benzyl)dihydrofuran-2-ones, diastereoselective

- synth via intramolecular nitrone cycloadditions, 17513
- bicyclic tetronate esters and related to goniofufurone, synth by intramolecular Wittig reactions 4815
- 4-cyanoalkylidenebutenolides, stereoselective synth by photo-rearrangement of 3-alkoxy-2,1-benzisoxazole-4,7-diones, 3363
- dihydroxy-anthraquinones from naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, 1823
- dimethyl 3,5-dimethoxy-2-oxo-2,3-dihydrofuran-3,4-dicarboxylate and dimethyl 2,5-dimethoxy-3-oxo-2,3-dihydrofuran-2,4-dicarboxylate, bis(methoxycarbonyl)carbene dimers, 10019
- 3-ethoxycarbonyl-2*H*-cyclohepta[*b*]furan-2-one, cycloaddition with 6,6-dialkyl, cycloalkyl and diaryl pentafulvenes, competing [8+2] and [4+2] modes of addition, 15903
- (±)-methylenolactocin and (±)-protolichesterinic acid, β-carboxy-α-methylene-γ-lactones, synth using retro-Diels-Alder reactions, 17335
- (S)-2-p-toluenesulfinyl butenolide, cycloadditions with dienes, 14115

Furans

- γ-alkylidenebutenolides and related compds, regioand stereoselective synth, 6707
- (±)-ambliol-A and dendrolasin, furosesquiterpenes, synth, 8513
- 4-amino-5-hydroxy-4,5-dihydrofuran-2-one hydrochloride, synth from 3-amino-3-vinylpropanoic acid, 15807
- arabino, ribo, and xylofuranosyl nucleosides with hydrogen isotopes at C2' and C3', synth by reduction of 2' and 3'-ketonucleoside derivs, 447 dehydrodendrolasins, marine furano-sesquiterpenoids, stereocontrolled synth, 2439
- 5-deoxycarbahexofuranoses, synth from bromolactones by radical cyclisation, 6879
- syn, syn-2,5-dialkyl-3-oxy-tetrahydrofuran from iodoetherification of C-6 allylated pyranosides, 5711
- 2,5-dihydro-2,5-dimethoxy-furan, reaction with phenylselenenylchloride, generation of small polyfunctional molecules, 15843
- 3,4-disubstituted furans by photooxygenation of 2,3-bis(bromomethyl)-1,3-butadiene *via* unsaturated cyclic peroxides, 13867
- 2,3- and 2,4-disubstituted furans and 2,3,4- and 2,3,5-trisubstituted furans, synth from silylated furans by lithiation/alkylation, *ipso*-iodination, boroxine formation, Sonogashira and Suzuki coupling, 3497

- 2,5-disubstituted tetrahydrofurans, synth, stereochemistry, 6171
- 2-functionalised furans as precursors of cycloheptane synthons, 11669
- furan Diels-Alder chemistry, synthetic applications of, 14179
- furanocoumarins derived from alkylation-cyclisation of iodo-umbelliferone, transfer-hydrogenation to yield deuterium-labelled marmesins, 17699
- furfural, reaction with diethyl azodicarboxylate, formation of diethyl 2-oxo-8-oxa-6,7-diazabicyclo-[3.2.1]oct-3-ene-6,7-dicarboxylate, 9313
- furosesquiterpenes from marine sponges consisting of linearly fused furo[2,3-b]- and furo[3,2-b] decalin systems with *cis/trans* ring junctions, synth of the ring system from Hageman's ester, 2989
- furylhydroperoxides, chemical, photochemical and enzymatic approach, 17139
- (2-furyl)pyridines and furan-pyridine oligomers, synth and characterisation, 11529
- 2-hydroxytetrahydrofurans and butanolides, synth from Li homoenolates, 2641
- 2-methylfuran, reaction with 1,3-oxazolidines and 1,3-dimethylimidazolidine to provide α -amino acid derivs, 14381
- (±)-c-4-phenyl-t-, (±)-t-4-phenyl-c-, (±)-t-4-phenyl-tand (±)-c-4-phenyl-c- -5-[(E)-styryl]tetrahydrofuran-r-ol by electrohydrodimerisation of *trans*cinnamaldehyde, 5831
- polysubstituted tetrahydrofurans, synth by electrophilic 5-endo-trig cyclisation of 2-silyl-3-alkenols, 4339
- 2,4- and 2,4,5-substituted tetrahydrofurans, synth by 5-exo-trig cyclisation of homoallylsilanes, application to synth of (±)-kumausyne, 2835
- tetrahydrofurans by reductive cleavage of 2-(α-hydroxydiphenylmethyl)-7-oxabicyclo[2.2.1] heptanes, 8519
- tetrahydrofuranyl-substituted long-chain carboxylic acids, synth and subsequent evaluation for alkali metal binding, 7403
- 2-trimethylsilyloxyfuran, reaction with a glyceraldehyde derived nitrone to form tetrahydrofuro-[2,3-d]isoxazol-5(2H)ones which after hydrogenolysis provides 5-amino-2,5-dideoxyheptono-1,5-lactams, 11721
- 2-(trimethylsilyloxy)furans, Michael addition to oxazolidinone enoates in the presence of hexafluoroisopropanol, synth of 4-substituted butenolides, 17015

Gas phase reactions

allenyl and methylallenyl anions, FA-SIFT

generation, reactions with CS₂, COS and CO₂, mechanism of thioketene formation, 9847

nucleogenic (recoil) ¹¹C atoms, reaction with alkanes, alkenes, dienes, aromatic hydrocarbons, 10155

Gels

organogelators, 2,3-substituted anthracenes, synth by Diels-Alder aromatisation reaction or by Friedel-Crafts approach, 6377

Germanium and compds

- alkenyl silanes and germanes, synth from cyclobutyl ketones and R₃MLi/ZnX₂, 8349
- 2,6-bis(dialkylaminomethyl)phenyl (dimethyl and o-biphenylene) germanium chloride, and ²H- and ¹⁵N-labelled isotopomers, DNMR, hypervalent structures, kinetics of exchange of N-alkyl groups, 10133
- germylenes [Ge(II) di(silylamides)], use in synth of Ge enolate polymers, 15281
- methyl(trimethylsilyl)germylene, generation in gas phase, rearrangement *via* intramolecular C-H insertion, [4+1]-cycloaddition to dienes, 10179
- polypolythiadigermabicyclo[k.l.m]alkanes, synth by reaction of tris(trimethylsilyl)methylgermane with sulfur or selenium, 12215

Gibberellins

12-hydroxy C₂₀-gibberellins, synth from gibberellic acid (GA₃), 2137

Glycals

- activated glycals, C-glycosidation with chiral (E)-crotylsilanes, stereodifferentiation in, 10971
 D-arabinal and L-rhamnal, conversion into 1-oxacephems, 14153
- exocyclic glycals, radical addition of thiol acetic acid to followed by deacetylation, S-alkylation and selective oxidation, synth of β-C-glycoside sulfoxides and sulfones, 16355
- ketopyranose-5,6-glycals, synth from methyl β-D-fructopyranoside, subsequent utility for preparing C(6)-functionalised ketopyranosides, 16365
- palladium-catalysed cyclization of dienes containing pseudoglycal units, 3957
- pyranose glycals related to carbohydrate moieties of pluramycin and vancomycin, synth by tungsten pentacarbonyl-induced cyclisation of an acyclic alkynol via cyclic tungsten oxacarbene, 11061
- reaction with electrophilic selenium reagents, synth of 2'-deoxy-2'-phenylselenofuranosyl nucleosides, 10921
- tri-O-benzyl-D-glucal, two-step additions initiated by halogenation, stereoelectronic control, 3417

Glycerol

1-[α-mannopyranosyl-(1α-3)-(6-O-acyl-α-mannopyranosyl)]-3-O-acylglycerol from *Arthrobacter atrocyaneus* LMG 3814T, structure, 3593

Glycoconjugates

tandem radical cyclizations of enyne glycosides forming — with fused cyclohexene rings, 8383

Glycolipids

- glyceroglycolipids, synth of stable analogues, 6163 1-[α-mannopyranosyl-(1α-3)-(6-O-acyl-α-mannopy ranosyl)]-3-O-acylglycerol from *Arthrobacter* atrocyaneus LMG 3814T, structure, 3593
- pyrancarboxylic acid analogues of GLA-60, synth of 2,6-anhydro-3-deoxy-5-*O*-phosphono-3-tetradecan amido-4-*O*-[(3-tetradecanoyloxy)tetradecanoyl]-heptonic acid, and a dimeric analogue, 16041
- tricolorins F-J, cyclic glycolipid trisaccharides from resin of *Ipomoea tricolor*, PMR, FAB MS, 9007

Glycopeptides/glycoproteins

- bleomycin antitumour antibiotic, synth of the disaccharide moiety (2-O-(3-O-carbamoyl-α-D-mannopyranosyl)-L-gulopyranose) from D-mannose by application of stannylene acetal methodology, 10993
- glycinyl-NeuAc saccharopeptides, synth by ring opening of sialyllactones with glycine esters, 11039 glycopeptide fragments, Fmoc solid-phase synth of from HIV gp120 using Tn and sialylTn building blocks, 369

Glycosidation

- deglucosylation of 3-methoxy secologanin derivs in formation of trioxadamantane type aglucones of, 11659
- deglycosylation of N-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, 10489
- 2,6-di-*O*-α-D-mannopyranosyl-1-phosphatidylD-*myo*-inositol, employing phosphite chemistry, 903
- dissymmetric indolocarbazole glycosides, synth by Mitsunobu reactions, 5937
- C-glycosidation of activated glycals with chiral (E)-crotylsilanes, stereodifferentiation in, 10971
- N-glycosylation of TMS derivs of agroclavine, lysergol and 9,10-dihydrolylsergol using 1-chloro-3,5-di-O-toluoyl-2-deoxy-D-ribofuranose, 4503
- of phenols with 1,2-anhydro-3,4,6-tri-O-methylα-D-glucopyranose, lifetime of the glucosyl oxocarbenium ion, 10471
- rengyol —, use of Sulfolobus solfataricus, thermophilic archaebacterium, 4693
- sulfonamide in synth of trisaccharide analogues of

moenomycin A and A₁₂, 1665, corrig. 5357 of 2-thiophenyl- and 2-selenophenyl-α-D-glucopyranosyl donors, 8825, 8837

Glycosides

- angucyclines, C-glycoside antibiotics, synth of galtamycinone, a common aglycon of C-glycosyl naphthacenequinone angucyclines, 16533
- anhydrofuranoside derived from D-glucose as chiral auxiliary in synth of γ and δ -lactones, 15061
- 4-aryl-7,7-dimethyl-5-oxo-2-thioxo-1,2,5,6,7,8-hexa hydroquinoline-3-carbonitriles, synth from dimedone and conversion into 1-glycosides, 17441 breynolide, sesquiterpene from Taiwanese plant *Breynia officinalis*, cycloaddition approach to synth, 8997
- C-6 allylated pyranosides containing an allylic benzyloxy substituent and their acyclic 5-hexen-1,2,4-triol analogues, iodoetherification of, synth of syn,syn-2,5-dialkyl-3-oxy-tetrahydrofuran, 5711
- callipeltosides B, C, macrolide glycosides from sponge *Callipelta* sp., 4-formamido-4,6-dideoxy-2-methoxy-3-methyltalopyranoside and 2-*O*-methylvalose sugar moieties, 3243
- 2-deoxy-2-C-methylene methyl glycosides, oxidation with hydrogen peroxide, synth of sugar hydroperoxides for use as chiral oxidants of allylic alcohols and prochiral sulfides, 185
- 2-deoxy-β-glycosides, stereoselective synth from glycal precursors, 8825, 8837
- didehydro-dideoxy C-glycosides with furan substituents, synth using ring closing metathesis, 12991
- fluorine substituted deoxyhexofuranosides by fluorine addition to 7-oxabicyclo[2.2.1]hept-5-ene derivs, 6327
- the fucofuranoside method for determining the absolute configuration of secondary alcohols using PMR/CMR, 5973
- C(6)-functionalised ketopyranosides from ketopyranose-5,6-glycals, 16365
- C-glyceroglycolipids, synth of stable analogues, 6163 glyconolactones from per-O-alkylated glycopyranosides using TMS-azide, and ring contraction of pyranoses, 3123
- β-C-glycoside sulfoxides and sulfones, prep by radical addition of thiol acetic acid to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, use as glycosyl transferase inhibitors, 16355
- C-glycosides from aldonolactone derived chain elongated 2,4-diuloses by deoxygenation, 1311

- $\alpha\text{-}$ and $\beta\text{-}glycosides$ of novel isomeric 3-deoxy-hept-2-ulosaric acid diesters, synth, 10643 4-hydroxybutyl $\alpha\text{-}$ and $\beta\text{-}glucosides$, formation using glucosidases on solid support in dry media, 17247 medium-dependent flexibility of $\beta\text{-}$ compared with $\alpha\text{-}D\text{-}$ nucleosides, experimental data from NMR, 14043
- methyl 4-amino-4,6-dideoxygulopyranoside and epi-tolyposamine, deoxy aminohexoses, synth from fully protected L-threonine deriv, 6473
- methyl α- and β-glycosides corresponding to the amino sugar component of the E-ring of caliheamicin $\gamma 1^1$ and esperamicin A_1 , synth from methyl 2-deoxy-α- and β-D-ribopyranoside, 14369 methyl glycosides of N,O-diacetate of acosamine and daunosamine, synth from sugar δ-enelactones, 739 per-O-benzoyl-β-D-galactofuranosyl isothiocyanate, chiral resolving agent, reactions, 16009
- purine nucleosides, cleavage of ribofuranose ring by DIBAL-H, acyclo-nucleoside synth, 16683
- saundersioside A and B, 24(23-22)abeo-cholestane glycosides from bulbs of Ornithogalum saundersiae, characterisation and cytostatic activity, 11549 secologanin, monoterpene glucoside, formation of trioxadamantane type aglucones of 3-methoxy secologanin derivs by hydrolysis and transacetalation and deglucosylation, 11659
- secologanin, monoterpenoid glycoside and precursor to many alkaloids, acidic deglycosylation of N-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, graph analysis, 10489
- sialyl-Lewis^x mimetics, synth, biological activity of side products, 2485
- tandem radical cyclizations of enyne glycosides forming glycoconjugates with fused cyclohexene rings, 8383
- (--)-tjipanazole F1, an indolocarbazole glycoside, synth by cyclisation of unsymmetrical bis-1,2-(3-indolyl)ethanes, 16553
- toxicarioside B and toxicarioside C, cardenolides isolated from *Antiaris toxicaria* latex-derived dart poison, structures, 16959
- tridesmosides rhoiptelesides A and B and bisdesmoside rhoipteleside E, glycosides of euphanetype triterpene from leaves and fruits of *Rhoiptelea* chilantha, structures, 16999

Gold and compds

biomembrane attachment to Au surface by molecular tethers, 10939

Grignard reactions/reagents

addition of - reagents to cyclic enaminones,

cyclohexenone synth, 1547

n-butyl Grignard reagents, conjugate addition to enones in the presence of chiral ferrocenyl phosphine oxazoline ligands, 16503

Guanidines

- bicyclic guanidinium and deoxycholic acid subunits as building blocks for synthetic receptors for uronic acid salts, 13119
- guanidines, hydroxylamine, hydrazines and thiourea, reactions with ketene dithioacetals, synth of heterocyclic thiols, 17163
- HgCl₂-promoted guanylation reaction with various substituted thiourea starting materials, scope and limitations, 5291
- konbu'acidin A, bromopyrrole alkaloid with two guanidine units from *Hymeniacidon* marine sponge, structure and enzyme inhibitory activity, 15681
- solid-phase synth using N,N'-bis-Boc-thiourea and N,N'-bis-Boc-pyrazole-1-carbamidine, 6697
- synth of RNAase active site model system on a steroid template, 8421

Halo esters

- acyclic α -haloesters, radical cyclisation to γ -butyrolactones using polymer-supported distannane, 1301
- pentafluorophenyl ester activation of aryl carboxylic acids, synth of N,N'-diaroylhydrazines, 4219

Halogenation

- bromination, of 4-methyl-A-homo-4-azacholest-4a-en-3-one, 10565
- bromination of acenaphthylene: concentration dependence of the steric course, 785
- bromination of alkylbenzenes in presence of montmorillonite, 2581
- bromination of benzhomobarrelene derivs, high temperature bromination, 14451
- bromination of dibenz[a,c]anthracene, formation of 9- and 10-bromo-compds, 15947
- bromination of imidazo[2,1-b]oxazoles, 6959
- α,α-dihalogenation of 2-aryl-1-pyrrolines with N-halosuccinimides followed by monodehydro-halogenation, synth of 3-chloro- and 3-bromo-2-arylpyrroles, 3693
- electrochemical trifluoromethylation of acrylonitrile and crotonitrile, prep of 2,3-bis(2,2,2-trifluoroethyl)succinonitrile and 3,4-dicyano-2,5-bis-(trifluoromethyl)-n-hexane, 4437
- fluorination of vinyl sulfides, synth of α-fluoro-β-thio-α,β-unsaturated carbonyl compds, 647
- α -iodination of 4-alkenylamide having a β -chiral centre, synth of syn α -iodoalkenamide through

formation of cyclic ketene N, O-acetal, 6825

- iodoetherification of C-6 allylated pyranosides containing an allylic benzyloxy substituent and their acyclic 5-hexen-1,2,4-triol analogues, synth of syn,syn-2,5-dialkyl-3-oxy-tetrahydrofuran, 5711
- stereoelectronic control in of tri-O-benzyl-D-glucal, 3417

Halogens and compds

- 2-aryliodonio-1,4-naphtho- and -benzo-quinone-3imides, synth, reactivity, 6097
- bromo—and iodo-o-xylenes, proton and carbon NMR study, conformation (atropisomerism) effects in $\alpha,\alpha,\alpha',\alpha'$ -tetrabromo-o-xylene, 10113
- bromocompds from Aplysina aerophoba and Aplysina cavernicola, structures, 6565
- bromoketals, reaction with tri-n-butyltin chloride and sodium cyanoborohydride to generate ethers via a tandem sequence comprising of a radical cyclisation-reductive demethoxylation sequence, 10479
- chemical transformations induced by hypervalent iodine reagents, 1179
- 3-chloro-and3-bromo-2-arylpyrroles, agrochemically and pharmaceutically active compds, synth from 2-aryl-1-pyrrolines by α,α-dihalogenation with N-halosuccinimides followed by monodehydrohalogenation, 3693
- N-chloro-alkylamines and N-chloro-N-alkylethanolamines, decomposition in water, kinetics, 2565
- chloroform, phase-transfer reactions with alkenyl carbonates, effect of catalyst, 1053
- clay-supported iodosylbenzene for oxidation of alkyl, aryl and diaryl sulfides, 7635
- diaryl and aryl styryl iodonium salts, Pd-catalysed cross-coupling with organo-fluorosilanes, and extension to carbonylative cross-coupling, 3027
- gem-dihalides by oxidation of hydrazones using copper(II) halides, 557
- fluorine addition to 7-oxabicyclo[2.2.1]hept-5-ene deriv, subsequent transformation to fluorine substituted deoxyhexofuranosides. 6327
- ω-halo acid chlorides, conversion to the corresponding thiolactones using benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent, 11835, corrig. 16607
- o- (and m-) halogeno-N-phosphorylmethylbenzamide derivs, aryne cyclisation and Horner reaction of, synth of 3-(aryl and alkyl)methylene-1H-isoindolin-1-ones, 10313
- 5-, 6- and 7-halogenotriazolopyridines, synth from 2-picoline *N*-oxide, reactions with nucleophiles to yield 7,7'-bitriazolopyridines, 8257

hexynyl and heptynyl iodides, cyclisation by Unimolecular Chain Transfer (UMCT) reactions, 5679

intermediate N-imine in base-decomposition of N-halo-dipeptide, 12615

iodine as a reagent for per-O-acetylation, regioselective acylation and acetolysis in carbohydrate chemistry, 11753

phenyliodine(III) diperchlorate, formation and uses, synth of 1,2-diol diperchlorates, 16877

phenyliodonium diacetate for oxidation of substituted phenols, synth of cyclohexadienones, subsequent annulation with the anion of 3-cyanophthalide affords anthraquinones, 4387

α-polychloroesters, halogen atom transfer radical addition to olefins promoted by Fe⁰ filings, 17761 (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, synth by reaction of [ArI⁺-F⁻OTf] with acetylenes, 13139

see also Fluorine and compds, Perfluoroalkyl compds

Hazards

diazomethane condensing in a drikold condenser, with resulting explosion, 9913

1,2-diol diperchlorates and phenyliodine(III) diperchlorate, explosive -, 16877

Heck reactions

of arenediazonium salts: arenediazonium perchlorates and fluorides as new Heck substrates, 2213 asymmetric Heck reaction, Report, 7371

Herbicides

N-(2-ethyl-6-methylphenyl)-N-(methoxyprop-2-yl)-choroacetamide (Metolachlor), kinetic investigation of the acid hydrolysis, 10513

herboxidiene, determination of absolute configuration by degradation and synthetic studies, 2785

(+)-hydantocidin, synth of analogues which are modified in both the carbohydrate and the hydantoin rings, synth from acetylated 1-bromo-glycopyranosyl cyanides, 5813

Homologation

of carboxylic acids with acrylamide to form 2-(2-pyridylsulfanyl)-carboxamides, desulfurisation to form primary amides: application to synth of 3-deoxy-D-*arabino*-2-heptulosonic acid, 12067

α-chloro α-(phenylsulfinyl) ketones (RCOCHCl SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843

Hormones

1α-(3'-carboxypropyl)-4-androsten-17β-ol-3-one, deriv of testosterone, synth and application to the prep of immunogens and fluorescent tracers, 12855 3-epi-2-deoxy-20-hydroxyecdysone and analogues,

synth from 20-hydroxyecdysone and activity in flies, 3145

 $1\alpha,25$ -dihydroxyvitamin D₃ (calcitriol), hormonally active steroid hormone, synth of calcitriol A-ring fragments, 91

24-epicathasterone, 22-deoxy-24-epiteasterone and 24-hydroxy-6-oxo-24-epicampestanol, steroidal phytohormones, synth via 22,23-epoxy- and 22,23-bromohydrin intermediates from ergosterol, 17039 onapristone, potent antiprogestin with low antiglucocorticoid activity for treatment of hormone-dependent breast cancer, studies towards total synth from Eder-Hajosh ketone, 13709

precocene II, acylation-dimerisation, 16177

secretagogue MK-677, spiroindoline-based growth hormone, synth from isonipecotic acid by Fischer indole/reduction strategy, 10983

Horner reactions

Horner reaction and aryne cyclisation of *o*- (and *m*-) halogeno-*N*-phosphorylmethylbenzamide derivs, synth of 3-(aryl and alkyl)methylene-1*H*-isoindolin-1-ones, 10313

Horner-Emmons reactions

of threonine derived aldehyde in synth of methyl 4-amino-4,6-dideoxygulopyranoside and *epi*-tolyposamine, 6473

Horner-Wadsworth-Emmons reactions

on 3,4-enuloses using the enolate of dimethyl-(methoxycarbonyl)methyl phosphonate and its ethyl analogue, synth of 3-O-phosphorylated products, 7397

Horner-Wittig reactions

of [(\alpha-chloro)sulfinylmethyl]diphenylphosphine oxides, synth of (Z)-1-chlorovinyl sulfoxides, 10527 **Host compds**

1,2-bridged calix[4]arene-biscrowns in the 1,2-alternate conformation, synth, 3767

double armed diaza-12-crown-4 derivs, enhanced Li⁺ ion-selective ionophoric properties of, 3487

ionoselective polymers bearing different pendant crown ethers, synth and complexation behaviour, 1343

supramolecular hosts containing the Tröger's base moiety, synth and cation binding studies, 11859

Hydantoins

see Imidazolidines, imidazolidinones

Hydrazides

aroylhydrazine dicarboxylates from reaction of heterocyclic aldehydes with diethyl azodicarboxylate, 9313

N,N'-diaryloxalodihydrazonoyl dichlorides, conversion into nitrilimines and cycloaddition to

diarylacrylonitriles, synth of 3,3'-bipyrazolines and 3,3'-bipyrazoles, 9293

Hydrazines

- alkenyl hydrazines, selenium-induced cyclisation to pyridazine or pyrrolidinamine derivs, factors affecting, 10591
- 1-alkyl-1-cyanohydrazines and enolisable ketones, formation of 5-aminopyrazoles, 1729
- allylhydrazines, phenylselenenyl sulfate induced cyclisation of, synth of pyrazole derivs, 4441
- aryl- and alkylhydrazines, reaction with β-diketones and the corresponding β-enaminoketones, having modified carane and p-menthane skeletons, synth of N-substituted fused pyrazoles and pyrazolinols, 17735
- arylhydrazines, dehydrazination using nitric oxide in the presence of oxygen, mechanism, 15701
- N,N'-diaroylhydrazines by pentafluorophenyl ester activation of aryl carboxylic acids, 4219
- hydrazines, hydroxylamines, thiourea and guanidines, reactions with ketene dithioacetals, synth of heterocyclic thiols, 17163
- 4-methoxy-5-hydrazino-2-oxazolidinones, synth from $3-[(1S)-2-alkoxy-1-apocamphanecarbonyl]-2-oxazolones as <math>\alpha$ -aminoaldehyde templates for synth of α -amino acids, 1275
- monosubstituted hydrazines, reaction with 2,5-dimethoxytetrahydrofuran, synth of *N*-substituted 1,4,5,6-tetrahydropyridazines, 3707
- reaction with β-alkoxycarbonyl-β-enaminoketoesters, synth of pyrazole *ortho*-dicarboxylic acid derivs, 14497
- reactions with 5,6,7,8-tetrahydro-2*H*-1-benzopyran-2,5-diones and 5-acetyl-2*H*-pyran-2-one, synth of 5-hydrazono-2*H*-1-benzopyran-2-ones and quinoline-2,5-diones, 1383

Hydrazones

- α-(arylimino-N-oxide)hydrazones from reaction between azoalkenes and arylnitroso compds, subsequent conversion to pyrazol-5(4H)-ones, 1467 azaenamine-benzaldehyde phenylhydrazone, reaction with p-benzoquinone and chlorobenzoquinone, synth of 5-hydroxyindazoles and indazole quinones, 15005
- derived from treatment of ketones and aldehydes with hydrazine hydrate, oxidation using copper(II) halides provides a route to gem-dihalides, 557
- lithiated SAMP hydrazones, asymmetric Michael addition to alkenylphosphonates followed by oxidative cleavage, synth of 2,3- and 1,2-disubstituted 4-oxophosphonates, 12961
- sterically hindered hydrazones, reaction with

- tellurium dichloride or tellurium tetrahalide in the presence of triethylamine, synth of Δ^3 -1,3,4-telluradiazolines, 8137
- αβ-unsaturated aldehyde dimethylhydrazones, cycloaddition to 1,4-naphthoquinone, synth of benzo[g]quinoline-5,10-quinones, 6001

Hydrocarbons

- aromatic hydrocarbons, complexation with a macrocycle containing four tropolone units in water, 11913
- cyclohexane, adamantane, functionalisation using Cu(II)/H₂O₂ and Cu(I)/H₂O₂ systems in pyridine, mechanism, 16017
- functionalisation of saturated hydrocarbons utilising the Gif oxidation system: role of the iron-carbon bond in Gif chemistry, 7417
- nucleogenic (recoil) ¹¹C atoms, reaction with alkanes, alkenes, dienes, aromatic hydrocarbons, 10155

Hydroformylation

- asymmetric of conjugated dienes using chiral phosphine-phosphite-Rh(I) catalyst, 7795
- Rh-catalysed and carbonylation of *N*-alkenyl-1,3-diaminopropanes, 17449

Hydrogen bonding

- 4,6-bis(acetamidomethyl)-dibenzofuran and -dibenzothiophene, intramolecular and conformation as spacer for parallel β-sheet formation, 17425
- calix[4]-, -[6]- and [8]-arenes from o-t-butylphenol, synth, structure, conformation, of calixarenes with exo-hydroxy groups, 3287
- complexation of dihydrogen phosphate anion by bis-thiourea hosts, 1647
- 10-hydroxy-10,9-borazarophenanthrene, cyclic dimer formation with associated peripheral molecules in solid phase, 8599
- intramolecular hydrogen bonding and conformation in bilirubin solution by nOe analysis, 2697
- secondary effects in flexible networks, 9881
- strapped Zn-porphyrin receptor for benzyloxy-carbonyl amino acids, involvement of in recognition, 9115

Hydrogenation

- of allylic and homoallylic ethers, use of catalytic chiral auxiliaries, 13063
- of aziridinylphosphonates, synth of α -amino-alkylphosphonates, 13603
- catalytic of *N*-t-butoxycarbonylindoles, formation of the corresponding *N*-t-butoxycarbonyl-*cis*-2,3-dihydroindoles, 791
- stereospecific H-labelling by asymmetric deuteriation of methyl N-acetyl-(Z)-α,β-didehydrotryptophan-

(L-phenylalaninate using Rh(I) catalysts, 16107 transfer-hydrogenation of furanocoumarins, synth of deuterium-labelled marmesins, 17699

Hydrolysis

- alkaline of *N*-methyl acetamide, acetanilide and *N*-acetyl imidazole, investigation by *ab initio* molecular orbital calculations, 4317
- alkaline hydrolysis of selenoxides to provide selenoxides which could lead to allylic alcohols on rearrangement, 12115
- chemoenzymatic of p-nitrostyrene oxide, synth of (R)-Nifénalol, 9707
- of cyclic and acyclic acetals to the corresponding carbonyl compds by catalytic CBr₄ in CH₃CN/H₂O solvent mixture under different energy sources, 14255
- enzyme catalysed of 1,3-bis[3,5-bis(ethoxy-carbonyl)-1*H*-pyrazol-1-yl]propane, synth of intermediates to dipyrazolic podands and ester crowns, 2907
- of N-(2-ethyl-6-methylphenyl)-N-(methoxyprop-2-yl)choroacetamide and intramolecular S_N2 reaction, participation of neighbouring amide group, 10513
- of2-hydroxy-2-methyl-N-arylpropionamides, synth of arylamines, 6303
- of 1-methyl-2-trimethylsilylthiopyrrole and corresponding seleno deriv, synth of 2-mercapto-1-methylpyrrole and the analogous selenol, 13079
- 2-(3-nitrophenoxy)quinoxaline, alkaline —, micellar and cationic head group effects, 12361

Hydroquinones

substituted hydroquinones by reaction of 1-(1,2-propadienyl)cyclopropanols with octacarbonyl-dicobalt: application to synth of vitamin E and K analogues, 11069

Hydroxamic acids and derivs

- α-oxobenzothiazole-2-acetimidoyl chloride, formation and reactions with dinucleophiles and dipolarophiles, 17461
- photolysis of cyclopentyl nitrites, formation and ESR of δ-valerolactam N-oxyl radicals, 3205

Hydroxy acids and derivs

- α,α-difluoro β-hydroxy esters, synth by asymmetric aldol addition to a difluoroketene silyl acetal catalysed by chiral Lewis acids, 10271
- γ,δ-epoxy-β-hydroxyesters, cyclisation to yield five and six membered ring hydroxylactones: application to synth of 5-methylated 2-deoxysugars, 659
- (4S)-hydroxymethyl-(2R)-(2-propyl)-butyrolactone, synth via enolate chemistry, 6281

- α-hydroxythioesters by reaction of *trans*-1,3-dithiane-1,3-dioxide with aromatic aldehydes, 16213
- (S)-malic acid, conversion into (S)-3-hydroxy-2-pyrrolidinone, 9213
- (R,R)-tartaric acid ester, amide and nitrile derivs, conformations by X-ray, CD, NMR, ab initio, 6113

Hydroxylamines

- α-aminooxyphosphonic acids, synth by Mitsunobu reaction, 4627
- hydroxylamine, hydrazines, thiourea and guanidines, reactions with ketene dithioacetals, synth of heterocyclic thiols, 17163
- monoterpene-derived α-hydroxylamino-oximes, reductive Beckmann rearrangement, formation of cyclic amidoximes, 2527
- reaction with β-alkoxycarbonyl-β-enaminoketoesters, synth of isoxazole *ortho*-dicarboxylic acid derivs, 14497
- O-substituted as fluorescent probes for detection of abasic sites in DNA, 5485

see also Hydroxamic acids

Hydroxylation

- of adamantane catalysed by manganese and iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxy-phenyl)porphyrin, 4497
- of pyrimidine heterocycles using *Rhodococcus* erythropolis and *Agrobacterium* bacteria together with *Beauveria bassiana* fungus, 6421
- of a series of methyl ester peracetate (5β) -bile acid derivs using dimethyldioxirane, effect of a 7-acetyloxy substituent, 435

Hypervalent elements

- benzo[1,2-c:4,5-c']bis[1,2,5]thiadiazoles-2S^{IV}, synth, spectra, cycloadditions, MO calculations, 10169
- 2,6-bis(dialkylaminomethyl)phenyl (dimethyl and o-biphenylene) germanium chloride, and ²H- and ¹⁵N-labelled isotopomers, DNMR, hypervalent structures, kinetics of exchange of N-alkyl groups, 10133
- chemical transformations induced by hypervalent iodine reagents, 1179
- hydroxy-tosyloxy-iodoarenes-I(III), reaction with aminoquinones, synth of 2-aryliodonylidene-3-imino-1,4-quinones, 6097
- iodine, (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, synth by reaction of [Art⁺-F⁻OTf] with acetylenes, 13139
- phenyliodine(III) diperchlorate, formation and uses, synth of 1,2-diol diperchlorates, 16877
- phenyliodonium diacecate oxidation of naphthols to yield quinone monoketals which react with

- phthalide sulfones to provide benz[a]anthraquinones, 2177
- phenyliodonium diacetate for oxidation of substituted phenols, synth of cyclohexadienones, subsequent annulation with the anion of 3-cyanophthalide affords anthraquinones, 4387
- Xe(II) trifluoroacetate, oxidation of aryl iodides by, synth of bis(trifluoroacetoxyiodo)arenes and related compds, 1145

Imidates

see Imidic acids and derivs

Imidazoles/imidazolines

- 4(5)-monosubstituted —, synth by TOSMIC cycloaddition to aldimines, 11355
- alkoxythiocarbonylimidazoles, synth from thiocarbonyldiimidazole by reactions in solid phase, 2415
- 2-alkyl-4,5-dihydroimidazoles in condensations, synth of 2-alkenyl derivs and conjugate addition reactions thereto, 1111
- 1-benzyl-2-(ethoxycarbonylmethylene)-2,3,4,5-tetra hydroimidazole, alkylation with halogeno and dihalogenoalkanes, and epoxides, subsequent removal of the ethoxycarbonyl group yields 2-alkyl-4,5-dihydroimidazoles, 11781
- 4,4-bis(trifluoromethyl)imidazoline—based ACAT inhibitors, asymmetric synth and absolute stereochemistry, 5359
- 4,5-bis(t-butoxycarbonyl)- and 4-tosyl-1-arylimidazoles by reaction of arylazosulfones with potassium salts of (t-butoxycarbonyl)methyl and tosylmethyl isocyanide respectively, 2125
- 15-crown-5 complex of the sodium salt of 2-nitroimidazole, synth and structure, 13177
- 2,3-dihydroimidazo[2,1-a]phthalazin-4-ium-6-olates, ring transformation by acetic and propionic anhydrides, substituent effects, 7021
- histidine, allylic protection of imidazole ring, 12525 histidine and histamine, radical alkylation at C-2, 2365
- histidines and histamines, synth of ring-substituted derivatives, 4539
- hymenidin, oroidin and keramadine, marine 2aminoimidazole metabolites, prep from imidazolemethanol, 7605
- imidazo[1,5-c][1,3]benzodiazepine ring system, synth by reaction of the iminophosphorane derived from (Z)-5-(o-azidoarylidene)hydantoin with isocyanates, 15895
- imidazo[2,1-b]oxazoles; Mannich, bromination, nitration and Vilmeier-Haack formylation of, 6959 imidazoles bearing 1-fluorinated substituents with

potential application as probes for intracellular pH determination; synth, acidity and ¹⁹F NMR, 8211

- Δ^3 -imidazoline 3-oxides, addition to aryl isocyanates, synth of 5,6,7,7a-tetrahydroimidazo[1,5-b][1,2,4]-oxadiazol-2(H)-ones, 13873
- imidazoline analogues of the kainoid family, synth *via* β-aminoglutamic acid derivs, 2775
- organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7237
- polyfunctionalisation of imidazole via sequential imidazolyl anion formation, 14481
- 1,3-selenazoles and 2-imidazolin-5-selones, synth from isoselenocyanates and isocyanides, 13667
- synth of RNAase active site model system on a steroid template, 8421
- meso-tetraalkyl porphyrin-Co(III), axially (substituted-imidazole)-coordinated, barriers to rotation, 12487
- 2-(1,1,1-trifluoroacetonyl)imidazoles by reaction of trifluoroacetyl ketene diethyl acetal with *o*-arylenediamines, 5847

Imidazolidines/imidazolidinones

- 3-acyl-1,5-dimethyl-4-phenylimidazolidin-2-ones, chiral auxiliaries/intermediates in synth of diphenacoum and brodifacoum, 4-hydroxycoumarin rodenticides, 6045
- 2-aryl-1,3-dihydroxy-4,4,5,5-tetramethylimidazolidi nes, NMR and semiempirical conformational analysis, 16911
- 2-chloro-1,3-dimethylimidazolidium hexafluorophosphate as coupling reagent for synth of peptaibols, 567
- 1,3-dimethylimidazolidine and 1, 3-oxazolidines, reaction with alkyl chlorosilanes and with 2-methylfuran, 14381
- 1,3-di-(2-pyridyl)imidazolidine-4,5-diol, formation from glyoxal, formaldehyde and 2-aminopyridine, crystal structure, 2557
- hydantoin derivs of silicon-containing α-amino acids, synth by alkylation of an α-amino cyanoacetate deriv with iodomethyl-substituted silanes followed by hydrolysis and reaction with KOCN and HCl, 13695
- intramolecular Ugi 4CC reaction in synth of hydantoin-4-imides on solid phase, 6653

Imide

- N-alkylcyclopropyl phthalimides, intramolecular electron transfer reactions of, synth of spiro lactams, 3475
- 3-aminosuccinimides, regioselective reduction for synth of pyrrolo[3,2-c]isoquinolines and 3,6-methano-2,5-benzodiazocine, 2075

- benzoylperylenedicarboximides, fluorescent dyes, synth from bromonaphthylimide and bromobenzanthrone, optical and electronic properties, 6847
- ene reactions of maleimides with allyl aromatics, potential cross-linking reaction in polymerisation, 13473
- 3-ethyl-3-(4-aminophenyl)glutarimide, synth in chiral forms, 7917
- Rebek imide benzoxazole, nitrile oxide cycloaddition of acryloyl derivs of, effect of aromatic ring on reactions of a nearby unsaturated imide, 1971
- N-(p-substituted phenyl)maleimides, Diels-ALder reaction with [3.3]orthoanthracenophanes, 6817
- N-substituted phthalisoimides, synth by reaction of phthalidylidene dichloride with primary amines, 5305

N-Imides

3,4-dihydropyrrolo[1,2-a]pyrazine, — formation and cycloadditions, 9341

Imidic acids and derivs

imidate derived from dimethyl aminomalonate with a variety of aldehydes as dipolarophiles, general route to 2-oxazoline derivatives, *ortho* and *meta* bis(2'-oxazoline-5'-yl)benzenes, 6351

Imines

- 4(5)-monosubstituted imidazoles, synth by TOSMIC cycloaddition to aldimines, 11355
- activated imines, reaction with the lactam enolate of the protected pyroglutamic acid ester, synth of non-proteinogenic amino acids, 10545
- aldol-type addition of enol borinates to —, *ab initio* MO study, 7705
- 5-amino-4-(4-nitrophenyl)-1,3-dioxan, sythesis and stereochemistry of Schiff bases, 1909
- 9a-azalide iminoethers, rearrangement to 9,11-iminoethers, 16923
- Co(II)-schiff base as catalyst for oxidation of organic substrates, 7649
- 1,3-diazabutadienes, [4+2] and [2+2] cycloadditions with ketenes, formation of azetidinones and dihydropyrimidinones, 14107
- 4,5-diazafluoren-9-one, synth, electronic and spectroscopic properties of derived imine and diimine ligands, 12377
- iminophosphorane derived from (Z)-5-(o-azido-arylidene)hydantoin, reaction with isocyanates, synth of the imidazo[1,5-c][1,3]benzodiazepine ring system, 15895
- intermediate N-imine in base-decomposition of N-halo-dipeptide, 12615
- intramolecular cycloaddition of ketenimines with -,

- synth of dihydroazeto[2,1-b]quinazolines and 1H-2,8-dihydroazeto[2,1-b]quinazolin-1-ones, 13449 kinetic studies of intramolecular additions of alkyl radicals onto--, 73
- low-temperature Schiff base condensation for synth of hetero-polytopic cryptands, 10517
- 4-nitrophenyl serinol, ring-chain tautomerism of Schiff bases, 1873, 1891, 1909
- oxidative rearrangement of imines to formamides using sodium perborate, 3805
- oxime- and Schiff base-containing aza- and diazacrown ethers which can be used for heteronuclear binding with hard and soft metal ions, synth from aza-15-crowns, 17595
- reduction to amines by treatment with catalytic *n*-butyltris(2-ethylhexanoate)tin and stoichiometric polymethylhydrosiloxane, 16349
- Schiff base intermediates in synth of optically active α -amino acids from glycine t-butyl ester employing (+)-N-alkyl-10-camphorsulfonamides as chiral auxiliaries, 11141
- Schiff base reduction by formic acid, spectroscopic evidence for a free-radical mechanism, 6907
- α-vinyl-, α-allyl- and α-allenyl-aldimines, transamination reactions by 1,3-proton shift leading to corresponding amines, 10803
- Yb(OTf)₃ catalysed reaction with an aldehyde and a nucleophile, multicomponent synth of 1,2,3,4-tetrahydroquinolines, 9715

Iminium salts

- α -acetoxy-dialkylnitrosamines,pH-independentdecay in water, secondary α -deuterium isotope effects consistent with nitrosoiminium ion intermediates, 10671
- acyliminium ion cyclization in synth of pyrido[2,1-a]isoquinolin-4-one derivs, diastereoselection, 3045
- acyliminium ion cyclizations, synth of thieno- and benzo-fused pyrrolo- and pyrido-[2,1-a]iso-indolones, 2495
- cyclization of *N*-acyliminium ions in synth of 1,2,5,6-tetrahydro-1-hydroxy-3-oxopyrrolo[2,1-*a*]i soquinoline-10b(3*H*)-acetic acid lactone, 2449
- generation using chlorosilanes and their reactions with electron rich aromatic heterocycles, 2941
- tandem cyclopropyliminium ion rearrangement-Hofmann elimination affording 3-vinyl D²pyrrolines and subsequent onter- and intramolecular [4+2]cycloaddition reactions, 8941

Imino ethers

see Imidic acids and derivs

Iminophosphoranes

see Phosphine imines

Immunodeficiency

nucleoside triphosphate isosteres, potential inhibitors of HIV reverse transcriptase, 5537

Immunostimulation

- conagenin, immunomodulator from Streptomyces roseosporus MI696-AF3, synth of conagenin analogues modified at 3'-carbon centre from D-xylose, 13883
- synth of 1α -(3'-carboxypropyl)-4-androsten-17 β -ol-3-one, a deriv of testosterone, application to the prep of immunogens and fluorescent tracers, 12855

Immunosuppressive compds

- 2-azabicyclo[3.3.1]nonanes, subunit of immunosuppressant FR901483, synth by intramolecular carboradical cyclisation of 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, 1391
- (+)-lactacystin, non-protein neurotropic factor having α,α-disubstituted α-amino acid structure, total synth from D-glucose, 16287

Inclusion

- calix[4], -[6]- and [8]arenes with t-butyl and OH groups on outer rim, inclusion compds, 3287
- enantiomeric recognition of alkyl phenyl sulfoxides by crystalline (R)-phenylglycyl-(R)-phenylglycine, 8315
- thiacalixarenes, analogues of p-t-butylcalix[4]arene with S bridges, synth, behaviour as hosts, 10689

Indanes/hydrindanes

- CD-ring steroid-derived 4-vinyl-2,3,3a,6,7,7a-hexahydro-1*H*-indenes, cycloadditions in synth of steroid-anthraquinone hybrids, 10871
- formation from α, α' -dibromo-o-xylene and carbanions, control of selectivity of alkylation by acidity of conjugate acids, 14973
- 1-methylenehydrindan-2-ones by intramolecular bicyclization of β-alkoxycarbonylallylsilanes with enones, 839

Indazoles

5-hydroxyindazoles and indazole quinones, synth by Nenitzescu reaction of azaenamine-benzaldehyde phenylhydrazone with *p*-benzoquinone and chlorobenzoquinone, 15005

Indenes

- bromoacetylenic oxy-Cope rearrangements, formation of reduced bromo-indenes, -naphthalenes, -benzo-cyclooctenes, -cyclodecadienones, 12637
- hydroxymethylacylfulvene (HMAF), illudin S derivative, reactions with thiols, 14579

Indium and compds

indium hydride reagent for diastereoselective reduction of acyclic hydroxyketones and diketones,

15685

Indoles

- addition to *N*-acetyl- and *N*-alkylpyridinium, quinolinium or isoquinolinium salts, synth of dihydroazines, 13959
- annelated pyrido[4,3-b], synth by cyclisation of 1-azatriene, 4447
- N-arylazoindoles solid-phase synth by reaction of diazonium ions, immobilised on an ion-exchange resin, with sodioindole, 9749
- 7-azaindole, lithiation followed by addition of electrophiles, synth of 2-substituted-1*H*-pyrrolo-[2,3-*b*]pyridines, 3637
- β-(benzofur-2-yl)- and -(indol-2-yl)enamines, reaction with benzoquinone leads to formation of 3-heteroarylbenzofurans, 177
- N-t-butoxycarbonylindoles, catalytic hydrogenation to provide the corresponding N-t-butoxycarbonyl-cis-2,3-dihydroindoles, 791
- closure of pyridine ring to in synth of 1-substituted 4-oxygenated β-carbolines, 1593
- condensed and substituted —, synth by annelation of 1-methylpyrrole-2-acetonitrile, 14737
- N-cyanation in synth of benzo[b]carbazole-6,11-diones, 16835
- 5,10-dihydro-5,10-dimethyl-2,5,10-triazadibenzo-[a,e]pentalene, the pyrroloindole analogue of ellipticine: synth and DNA intercalative properties of, 479
- 5,6-dihydroxyindole versus 5,6-dihydroxyindole-2-carboxylic acid units in integrated approach to structure of sepia melanin, 8281
- 1,2-disubstituted mitosenes or pyrrolo[1,2-a]indole, synth based on the intramolecular cyclisation of diazoesters, 16521
- fluvistatin analogues, asymmetric synth of (E)-3,5-dihydroxyhept-6-enoates and (E)-3-hydroxypent-4-enoates, 10659
- 6-*N*-formylamino-12,13-dihydro-1,11-dihydroxy-13 -(β-D-glucopyranosyl)-5*H*-indolo[2,3-*a*]-pyrrolo-[3,4-*c*]carbazole-5,7(6*H*)-dione (NB-506), indolopyrrolocarbazole anticancer agent, synth, 585
- 1-hydroxy—, mainly with 3-CN and 2-vinyl groups, synth from (2-nitroaryl)ethanes, intramolecular oxidation/reduction and cyclization, 5501
- 7-hydroxyindoles by Fischer indole synthesis involving construction of a 4-aminobenzoxazine and removal of the N-O tether after indole formation: access to the pyrrolo[2,3,4-d,e]quinoline nucleus, 8853
- indol-3-yl-carbaldehyde oximes, reaction with electrophilic alkenes/alkynes, synth of nitrones and

- y-carbolines, 747
- 6-(3-indolyl)-2-piperidones, prep by amidoalkylation of piperidones with indole, subsequent conjugate addition to a 3,4-didehydro deriv, 719
- 3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl phosphine, ligand for chiral Pd catalysis, 4035
- C-(1-methylindol-3-yl)-N-methylnitrone, 1,3-dipolar cycloaddition with carbonyl substituted dipolarophiles, formation of indolyl-isoxazolidines which could be further reduced to pyrrolidinones, 707
- 1-methylindole-3-carbaldehyde, reaction with diethyl azodicarboxylate, formation of diethyl N-(1-methylindol-3-ylcarbonyl)hydrazine-N, N'-dicarboxylate, 9313
- 1-, 2- and 3-monosubstituted 1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizine alkyl derivs, epimerisation of, 5349
- perhydropyrrolo[1,2-a]indole alkaloid nucleus by cyclisation of amino-cyclohexadienone, 8871
- 7-(2-pyrrolyl)indoles and 7-indolyl 2-pyrrolyl ketones, and 2- and 7-(3*H*-4,5-dihydropyrrol-2-yl)indoles, synth, 8565, 8573
- 1,3,4-substituted tetrahydro-β-carbolines, stereoselective synth from indoles by nucleophilic aziridine ring opening and Pictet-Spengler-like reaction, 8237
- 1,3,4,5-tetrahydrobenz[cd]indole, synth by Vicarious Nucleophilic Substitution of hydrogen, 193
- unsymmetrical bis-1,2-(3-indolyl)ethanes, cyclisation of, synth of (—)-tjipanazole F1, an indolocarbazole glycoside, 16553

Indolines/indolinones

- 1-acyl-2-alkylideneindolin-3-ones, cycloadditions to enol ethers and thioethers, synth and oxidation of 2H,5H,-3,4-dihydropyrano[3,2-b]indoles, 987
- 3-(aryl and alkyl)methylene-1*H*-isoindolin-1-ones, synth *via* aryne cyclisation and Horner reaction of *o* (and *m*-) halogeno-*N*-phosphorylmethylbenzamide derivs, 10313
- benzastatins E-G, indoline alkaloids with neuronal cell protecting activity from *Streptomyces nitrosporeus*, structures and toxicity, 4309
- 2-oxoindolinium enolate derivs by Wolff rearrangement of 1-diazo-2-oxo-(2-N, N-disubstituted aminophenyl)ethylphosphonates on thermolysis, 7557
- secretagogue MK-677, spiroindoline-based growth hormone, synth from isonipecotic acid by Fischer indole/reduction strategy, 10983
- 3-spiro-fused indolines by distereoselective photocyclizations, 16083

Indolizines/indolizidines

- formation of from papyracillic acid, spirobutenolide antibiotic, 6209
- substituted benzo[b]indolizidines and benzo[b]quinolizidines by ring-opening of 3-bromo-2,5-dimethylthiophene-1,1-dioxide, 771
- substituted indolizines, synth by electrochemical reduction of 2-cyano-3-(2-pyridyl)methylacrylates in the presence of chlorotrimethylsilane, 81
- swainsonine, mannosidase inhibitor and anticancer drug, synth of (3R)- and (3S)-3-(hydroxymethyl)-swainsonine from D-ribose, 11021

Infrared spectra

- 4,6-bis(acetamidomethyl)-dibenzofuranand-dibenzothiophene, intramolecular H-bonding evidenced by -. 17425
- flavones from reaction of 2-hydroxy-α-bromoacetophenones with piperidine or morpholine aminals of benzaldehydes, 9813
- products from lipase-catalysed N-acylation of amino sugar derivs, 7587
- N-(2-propyl)-3-(4-chlorobenzoyl)-4-ethoxycarbonyl methylpyrrolidine-2,5-dione, 17643 spirofurochromanone derivs, 15799

Inositols

- 6-O-(2-amino-2-deoxy-α-D-glucopyranosyl)-D-myoinositol 1-phosphate, inner core structure of glycosylphosphatidylinositols and part of a proposed insulin second messenger phosphate, synth, 17727
- 5-deoxy-5-fluoro-*myo*-inositol and 3-deoxy-3-fluoro-L-*chiro*-inositol, synth from bromocyclo-hexadiene *cis*-diol obtained by microbial oxidation of bromobenzene with *P. putida*, 8807
- 1D-3-deoxy- and -2,3-dideoxyphosphatidylinositol, synth using viburnitol 1,2:4,5- and 1,2:5,6-diacetonides as starting materials, 14903
- 6-deoxy- and 3,6-dideoxy-D-*myo* precursors of deoxy-*myo* phosphate analogues, synth from D-galactose, 16747
- 2,6-di-O-α-D-mannopyranosyl-1-phosphatidyl-D-myo-inositol, glycosylation and phosphatidylation both employing phosphite chemistry, 903
- membrane-permeant esters of polyphosphates, synth, applications, 12017

Insecticides

- kainoids, natural products with anthelmintic and insecticidal activities, synth of imidazoline analogues of, 2775
- parathion (dimethyl and diethyl *p*-nitrophenyl phosphothioate), chemical model for enzymatic mono-dealkylation, 17241

Insects

Chrysomela lapponica, leaf beetle, biogenesis of defensive secretion (esters of C₆ and C₁₀ alcohols), 9203

Periplaneta fuliginosa, P. americana and P. japonica, response to (-)-periplanones C and D, 7209

Insertion reactions

asymmetric insertion of metal-carbenoids into the Si-H bond of α -silylacetic ester enolates, synth of α -silylcarbonyl compds, 2855

C-H insertion via deoxygenation of amides by a Sm/Sml, mixed system, 12895

of electrophilic carbenes with α-amino acid derivatives, 3425

of trans-silirane, synth of oxasilacyclopentane acetals, 16597

Iodine and compds

1β-methyl carbapenem synth via an iodonium ylid, 1635

oxidation of aryl iodides by Xe(II) bistrifluoroacetate, synth of bis(trifluoroacetoxyiodo)arenes and related compds, 1145

Ionisation

1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, dissociation in polar solvents, PMR, cyclic voltammetry, UV/vis/near IR spectra, 9935

equilibrium acidities of sulfoxides and sulfones in THF, ion pairing, 10103

ionisation constant determination of 9-deazaadenosine and formycin B, 6903

Ionophores

bispyridine tetramide macrocycles, complexation of Ag⁺ and the role of preorganisation on selectivity, 10841

enhanced Li⁺ ion-selective ionophoric properties of double armed diaza-12-crown-4 derivs, 3487

Iridoids

cyclopenta[c]pyran skeleton of — lactones, synthesis (Report 431), 14507

Iron and compds

oxidative functionalisation of unactivated carbon-hydrogen bonds in heptacyclo-[6.6.0.0^{2,6}.0^{3,13}.0^{4,11}.0^{5,9}.0^{10,14}]tetradecane using Gif-type reactions, 1257

cyclohexadiene and cyclohexadienyl Fe(CO)₂ with phosphinite- and phosphine—containing bridges from Fe to ring, synth, reactivity, 12553

Fe⁰ filings for promotion of the halogen atom transfer radical addition of α -polychloroesters to olefins, 17761

Fe^{II}Cl₂ salt and bis(trimethylsilyl)peroxide in pyridine

for selective functionalisation of alkanes, 511

Fe^{III}(PA)₃ and Fe^{III}(PA)₂Cl₂Pyr₂H with bis(trimethylsilyl)peroxide for oxidation of alkanes, 487, 511

Gif oxidation system for functionalisation of saturated hydrocarbons: role of the iron-carbon bond in Gif chemistry, 7417

Gif-type reactions, evaluation of stereoselectivity using *trans*-1,4-dimethylcyclohexane as a probe, 2997

(4,6-heptadien-3-one)- and (methyl 3,5-hexadienoate) Fe(CO)₃, alkylation of, model studies for prep of protomycinolide IV, 4185

iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxyphenyl)porphyrin as catalysts for epoxidation and hydroxylation reactions, 4497

 η^5 -[4-methoxy-1-(1-methoxycarbonylvinyl)cyclohexadienyl] dicarbonyl triphenylphosphine iron(I) hexafluorophosphate, synth, reactivity, structure, 4095

Isobenzofurans

mycophenolic acid, phthalide deriv, convergent synth using Pd-catalysed coupling, 3395

phthalide synth by 1,6-conjugate addition to 2-(o-vinylphenyl)oxazolines, synth of chuangxinol, 14127

U-shaped cavity molecules, synth using - cycloadditions, 3975

Isochromans

isochromans, conversion into isocoumarins by reaction with dimethyldioxirane, 9755

Isocoumarins

from isochromans by reaction with dimethyldioxirane, 9755

Isocyanates

acyl isocyanates, reaction with silylketenes followed by hetero Diels-Alder reaction with acetylene: AM1 semi-empirical calculations, 225

aryl —, reaction with 2-(phosphoranylideneamino)nicotinate esters, synth of 4-arylimino-1,3,5triazin-2-ones and fused derivs, 16061

aryl isocyanates, addition of Δ^3 -imidazoline 3-oxides to aryl isocyanates, synth of 5,6,7,7a-tetrahydro-imidazo[1,5-b][1,2,4]oxadiazol-2(H)-ones, 13873

isoselenocyanates, reaction with isocyanides, synth of 1,3-selenazoles and 2-imidazolin-5-selones, 13667 tosyl—, reaction with silyl enol ethers incorporated into vinyl polymers, formation of *N*-tosyl-β-ketoamides, 15429

Isocyanides

isocyanides, reaction with isoselenocyanates, synth of 1,3-selenazoles and 2-imidazolin-5-selones, 13667

tosylmethyl — (TOSMIC), cycloaddition to aldimines, synth of monosubstituted imidazoles, 11355

Isoindoles

3-(aryl and alkyl)methylene-1*H*-isoindolin-1-ones, synth *via* aryne cyclisation and Horner reaction of *o*- (and *m*-) halogeno-*N*-phosphorylmethylbenzamide derivs, 10313

Isomerisation

cycloisomerisation of butynols at a pentacarbonylmetal template, synth of carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, 5143

of dithiirane 1-oxides, 12203

of octadecatrienoic acid ethyl esters, 4531

oxa-di-π-methane photoisomerisation in rearrangement of carbocycles possessing bridgehead unsaturation, 11099

Isomerism

condensation of aldehydes with 1,3-benzenedithiol, formation of 1,2,10,12-tetrathia[3.3]metacyclophanes, conformational and geometrical isomerism, 3155

Isomers

isopropenyl and isopropylidene isomers of an alkene from allylic 2-hydroxypropyl, 2-trimethylsilylethyl, and benzothiazol-2-yl sulfones *via* α-alkylation, 1,3-rearrangement and desulfonylation, 307

Isoquinolines

- N-acetyl- and N-alkylisoquinolinium, quinolinium or pyridinium salts, addition reaction with pyrrole and indole, synth of dihydroazines, 13959
- 6,7-dimethoxy-1-methyl-3,4-dihydro— with DMAD, fused 1,3-dihydro-3-oxopyrrol-2-ylideneacetic ester as 1:1 adduct, 10899
- 4,5-dioxoaporphines, isoquinoline alkaloids, synth by bicyclisation of biphenylacetamides, 14397
- substituted 3,4-dihydroisoquinoline *N*-oxides, 1,3-dipolar cycloadditions with allenes, synth of 5-methylene isoxazolidines, 9575
- 1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by Suzuki coupling, barriers to rotation, conformation, AM1 and PM3 calculations, 5379
- yaoundamine A, a naphthyldihydroisoquinoline alkaloid isolated from *Ancistrocladus korupensis*, absolute axial configuration by experimental and theoretical Circular Dichroism, 2817
- yaoundamines A and B, antimalarial naphthylisoquinoline alkaloids from *Ancistrocladus korup*ensis, structures, 8121

Isoquinuclidines

oxahydrindane subunit of avermectins, prep from

isoquinuclidine derivs, 5195

Isosteres

see also Carbohydrate analogues, Peptide analogues Isothiazoles

3-amino-4-arylisothiazole 1,1-dioxides, functionalisation by reaction with vinyl-, aryl-, heteroaryland alkynylstannanes, 15859

Isothiocyanates

per-O-benzoyl-β-D-galactofuranosyl isothiocyanate, chiral resolving agent, reactions, 16009

Isotope effects

α-acetoxy-dialkylnitrosamines, pH-independent decay in water, secondary α-deuterium — consistent with nitrosoiminium ion intermediates, 10671

hydrogen shifts in cyclohexylcarbenes, spatial dependence of activating power and of primary deuterium isotope effects, 14871

kinetic isotope effect studies of 2S-[2-²H]-kynurenine with kynureninase, 15761

Isotopic substitution

see Labelling

Isoxazoles

5-alkoxy—, isomerization to 2-carboxyazirines by Fe²⁺ salts, 10911

4-aryl isoxazolin-5-ones, conversion to heterocyclic ketene *N*,*O*-acetals, 10433

isoxazole and pyrazole annulated sultams, synth by intramolecular 1,3-dipolar cycloaddition of substituted α - and β -sulfonamides, 13855

L-isoxazolylalanine by ozonolysis of L-1,4-cyclohexadienylalanine followed by cyclisation with hydroxylamine, 4457

pyrazole, isoxazole and pyrimidine *ortho*-dicarboxylic acid derivs, synth by reaction of β-alkoxycarbonyl-β-enaminoketoesters with hydrazines, hydroxylamine and amidines respectively, 14497

tetrahydrofuro[2,3-d]isoxazol-5(2H)ones, synth by reaction of 2-trimethylsilyloxyfuran with a glyceraldehyde derived nitrone, subsequent hydrogenolysis provides 5-amino-2,5-dideoxyheptono-1,5-lactams, 11721

Isoxazolidines

cage-fused —, cycloadditions of homoadamantaneincorporated nitrones, 3-oxa-2-azatetracyclo-[7.3.1.1^{7,11}.0^{2,6}]tetradecanes, 5413

fused —, cleavage by methyl iodide to quaternary hydroxyalkylammonium salts, 16897

indolyl-isoxazolidines by 1,3-dipolar cycloaddition of C-(1-methylindol-3-yl)-N-methylnitrone with carbonyl substituted dipolarophiles, 707

isoxazolidine derived heterocycles by 1,3-dipolar

- cycloaddition of nitrones derived from δ -alkenyl oximes, 15051
- 5-methylene isoxazolidines by 1,3-dipolar cycloaddition of substituted 3,4-dihydroisoquinoline N-oxides with allenes, 9575
- optically active isoxazolidines via asymmetric cycloaddition reactions of nitrones with alkenes, 403
- oxime-nitrone-isoxazolidine cascade reactions involving nucleophilic opening of epoxides with oximes followed by 1,3-dipolar cycloaddition reactions with dipolarophiles, 14339
- 10-phenyl-11-oxa-1-azabicyclo[6.3.0]undecane and congeners, synth, barriers to inversion at N, 5581
- 3-substituted isoxazolidin-5-ones, synth by conjugate addition-rearrangement of N-benzylhydroxylamine to αβ-unsaturated lactones, 739

Isoxazolines

- cyclolignans with an isoxazoline ring fused to the cyclolignan core, synth by reaction of 7-ketolignans with hydroxylamine, 6555
- preparation of "library" of using "fluorous synthesis", 6681

Ketals

see Acetals

Ketenes

- addition of methoxy(methoxycarbonyl)ketene to cyclopentadiene, 10019
- difluoroketene silyl acetal, asymmetric aldol addition of aldehyde catalysed by chiral Lewis acids, synth of the corresponding α , α -difluoro β -hydroxy esters, 10271
- diphenyl—, reaction with methyl 2-methyl-3-phenyl-2*H*-azirine-2-acrylate, formation of 3,4-dihydro-2*H*-pyrrol-2-ones and of cyclopropane derivs, 7089 heterocyclic ketene *N,O*-acetals, synth from 4-aryl isoxazolin-5-ones, 10433
- ketene dithioacetals, reduction and reactions with bis-nucleophiles, synth of substituted dithianes and heterocyclic thiols respectively, 17151, 17163
- nitrosoketene, cycloaddition of chiral cyclic ketones to, synth of chiral spiro 3-oxazolin-5-one 3-oxides for use in EPC synth of modified amino acids, 5725
- α-oxoketene *O,N*-acetals, reaction with maleic anhydride, synth of *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, 17643
- phthalimidoketene, [2+2]-cycloaddition to *N*-cinnamylidene-2-amino-1-phenylpropane-1,3-diol silyl ethers, 7985
- N-phthalyl valine ketene, stereoselective addition of (R)-pantolactone to, 13719
- regioselective [4+2] cycloadditions with N-arylamino

- substituted 1,3-diaza-1,3-butadienes, synth of pyrimidinone and fused pyrimidinones, 13829, 13841
- silylketene acetals, enantioselective conjugate addition to 2-carboxycyclopentenones promoted by TADDOL.TiCl, complexes, 13009
- silylketenes, reaction with acyl isocyanates followed by hetero Diels-Alder reaction with acetylene: AM1 semi-empirical calculations, 225
- tetracyclo[5.3.2.0^{2,10}.0^{3,6}]dodeca-4,8,11-triene (homotropilidene system), electrophilic additions mediated by TCNE, and dichloroketene cycloaddition, 4869
- trimethylsilyl-, t-butyldimethylsilyl- and stannylketenes, formation from ethoxyacetylene and ethoxy(silyl)acetylene, *ab initio* and semiempirical calculations. 8165

Ketene acetals

stereocontrolled thio-Claisen rearrangement of S-allylic ketene aminothioacetals with adjacent hydroxy stereogenic centre, 17253

Ketenimines

intramolecular cycloaddition of — with imines, synth of dihydroazeto[2,1-b]quinazolines and 1H-2,8-dihydroazeto[2,1-b]quinazolin-1-ones, 13449

Keto acids and derivs

- β-alkoxycarbonyl-β-enaminoketoesters, reaction with hydrazines, hydroxylamine and amidines respectively, synth of pyrazole, isoxazole and pyrimidine *ortho*-dicarboxylic acid derivs, 14497
- alkyl phenylglyoxylates containing thioether groups, photocyclization and photodimerisation, 7165, corrig. 12771
- Baker's yeast reduction of β -ketoesters in organic solvents and water, 935
- cyclic γ-ketoesters and α-allyl analogues with 10-17-membered rings, synth by radical intramolecular carbonylation, 14615
- ethyl pyruvate, Knoevenagel condensation with O,S-diethyl monothiomalonate and S,S'-diethyl dithiomalonate, effect of ZnCl₂, 7097
- γ-keto esters, stereoselective synth, ketomethylene dipeptide isosteres, 7119
- α -keto-perfluorocarboxylic esters, biomimetic transamination, synth of β, β, β -trifluoroalanine, 8307
- ketoacids derived from proteinogenic amino acids, oxidative decarboxylation by α -ketoisocaproate dioxygenase, 6993
- β-phenylseleno-α-oxo-esters, synth by selenenylation using *N*-phenylselenomorpholine, olefination, synthetic uses, 16767
- trideuteriomethyl labelled α-ketoisocapric (4-methyl-

2-oxopentanoic) acid, chiral synth, 10827 **Ketols**

α-acyloxy-ketones, synth by Ru-catalysed hydration/esterification of propargylic alcohols,

photolabile benzoins, carbamoyl derivatives, synth, reactions, 3917

Ketones

- acetophenone, double benzylation under phase transfer catalysis conditions, effect of acidity and π - π interaction, 3659
- 4-X-acetophenones and 4-X-2,6-dimethylacetophenones, substituent effects on the gas-phase basicities, 731
- acyclic hydroxyketones and diketones, diastereoselective reduction with an indium hydride reagent, synth of *meso*-diols, 15685
- α-acyl-N-[bis(methylthio)methylene]alaninates and phenylalaninates, reduction to yield α,α-disubstituted β-hydroxy α-amino esters, 2189 and aldehydes, transformation to gem-dihalides via hydrazones using copper(II) halides, 557
- α-amido trifluoromethyl alcohols and ketones, metallo-β-lactamase inhibitors, synth using Ruppert reagent, 7275
- benzylation of ketone enolates under PTC conditions, effect of π - π interaction between substrate and reactant, 11437
- bicyclic —, photo-enolisation and trapping of o-quinodimethanes, 15969
- α-chloroacetophenones, photo-Favorskii rearrangement, effect of solvent on synth of phenylacetic acids, 16789
- α-chloro α-(phenylsulfinyl) ketones (RCOCHCl SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843
- coupling of polyhalo compds with —, direct electroreduction and use of electroregenerated base, 1721 cyclic β-benzenesulfonyl —, ring cleavage by base, 7341
- cyclopropyl ketones, opening with samarium(II) iodide followed by intramolecular trapping of an electrophile, synth of spirocyclic and bicyclic ketones, 8067
- α,α-difluoro-β-ketophosphonates, synth by addition of diethyldifluoromethylphsophonate to LDA containing cerium(III) chloride followed by reaction with esters and DMF, 10623
- β-diketones and β-ketoaldehydes, enol/enol tautomerism and annular tautomerism in NH-pyrazoles, semi-empirical study of Mills-Nixon effect. 1403
- β -diketones and the corresponding β -enaminoketones,

- having modified carane and p-menthane skeletons, treatment with aryl- and alkylhydrazines, synth of N-substituted fused pyrazoles and pyrazolinols, 17735
- haloketones, reduction of as key step in stereocontrolled synth of *erythro N*-protected α-amino epoxides, 5325
- heteroatom-substituted ketones, Tebbe methylenations of synth of heteroatom-containing bicyclic endoperoxides, 37
- α -hydroxy- ketones, carboxylic acids, esters and amides, synth from α -hydroxythioesters, 16213
- 2-hydroxy-α-bromoacetophenones, reaction with piperidine or morpholine aminals of benzaldehydes, synth of flavones, 9813
- 3- and 7-indolyl 2-pyrrolyl -, synth, 8565
- ketone silyl acetal, Mukaiyama reaction of catalysed by organotin perchlorates, 14275
- δ and ϵ -lithioketone equivalents by aromatic radical-anion induced reductive lithiation of the acetals or thioacetals of δ and ϵ -(phenylthio)ketones, 17607
- (S)-2-methoxycyclohexanone, intermediate in synth of Sanfetrinem, synth by microbial reduction of 2-benzylidenecyclohexanone, 2617
- nickel-catalysed electrosynthesis from organic halides and metal carbonyls, 17089
- by oxidation of alkanes using Fe^{III}(PA)₃ and Fe^{III}(PA)₂Cl₂Pyr₂H with bis(trimethylsilyl)peroxide, 487, 511
- oxidation of ketones by in situ formation of FOH, 15833
- α -phenylselanyl γ -unsaturated ketones, synth by allylation and benzylation of enolates derived from β -phenylselanyl silyl enol ethers, 6365
- polymethylhydrosilane-TBAF reduction of in THF, stereo- and chemo-selectivity, 1627
- 2-propanone, 2-butanone, 3-pentanone and 3-buten-2-one, laser photolysis in the gas phase, 3757 reaction with 1,2- and 1,3-hydroxyalkyl azides, synth of *N*-hydroxyalkyl lactams *via* formation of a hemiketal, 16241
- reactions with tetrathiafulvalenyllithium, synth of mono-functionalised tetrathiafulvalene derivs, 17781 reduction with 3-(p-tolylsulfinyl)-1,4-dihydropyridines, 593
- 4-substituted butenolides, synth by Lewis acid promoted Michael addition of 2-(trimethylsilyloxy)-furans to oxazolidinone enoates in the presence of hexafluoroisopropanol, 17015
- tetrabenzoyl cyclohexanols from Michael reactions of acetophenones and *trans*-dibenzoylethylene, 1045 tetrahydroxyketones, ketalisation of, application to

synth of ketal core of zaragozic acid, kinetics and thermodynamics, 11179

β-thioketones, solid-phase combinatorial synth, 6595 see also the individual Cyclic ketones, Chalcones, Dienones, Enones

Kinetics

acceleration of reactivity of alkenes tethered to pyridyl groups compared with alkenes tethered to phenyl groups for Diels-Alder cycloaddition of enoate esters and hydrogenation of allylic and homoallylic ethers, 13063

acid dissociation constants of substituted phenols by kinetic method together with rate constants for reactions of aryl benzoates with Z-substituted phenoxide and EtO, 5073

catalysis of Diels-Alder reactions of arylidenemalonic ester with cyclopentadiene in CH₂Cl₂ by Mg(ClO₄)₂, —, structure of reactive dienophile-Mg²⁺ complex, 13495

N-chloro-alkylamines and N-chloro-N-alkylethanolamines, decomposition in water, 2565

controlled racemization of optically active organic compounds: prospects for asymmetric transformation, 9417

of copper-catalysed phenylation of amines using pentavalent organobismuth reagents, 4137

dependence of the rate of acetylation of disaccharides by iodine on the iodine stoichiometry, 11753

dynamics of 8,8,13,13-tetramethyltetraspiro-[2.0.3.1.3.1.3.0]heptadecane, 7529

effect of acidity and π - π interaction on benzylation of 1,3-diphenylpropanone, 3659

effect of blocking group on aminolysis of Block-L-Glu(OEt)-OEt, synth of L-glutamic α-monoamide derivs, 11745

enzymatic kinetic resolution of (±)-4-acetoxy[2.2]paracyclophane by *Candida cylindracea* lipase, prep of (+)-*R*-4-hydroxy- and (+)-*S*-4-acetoxy[2.2]paracyclophane, 11853

epoxidation of *cis*-stilbene by dimethyldioxirane in acetone-free solutions, 8643

formation from α,α' -dibromo-o-xylene and carbanions, control of selectivity of alkylation by acidity of conjugate acids, 14973

isoprene cyclodimerisation and cycloaddition to mesityl oxide, effect of LiClO₄, 4637

kinetic aspects of the amine oxidation of 3-methyl-5-ethyllumiflavinium perchlorate, 5027

kinetic investigation of the acid hydrolysis of *N*-(2-ethyl-6-methylphenyl)-*N*-(methoxyprop-2-yl) choroacetamide (Metolachlor), 10513

kinetic studies of intramolecular additions of alkyl

radicals onto imines, 73

kinetic study of concentration dependence of the steric course of bromination of acenaphthylene, 785 lipase-catalysed enantioselective ester hydrolysis, interpretation of kinetic results in terms of frontier orbital localisation, 4889

mono- versus dialkylation of alkali salts of diethyl malonate with 1,2-bis-, 1,2,4,5-tetrakis- and 1,2,3,4,5,6-hexakis(halomethyl)benzenes, solvent and leaving group effects, 8195

neighbouring group effects on rates of thermolysis of 4-azidothiazoles, 9657

photodeprotection rates for *o*-nitrobenzyloxycarbonyl protected nucleoside 5'-hydroxyls, 4247

rate of solvolysis of 4-methylene-3-homoadamantyl mesylate, effect of a γ -cyano substituent, 8155

stereocontrolled synth of *erythro N*-protected α-amino epoxides involving reduction of the corresponding haloketone, 5325

stereospecific photodecomposition of optically pure pyrazolines to cyclopropanes, 3777

switchable hydrophobic cavity of disodium 1,8disulfonato-3,4,5,6-acridinetetracarboxylic acid, 10523

tetracyclo[7.3.1.0^{2.8}.0^{4.12}]trideca-5,10-diene,—ofracemisation by degenerate Cope rearrangement, 9903 thermal decomposition in the ground singlet state of α -azido five-membered heterocycles, 9647

and thermodynamics of ketalisation of tetrahydroxyketones, application to synth of ketal core of zaragozic acid, 11179

tris(trimethylsilyl)silyl radicals, reactivity, DSP analysis of Br abstractions, 8479

Labelling

allenyl and methylallenyl anions, gas-phase generation, reactions with CS₂, COS and CO₂, mechanism of thioketene formation, 9835

amphidinolides R and S, 14- and 15-membered macrolides from dinoflagellate, no incorporation of ¹³C-labelled succinate during biogenesis, 7827

aryldiazonium fluoroborates, protodediazoniation by DMF, radical pathway, H/D -, 10009

biological labels with acetylenic linker arms, synth and attachment to biological molecules, 1505, 1523 ¹⁴°C radiolabelled synth of the cholesterol absorption inhibitor CP-148,623, 11007

carbon-13, nitrogen-15, — of *N*-methyl-*N*-nitrosourea, mechanism of decomposition in water, 4063 carbon-13 — in study of biosynthesis of andibenin B, andilesin A, meroterpenoid metabolites of *Aspergillus variecolor*, 4013

deuterium labelled marmesins as valuable metabolic probes for mechanistic studies in furanocoumarin

biosynthesis, 17699

[18F]fluoro aromatic α-methyl-L-amino acids, radiopharmaceuticals for Positron Emission Tomography (PET), asymmetric synth, 5785

isopropyl trideuteriovinyl sulfide, diethyl 2,3-dideuterofumarate, synth and involvement in spin-labelling trapping during co-polymerisation, 15297 ¹³— of 24-methyl- and 24-ethyl-Δ²⁴-cholesterols, biosynthetic precursors of 24-alkylsterols in higher plants, 877

murayaquinone, rearranged polyketide phenanthraquinone, biosynthesis studied by ¹³C -, 4561

³²P-radiolabelling in site-directed oxidatively cross-linked proteins, 11953

stereospecific H— by asymmetric deuteriation of methyl N-acetyl-(Z)-α,β-didehydrotryptophan-(L-phenylalaninate using Rh(I) catalysts, 16107

trideuteriomethyl — of β -hydroxyisovaleric acid and α -ketoisocapric (4-methyl-2-oxopentanoic) acid, chiral synths, 10827

ubiquinones with specific ¹³C - at C5 or C6, synth, 2505

Lactams

for β-lactams see Azetidinones

5-amino-2,5-dideoxy-heptono-1,5-lactams by reaction of 2-trimethylsilyloxyfuran with a glycer-aldehyde derived nitrone *via* hydrogenolysis of the formed tetrahydrofuro[2,3-*d*]isoxazol-5(2H)ones, 11721

bicyclic γ -lactams by incubation of γ -lactam analogue of proclavaminic acid using clavaminic acid synthase, 7011

1,2,5-dithiazocan-6-ones, synth, conformation by NMR, 16859

 α , β -epoxy —, organo-Se mediated reduction to β -hydroxy carbonyl compds, 12469

five- and six-membered lactones and lactams, preparation using tandem dealkoxycarbonylation-Michael addition reactions, 9477

N-hydroxyalkyl lactams by reaction of 1,2- and 1,3-hydroxyalkyl azides with ketones via formation of a hemiketal, 16241

β-lactams by manganese(III)-promoted free radical cyclisation of enamides, 13129

16-, 18-, 19- or 20-membered secondary tetralactams with L-tartaric acid or β-hydroxyglutaric acid moieties, synth *via* a diamide diamine, 13757

spirolactams from thermal rearrangement of *N,N*-unsaturated dialkyl- and *N*-unsaturated alkyl-*N*-alkyl-β-ketoamides, 5775

α,β-unsaturated bicyclic lactams prepared from (S)-pyroglutamic acid, cycloaddition of, synth of functionalised pyrrolidinones, 11731

for β-lactams see Azetidinones

Lactones

aldonolactones, conversion to chain elongated 2,4-diuloses by reaction with carbonyl compds, subsequent conversion to *C*-glycosides by deoxygenation, 1301

aldonolactones, homologation allowing the incorporation of propionate units by magnesio-Reformatsky reaction, 12947

5-alkylidene-3-amidofuran-2(5*H*)-ones from 4-(acylmethylene)azlactones by translactonization, acid and base effects, 1843

butanolides, synth via Li homoenolates from Li reduction of αβ-unsaturated esters, 2641

γ-butyrolactones from acyclic α-haloesters by radical cyclisation using polymer-supported distannane, 1301

chiral azlactones, experimental and theoretical studies of 1,3-dipolar cycloaddition of diazomethane to, 4479

cyclopropane lactones containing a trifluoromethyl group, synth by SET induced cyclisation reactions of malonic acid esters of *trans*-1-substituted-3-trifluoromethyl-2-butene-1-ols, 13001

 α,β -epoxy —, organo-Se mediated reduction to β -hydroxy carbonyl compds, 12469

five and six membered ring hydroxylactones by Lewis acid mediated reaction of γ,δ-epoxy-β-hydroxyesters: application to synth of 5-methylated 2-deoxysugars, 659

five- and six-membered lactones and lactams, preparation using tandem dealkoxycarbonylation-Michael addition reactions, 9477

glyconolactones from per-O-alkylated glycopyranosides using TMS-azide, and ring contraction of pyranoses, 3123

(4S)-hydroxymethyl-(2R)-(2-propyl)-butyrolactone, synth *via* enolate chemistry, 6281

β-lactones by tandem Mukaiyama aldol-lactonisation employing thiopyridylsilylketene acetals and various aldehydes, 16471

γ- and δ-lactones, synth using anhydrofuranoside derived from D-glucose as chiral auxiliary, 15061

δ-lactones, unexpected stability of δ-lactones with axial substituents rather than equatorial: conformational evaluation by molecular mechanics and molecular orbital calculations, 2013

methylene-γ-butyrolactones, cycloadditions to 3,4-dihydro-2*H*-pyrrole 1-oxide, 14763

(±)-methylenolactocin and (±)-protolichesterinic acid, β-carboxy-α-methylene-γ-lactones, synth using retro-Diels-Alder reactions, 17335

phthalide synth by 1,6-conjugate addition to

- 2-(o-vinylphenyl)oxazolines, synth of chuangxinol, 14127
- protoanemonin, physiologically active lactone from Ranunculaceae plants, cycloaddition of 4-substituted protoanemonin with non-stabilised azomethine ylids, 10633
- racemic hydroxylactones by baker's yeast reduction of ketolactone, synth of verapamil's optically active intermediates, 10555
- cis-3,5 and trans-3,5-substituted β-alkoxy-δ-valerolactones, synth from 8-oxabicyclo[3.2.1]oct-6en-3-one, 14929
- syringolide I, trioxa-triquinanone elicitor from Pseudomonas syringae pv. tomato, synth, 16029
- thiolactones from ω-halo acid chlorides by use of benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent, 11835, corrig. 16607
- (S)-2-p-toluenesulfinyl butenolide, cycloadditions with dienes, 14115
- D-xylone-1,4-lactone, synth as intermediate to the spiroketal fragment of calyculin A, 9769, 9777 see also Furanones, Macrolides

Lactonisation

tandem Mukaiyama aldol-lactonisation employing thiopyridylsilylketene acetals and various aldehydes, synth of β-lactones, 16471

Lacustrine metabolites

see Marine metabolites

Lanthanides and compds

- bimetallic samarocene(III) catalysts via electron transfer initiation, formation of well-defined (meth)acrylate triblock copolymers, 15367
- intramolecular samarium Barbier reactions, probes for radical and organo-Sm intermediates, 9023
- see also Cerium, Samarium, and compds

Lignans

- 1H-cyclopenta[b]benzofuran lignans, isolation from stems and fruits of Aglaia elliptica, 17625
- (—)-O-dimethylsugiresinol, natural norlignan of the sequirin group, synth involving asymmetric [4+2] heterocycloaddition of a styrene with benzylidene-pyruvic ester of an α-O-silyl deriv of (D)-erythronolactone, 9679
- (+)-fargesin and (—)-picropodophyllone by Michael addition of lithium salt of cyanohydrin to (S)- and (R)-3-(2,2-dimethyl-1,3-dioxolan-4-yl)-cis-propenoate, 9585
- 7-ketolignans, reaction with hydroxylamine, synth of cyclolignans with an isoxazoline ring fused to the cyclolignan core, 6555
- podophyllotoxin derivs lacking the lactone ring, prep from naturally occurring lignans, cytotoxic activity,

15743

Limonoids

azadiradione, synth of 13β-analogs from agathic acid using Nazarov cyclization, 14131

Linear free energy relations

- hexahydrophenanthrene 9,10-and dihydronaphthalene 3,4-epoxides (2-aryloxirans), stereoselectivity of methanolysis in gas and condensed phases, Hammett-Brown ρσ⁺ plots, 5515
- tris(trimethylsilyl)silyl radicals, reactivity, DSP analysis of Br abstractions, kinetics, 8479

Lipids

- di(3β-hydroxyfurost-5-en-26-yl) and two other dimeric steroids, synth as components of lipid membranes, 10565, 10579
- hanishenols A and B, glyceryl enol ethers from sponge, structure, 2625
- polymerisation of supramolecular assemblies, comparison of lamellar and inverted hexagonal phases, 15397
- yendolipin, phytoalexic polyene betaine from alga Neodilsea yendoana, structure, 869
- see also Cerebrosides, Glycolipids, Phospholipids

Lithiation

- 2-alkyl and 2,2-diakyl-2*H*,4*H*-1,3-benzodioxins and -3,1-benzoxathiins,—and rearrangement, formation of *o*-hydroxy- and *o*-mercapto-homobenzyl alcohols, 17373
- α-arylalkyl methyl ethers, reductive —, synth of benzylic organolithium compds, *p*-fluorobenzyl methyl ether, under various conditions, 16205
- of 7-azaindole followed by addition of electrophiles, synth of 2-substituted-1*H*-pyrrolo[2,3-*b*]pyridines, 3637
- of the benzene moiety of 4-substituted quinazolines, 2871
- di— of dibenzofuran and dibenzothiophene, 17425 dibenz[a,c]anthracene, formation of lithio and dilithio compds by lithio-debromination and lithio-deprotonation, 15947
- 3,3-difluorovinyl-1-ethylprop-2-enol derivs, mono-defluorination, 3-lithiation and applications of obtained 3-fluoro-3-lithioallylic alcohol derivs, 14749
- 1,3-dimethoxybenzene-Cr(CO)₃ complexes, metallation/deprotonation and alkylation, effect of conditions on selectivity, 9219
- directed of 2,2-dimethyl-N-(phenylsulfonyl)-propanamides, synth of benzo[d]-1,2-thiazole-1,1-dioxide derivs, 3615
- DTBB-catalysed of di(chloromethyl)benzenes under Barbier-type conditions, synth of

- di(lithiomethyl)benzenes, 13897
- Li/Te exchange on (1Z,3Z)-butyltelluro-1,3-butadienes and (1Z,3Z)-1,4-bis(butyltelluro)-1,3-butadienes, synth of (1Z,3Z)-buta-1,3-dienyl-1-lithium and tellurophenes, 4199
- 2-lithiation of N-protected quinolones followed by addition to aldehyde-ester and subsequent oxidation, synth of pyrido[2,3-b]acridine-5,11,12-triones, 341 lithiovinyl sulfones with remote oxy-functionalisation, synthetic applications, 11449
- 1-(methoxyphenyl) pyrroles, in pyrrole and in benzene ring, effect of lithiation reagent/amine additive, 4883
- 2-methoxy-3-pivaloylaminopyridines, 4-lithiation in synth of 4-alkyl derivs, 12505
- naphthalene-catalysed lithiation for deprotection of allyl, benzyl and sulfonyl substituted alcohols, amines and amides, 14355
- reactions of butyllithiums with tertiary oligoethylenepolyamines, complexation and lithiation reactions, 9977

Lithium and compds

- α -amino/amido lithiomethyl sulfones, synth, uses, 4835
- carbohydrate enones, addition of organolithium reagents, 6035
- chiral bidentate lithium amides having an alkyl- or a fluoroalkyl substituent at the amide nitrogen for deprotonation of 4-substituted cyclohexanones, 13641
- combination of LiClO₄ and high pressure effective in [4+2] cycloaddition reactions, 4637
- enantioselective deprotonation of prochiral 4-substituted cyclohexanones by chiral chelated lithium amides, 5963
- (Z)- and (E)-2-ethoxyvinyllithiums and diethoxyvinyllithiums, formation, comparison of stabilities, reactivity, 1735
- functionalised propargyllithium reagents by reaction of chlorinated acetylenic ether or amines with lithium and a catalytic amount of DTBB in the presence of different electrophiles, 17201
- generation of acylals and reaction with Grignard and organo-Li reagents, formation of esters by alkylative de-acylation, 12679
- Li homoenolates, formation by Li reduction of enones and αβ-unsaturated esters, synth of 2-hydroxytetrahydrofurans and butanolides, 2641
- ketalised α and β -lithiated $\alpha\beta$ -unsaturated ketones, new masked acylvinyl anion equivalents, 4921
- lithiated β -aminoalkyl sulfones, use in synth of N-heterocycles, 4791
- δ- and ε-lithioketone equivalents by aromatic

- radical-anion induced reductive lithiation of the acetals or thioacetals of δ and ϵ -(phenylthio)ketones, 17607
- lithium trimethylsilyldiazomethane and diazomethane, reactivity toward the 5,6-double bond of uracil and uridine derivs, synth of annulated and fused heterocyclic systems, 7045
- methyl-Li, theoretical study of metallodehydrogenation and addition to crotonaldehyde dimethyl acetal, 7937
- Michael adducts of lithiated 2,5-dimethoxy-N-pivaloylanilines, 3231
- organolithium addition to trithiocarbonate oxides (sulfines), synth of trithioorthoester oxides, 1323
- reactions of butyllithiums with tertiary oligoethylenepolyamines, complexation and lithiation reactions, 9977
- ring-opening of an oxirane and oxetane by organo-Li controlled by external chiral ligand, 10699

Luminescence

coelenterazine, apoprotein from luminescent jellyfish Aequorea victoria, chemi- and bioluminescence of coelenterazine analogues possessing an adamantylmethyl group, 12903

see also Fluorescence

Macrocycles

- bispyridine tetramide—, complexation of Ag⁺ and the role of preorganisation on selectivity, 10841
- complexation of aromatic hydrocarbons with a macrocycle containing four tropolone units in water, 11913
- cycloalkadiynes, 10-, 11-, 13-, 14- and 16-membered, synth, 3111
- diamides and tetramides containing phenol ether units, synth, 7957
- lysobactins, katanosins, cyclic depsipeptides, monitoring solid-phase synth using *in situ* MALDI-TOF MS, 14021
- macrocyclic phosphine oxide-disulfoxides, synth by oxidation of the corresponding dithioethers with *m*-CPBA, steric control on selectivity, 12249
- 16-, 18-, 19- or 20-membered secondary tetralactams with L-tartaric acid or β-hydroxyglutaric acid moieties, synth via a diamide diamine, 13757
- 14-membered *trans-cis-cis*macrocyclic triene, Diels-Alder reaction of, synth of an A.B.C-[6.6.6] *trans-syn-cis* tricycle, 14937
- nonactin, homologue of nactins, a class of macrotetrolide antibiotics from *Streptomyces*, stereoselective approach to nonactate esters, 17079 supramolecular hosts containing the Tröger's base moiety, synth and cation binding studies, 11859

see also Cembranoids, Macrolides

Macrolides

- amphidinolides R and S, 14- and 15-membered from dinoflagellate, structures, 7827
- callipeltosides B, C, macrolide glycosides from sponge Callipelta sp. containing O-bridged 14membered —, 3243
- erythromycin A: novel transannular rearrangements of azalide iminoethers, 16923
- FK-506, construction of C16-C34 fragment, and culmination of synth of -, 13221, 13257
- γ-ketoesters and α-allyl analogues with 10-17membered rings, synth by radical intramolecular carbonylation, 14615
- latrunculin B, 14-membered from mollusc, 4655 nodusmicin, 10-membered antibiotic with 1,5-epoxy-octahydronaphthalene moiety, synth of O-bridged decalin, 3083
- oasomycins, 42-membered —, chemistry and biological activity, 971

Magnesium and compds

- bis(oxazoline)-magnesium perchlorate as catalyst for asymmetric Diels-Alder reactions, enantioselectivity, 7671
- perchlorate, catalysis of Diels-Alder reactions of arylidenemalonic ester with cyclopentadiene in CH₂Cl₂, kinetics, structure of reactive dienophile-Mg²⁺ complex, 13495

see also Grignard reactions/reagents

Manganese and compds

- achiral (salen)manganese(III) complex with chiral amine for asymmetric epoxidation, 9541
- arene-Mn(CO)₃ complexes, nucleophile additions promoted by chiral auxiliary, 3849
- chiral Mn(III) porphyrins as ligands for chiral epoxidation, D_4 -symmetric tetraaryl porphyrin with two octahydroanthracene units the outer rings of which are derived from (+)-nopinone, 7753
- manganese complexes of 5,10,15,20-tetrakis(2,6-dimethoxyphenyl)porphyrin as catalysts for epoxidation and hydroxylation reactions, 4497
- tetraallylmanganate or triallylmanganate reaction with propargylic alcohols, trapping of intermediate alkenylmanganese compds, 5061

Mannich reactions

- activation of aminals by SO₂ and reactions with electron-rich aromatics, 13361
- for synth of (S)-(—)-3-(4-t-butyl)phenyl-1-N-(cis-2,6-dimethyl)morpholinyl-2-methylpropane from cis-2,6-dimethylmorpholinemethyl immonium tetrachloroaluminate, 689
- of imidazo[2,1-b]oxazoles, 6959

Marine metabolites

- acetylenic from sponge *Pellina triangulata*, use of CAD tandem MS, 799
- (+)-agelasimine A and B, adenine-related bicyclic diterpenoids from the orange sponge Agelas mauritiana, synth and absolute configuration, 16977 alboinon, 1,3,5-oxadiazin-2-one alkaloid from ascidian Dendrodoa grossularia of the Baltic Sea, structure, 2055
- (+)-ambrein, major constituent of ambergris, synth from (+)-drimane-8,11-diol, 3527
- aromadendrane diterpenoids from soft coral Sinularia sp., 9301
- asterasterols A-C, sulfated starfish sterols, A with ring B 7-membered αβ-unsaturated lactone, B and C with ring-B enones, 8625
- braunixanthins 1 and 2, carotenoids linked to alkylphenol and echinenone residues, from lacustrine alga *Botryococcus braunii*, 11307
- brevetoxin, synth of the *trans*-fused seven-membered cyclic ethers corresponding to subunits of brevetoxin B and hemibrevetoxin B, 12917
- bromo compds from Aplysina aerophoba and Aplysina cavernicola, structures, 6565
- 3-n-butyl-4-vinylcyclopent-1-ene, multifidene, viridiene and caudoxirene, constituents of brown algae pheromones, synth, 145
- calyculin A from marine sponge *Discodermia calyx*, synth of a D-xylone-1,4-lactone intermediate to the spiroketal fragment and synth of the C_{20} - C_{25} building unit, 9769, 9777
- (+)-curacin A, cytotoxic agent from marine cyanobacterium *Lyngbya majuscula*, synth utilising geraniol and serine, 11087
- cyclolinteinol and its acetate, sesterterpenes from sponge *Cacospongia* cf. *linteiformis*, structure and stereochemistry, 7305
- cytotoxic sesterterpenes from the New Caledonian marine sponge *Patrosaspongia nigra* (Bergquist), structures, 10451
- dactylallene, C₁₅ cyclic 12-membered ether with bromoallene side-chain isol from sea hare *Aplysia dactylomela*, 17343
- dehydro-thyrsiferol and -venustatriols, predehydrovenustatriol acetate, 16-hydroxydehydrothyrsiferol, further polyether squalene derivs from *Laurencia* viridis, structures, 4649
- dehydrodendrolasins, furano-sesquiterpenoids, stereocontrolled synth, 2439
- di and tricarbocyclic diterpenes possessing a bicyclic [4.3.1] ring system from soft coral *Xenia florida*, structures, 6809

- (+)-dihydroerythrodiene, spirosesquiterpene from Caribbean gorgonian *Erythropodium caribaeorum*, synth from *R*-carvone, 1439
- (3Z)-4,8-dimethylnon-3-en-1-yl sulfate, isol from ascidian *Microsmus vulgaris*, 11489
- dolastatin I, cytotoxic cyclic hexapeptide from the Japanese sea hare *Dolabella auricularia*, isolation and stereostructure, 8149
- eunicelline marine diterpenes, construction of the bridged nine-membered ring ether moiety by annulation-fragmentation strategy, 4331
- fimbrolides, halogenated lactone from *Delisea* red marine algae, synth of 3-alkyl-5-methylene-2(5*H*)-furanones by cyclisation of brominated 2-alkyl-levulinic acids, 15813
- frondosins A-E, sesquiterpene hydroquinone derivs from the sponge *Dysidea frondosa*, structures and biological activity, 5047
- furosesquiterpenes from marine sponges consisting of linearly fused furo[2,3-b]- and furo[3,2-b] decalin systems with *cis/trans* ring junctions, synth of the ring system from Hageman's ester, 2989
- halisulfate 3, terpenoid from sponge *Ircinia* sp., absolute configuration, 5373
- hanishenols A and B, glyceryl enol ethers from Red Sea Axinellid sponge, structure, 2625
- hymenidin, oroidin and keramadine, marine 2aminoimidazole metabolites, prep from imidazolemethanol, 7605
- kailuins A-D, bacterial cyclic depsipeptides, structures by NMR and HRFABMS, 1577
- konbu'acidin A, bromopyrrole alkaloid from Okinawan Hymeniacidon marine sponge, structure and enzyme inhibitory activity, 15681
- kuanoniamine A, 11-hydroxyascididemin and neocalliactine acetate, polycyclic aromatic alkaloids from marine organisms Amphicarpa meridiana, Leptoclinides and Calliactis parasitica, synth, 17029
- (±)-kumausyne, halogenated tetrahydrofuran from red algae of *Laurencia*, synth by 5-exo-trig cyclisation of homoallylsilanes, 2835
- lamellarian alkaloids from an unidentified mollusc from the Arabian Sea, structures, 3457
- lamellarin D and H, [1]benzopyrano[4',3':4,5]-pyrrolo[2,1-a]isoquinolines from molluscs and ascidians, synth, 5951
- ma'ilione and allo-isoobtusol, chamigrane sesquiterpenes from Hawaiian red alga Laurencia cartilaginea, structures and cytotoxic activity, 521 malyngamides J, K and L, novel cyclohexenone—from Lyngbya majuscula, cyanobacterium, 15983

- manzamine alkaloids, approach to core structure of the bridged hydroisoquinoline alkaloids of keramaphidin B, ingenamine and the ingamines and xestocyclamines using biogenetic theory, 2271
- marine brown algae (Phaeophyceae), Cope rearrangement of female gametes of, 13681
- meridine, pentacyclic ascidian alkaloid with 12-hydroxybenzo[b]pyrido[4,3,2-de][1,7]phenanth rolin-8-one structure, synth, 1743
- mycalazols 1-12 and mycalazal 1-2, 5-acyl-2hydroxymethylpyrroles and 5-alkylpyrrole-2carbaldehydes from *Mycale micracanthoxea* Atlantic sponge, structures, 331
- norsiphonarienone A, isosiphonarienolone, 2-deoxysiphonarienfuranone and isopectinatone, polypropionates from *Siphonaria pectinata*, structures and cytotoxic activity, 2303
- pavoninin-1 and 2, steroid N-acetylglucosaminides from the defense secretion of the sole *Pardachirus* pavoninus, synth of aglycones of, 8129
- prelaureatin conversion into laurallene by enzymatic and chemical bromo-etherification, 8371
- scanlonenyne, halogenated C₁₅ acetogenin from the red alga *Laurencia obtusa*, structure, 4271
- sinulobatins A-D, amphilectane-type diterpenoids from coral Sinularia nanolobata 4569
- [4.4]spirononene dimethyl gloiosiphone A, microbial agent from *Gloiosiphonia verticillaris*, synth by ring expansion of a 2'-(dimethoxymethyl)-1'-(cyclopenten-1'-yl)-4-hydroxy-2-cyclobuten-1-one, 8913
- spongiane diterpene lactones from *Chromodoris* hamiltoni, nudibranch mollusc, also latrunculin B, macrolide, 4655
- tauroacidins A and B, bromopyrrole alkaloids with taurine residue from *Hymeniacidon* sp., Okinawan sponge, 16679
- 3,7,11,15-tetramethyl-hexadecan-1,19-sodium disulfate and heneicosane-1,21-sodium disulfate from the Mediterranean tunicate Ascidia mentula, structures, 5877
- thyrsenols A, B, polyether squalene derivs from *Laurencia viridis*, structures, 3173
- verrucosins, diterpenoid acid glycerides from the skin of Mediterranean dorid nudibranch *Doris verrucosa*, structures, 1491

Mass spectra

- EI, alkoxylated *p*-phenylenevinylene oligomers, 13811
- FAB, $1-[\alpha-mannopyranosyl-(1\alpha-3)-(6-O-acyl-\alpha-mannopyranosyl)]-3-O-acylglycerol, 3593 flavones from reaction of 2-hydroxy-<math>\alpha$ -bromo-

acetophenones with piperidine or morpholine aminals of benzaldehydes, 9813

Mass spectrometry

collisional activation decomposition (CAD) tandem
 applied to Li salt adducts of acetylenic sponge metabolites, 799

furoxan -, fragment loss of NO and (NO)₂ on fragmentation, 17395

GC/MS of β-thioketones extracted from single beads of solid-phase synthetic operation, 6595

lysobactins, katanosins, cyclic depsipeptides, monitoring solid-phase synth using in situ MALDI-TOF MS, 14021

negative ion FAB MS of tricolorins, *Ipomoea* tricolor, tricolorins F-J, cyclic glycolipid trisaccharides, 9007

Mechanisms

acylation of enaminone lithium dianions with N, N-dimethylcarbamoyl chloride, synth of N, N-dimethylcarbamoylenaminones, 6893

of amide hydrolysis dependent on leaving groups, ab initio molecular orbital study, 4317

aryl fluorides, criticism of S_{RV}1 mechanism of fluoride displacement, 9835

asymmetric Heck reaction, 7371

Beckmann-type reactions of nitrones in TFAA with NaI, mechanistic considerations, 14169

Co(II)-schiff base catalysed oxidation of organic substrates, 7649

dehydrazination of arylhydrazines using nitric oxide in the presence of oxygen, 15701

formation of 5,6-tocopheryldione (α-tocored) from α-tocopherol *via* a 5-alkoxytocopherol intermediate, 3571

free-radical — for reduction of Schiff bases by formic acid, spectroscopic evidence, 6907

functionalisation of hydrocarbons using Cu(II)/H₂O₂ and Cu(I)/H₂O₂ systems in pyridine, involvement of Cu(III) species, 16017

high temperature bromination of benzhomobarrelene derivs, 14451

Horner Wittig synth of (Z)-1-chlorovinyl sulfoxides, 10527

Horner-Wadsworth-Emmons reaction on 3,4-enuloses using the enolate of dimethyl(methoxycarbonyl)-methyl phosphonate and its ethyl analogue, synth of 3-O-phosphorylated products, 7397

intramolecular samarium Barbier reactions, probes for radical and organo-Sm intermediates, 9023

microsomal and biomimetic oxidation of sulfides, 12287

α-nitro- and α-chloro-cumene, reductive cleavage by

Na naphthalenide in THF, proposed formation of cumyl carbanion as common intermediate, 5397

(2-nitroaryl)ethanes, conversion into 1-hydroxyindoles by intramolecular oxidation/reduction and cyclization, 5501

oxidation of alkyl, aryl and diaryl sulfides with clay-supported iodosylbenzene, 7635

reaction of diazinium ylids with diazonoium salts, formation of C-disubstituted ylids, 4411

reaction of N-(o-bromobenzyl)anilines with n-tributyltinhydride, radical C_{aryl}-C_{aryl} coupling to form phenanthridines, 269

rearrangement of substituted bicyclic cycloheptatriene endoperoxides, 10401

reduction of artemisinin by lithium aluminium hydride, generation of two rearranged hydroperoxide products, 7493

reduction of cumyl phenylsulfide with aromatic radical anions to form bicumyl rather than cumyllithium, 12089

of selenosubtilisin's peroxidase activity, 12311

silylation of β -substituted aliphatic nitro compds with N, O-bis(trimethylsilyl)acetamide, synth of β, β' -functionalised N, N-divinyl-N-trimethylsilyloxyamines, 13085

trimethylsilylcyanation of aldehydes catalysed by chiral salen-titanium complexes, 14327

Medium-ring carbocycles

cycloalkadiynes, 10-, 11-, 13-, 14- and 16-membered, synth, 3111

(Z,E)-cyclodeca-1,5-diene derivs, model systems for melampolides, 11425

(E, E)-germacra-1(10),4-diene 4-epoxides, 6,8-disubstituted, reactions with oxyphilic reagents, 4681

Medium-ring heterocycles

dactylallene, C₁₅ cyclic 12-membered ether with bromoallene side-chain isol from sea hare, 17343

1,5-dithiacyclooctane, 1-phenyl-1-phospha-5-thiacyclooctane and trans-1,5-diphenyl-1,5-diphosphacyclooctane, solution conformation of, 7461

1,4,7-thiadiazonane- and -thiadiazecane-3,6-diones, β -turn peptidomimetics, solid-phase synth, 6635

Membranes

biomembrane attachment to Au surface by molecular tethers, 10939

esters of inositol polyphosphates, —permeant, synth, applications, 12017

lipophilic membrane, competitive transport of reducing sugars through dichloroethane facilitated by aryl boron acids, 3669

Mercury and compds

HgCl₂ as catalyst for guanylation reaction of

substituted thioureas, 5291

mercuribis(diazoacetic esters), substrates for crosscoupling reactions; acylation, 2371

methoxymercuration of ethyl E-5,6,7,8-tetra-O-acetyl-3,4-dideoxy-D-arabino-oct-2-ulos-3-enoate, synth of 3-deoxy-4-O-methyl-D-manno-oct-2-ulosonic acid, 3723

Mesoionic compds

isomünchnones (4-oxidooxazolium betaines) from α-diazo-carboximides with perfluorinated Rh(II) catalyst, 7777

sydnones, isomünchnones, thiazolium- and 1,3dithiolium- 4-olates, 1,3,2-oxathiazolium-4-olates, cycloadditions to 2-t-butylfulvenes, formation of pseudo-heteroazulenes, 9921

Metabolites

(+)-ambrein, major constituent of ambergris, synth from (+)-drimane-8,11-diol, 3527

benz[a]anthracene, 9- and 10-fluoro-7-, -12-, and -7,12-di-methyl derivs, synth of 1,2-epoxy-3,4-dihydroxy-1,2,3,4-tetrahydro- and 3,4-dihydroxy-3,4-dihydro- compds, putative —, 7101

(S)-13-hydroxyoctadeca-(9Z,11E)-dienoic acid, oxygenated metabolite of linoleic acid, synth from (E)-2-octenal using (S)-hydroxynitrile lyase cloned from Hevea brasiliensis, 617

mycophenolic acid, mould —, convergent synth using Pd-catalysed coupling, 3395

tolypocladin and isotolypocladin, microbial metabolites from *Tolypocladium inflatum*, synth via Friedel-Crafts acylation 91

vanillin, metabolism in *Nicotiana plumbaginifolia* followed by *in vivo* cell suspension NMR, 927

Metalation

directed lithiation of 2,2-dimethyl-N-(phenyl-sulfonyl)-propanamides, synth of benzo[d]-1,2-thiazole-1,1-dioxide derivs, 3615

lithiation of 7-azaindole followed by addition of electrophiles, synth of 2-substituted-1*H*-pyrrolo-[2,3-*b*]pyridines, 3637

lithiation of the benzene moiety of 4-substituted quinazolines, 2871

methoxymercuration of ethyl E-5,6,7,8-tetra-O-acetyl-3,4-dideoxy-D-arabino-oct-2-ulos-3-enoate, synth of 3-deoxy-4-O-methyl-D-manno-oct-2-ulosonic acid. 3723

Metals

alkali earth metal ions, cation-induced shifts in PMR spectra of dioxyacetamide ionophores, 17235

highly reactive metals for prep of new organometallic reagents, 1925

light-switched metal-tunneling across a π -basic tube of 1,3-alternate-calix[4]arenes, 13609

Metathesis

ring closing — as key step in synth of furansubstituted C-aryl glycosides, 12991

ring-opening metathesis, chemo-, regio- and stereoselectivities of ROM, 16511

ruthenium-catalysed enyne metathesis in stereoselective prep of cyclic 1-amino-1-carboxylic acids, 10603

ruthenium(II) in ring closing metathesis for the stereoselective prep of cyclic 1-amino-1-carboxylic acids, 2309

ruthenium(II)-catalysed ring closing metathesis in synth of conformationally restricted serine derivs, 5925

Micellar systems

2-(3-nitrophenoxy)quinoxaline, alkaline hydrolysis, micellar and cationic head group effects, 12361

Micelles

photoelectron transfer induced decarboxylation across a liquid-liquid interface, 16817

Michael reactions

addition of lithium salt of cyanohydrin to (S)- and (R)-3-(2,2-dimethyl-1,3-dioxolan-4-yl)-cis-2-propenoate, synth of (+)-fargesin and (—)-picropodophyllone, 9585

addition of 2-phenylcyclohexanone to chalcone, structure and stereochemistry of the products, 11693

addition in synth of 4-oxo- and 4-(R)hydroxypipecolic acid derivs from L-aspartic acid, 15671

to 2-alkenyl-4,5-dihydroimidazoles, 1111

asymmetric addition of lithiated SAMP hydrazones to alkenylphosphonates followed by oxidative cleavage, synth of 2,3- and 1,2-disubstituted 4-oxophosphonates, 12961

chiral β-trifluoromethyl ethenesulfonamides, synth, conformation study, Michael additions, 823

of didehydropiperidinecarboxylate, synth of trans(2,3)-cis(2,6)-trisubstituted piperidines: application to synth of Dendrobates alkaloids, 9553

Lewis acid promoted Michael addition of 2-(trimethylsilyloxy)furans to oxazolidinone enoates in the presence of hexafluoroisopropanol, synth of 4-substituted butenolides, 17015

lithiated 2,5-dimethoxy-N-pivaloylanilines, addition to benzylidenemalonate esters, 3231

methylene-gem-difluorocyclopropanes as Michael acceptors in the reaction with thiol or amine, 9497 Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2H-pyran-5-carboxylates, synth of highly

functionalised2-cyclohexenonedicarboxylates, 2241 pyrrolidine from tandem Michael addition reaction as template for azanorbornane derivs with substance P receptor affinity, 11121

tandem dealkoxycarbonylation-Michael addition reactions for the preparation of five- and six-membered lactones and lactams, 9477

tandem Michael addition alkylation of vinylphosphonates, 9623

tetrabenzoyl cyclohexanols from — of acetophenones and *trans*-dibenzoylethylene, 1045

β-thioketones, solid-phase combinatorial synth from enones, 6595

αβ-unsaturated 3-acyl oxazolidin-2-ones, diastereoselectivity of thiol addition, formal synth of (+)-diltiazem, 2421

Michaelis Arbuzov reactions

between enantiopure 2-phenyl-1,3,2-oxazaphospholidine and halide compds, synth and coordination studies of chiral hybrid phosphine-phosphine oxide ligands, 11577

Microbial reactions

Alcaligenes latus DSM 1122, poly(3-hydroxybutyrate) formation, modification of end group structure and mol. weight by poly(ethylene glycol), 15209

Baker's yeast reduction of β -ketoesters in organic solvents and water, 935

microbial oxygenation of cycloheptyl-N-phenyl-carbamate and (±)-trans-2-fluorocycloheptyl-N-phenylcarbamate with Beauveria bassiana, 17055, 17067

Ochrobactrum anthropi, resolution of 2-amino-2phenyl-4-pentenoic acid (α -allyl α -phenyl glycine), 9233

Microorganisms

Acinetobacter calcoaceticus NCIMB 9871, Acinetobacter TD 63, Pseudomonas NCIMB 9872 and the fungus Cunninghamella echinulata NRRL 3655, for microbiological transformation of dithioacetals to sulfoxides, 9695

Aspergillus variecolor, biosynthesis of andibenin B, andilesin A, meroterpenoid metabolites, 4013

Botryococcus braunii, green colonial alga, isolation and structure of braunixanthins 1 and 2, carotenoids linked to alkylphenol and echinenone residues, 11307

Chromobacterium violaceum, application of L-tryptophan oxidase to synth of methyl didehydrotryptophan-phenylalaninate, 16107

Deinococcus radiodurans, bacterium, isolation and structure of deinoxanthin, carotenoid, 919

Escherichia coli JM109 for microbial oxidation of

halobenzenes, synth of *cis*-diols which could be converted to fluorinated hexoses, 11541

Gonyaulax polyedra and other dinoflagellates, biogenesis of gonyauline, methionine cascade pathway, 9067

Lyngbya majuscula, cyanobacterium, isolation and structure of malyngamides J, K, L, cyclohexenone metabolites, 15983

Lyngbya majuscula marine cyanobacterium, synth of (+)-curacin A (originally isolated from —) utilising geraniol and serine, 11087

Microcystis aeruginosa, structures of microginins 299-A and -B, leucine aminopeptidase inhibitors from the cyanobacterium. 10281

Mycobacterium gordonae str. 990, synth of terminal tetrasaccharide with three rhamnoses and a xylose, 8629

Pseudomonas putida G4R, nitrogen-fixind strain, constitution of pyoverdin G4R, peptidic siderophore, 12539

Saccharomyces sp, Candida lipolytica, Nocardia opaca, Pichia etchelsii, Mucor subtilissimus, use of in chiral reduction of 2-benzylidenecyclohexanone, 2617

Sulfolobus solfataricus, thermophilic archaebacterium, use in glycosylation of rengyol, 4693

Microwave heating

2H-chromene synth by microwave-mediated cyclization of propargyl phenyl ethers, 12621

cycloaddition to [60]fullerene using —, [4+2], [3+2] and [2+1] reactions, 2599

microwave-assisted oxidation of saturated and unsaturated alcohols with t-butyl hydroperoxide and zeolites, 15867

Mitsunobu reactions

α-aminooxyphosphonic acids, synth by —, 4627 dissymmetric indolocarbazole glycosides, synth by —, 5937

formation of anhydrides in -, 3933

thioesterification of (1S,2S)-2-amino-1phenyl-1,3-propanediolunder Mitsunobuconditions, regio- and stereochemistry, 10615

Molecular design

U-shaped cavity molecules, and rigid molecular racks, synth using isobenzofuran, cyclopentadiene and cyclopentadienone cycloadditions, 3975, 3991

Molecular modelling/mechanics

ab initio calculations on bis(2,2'-biphenylylene)-dichloro- and -difluoropertellurane, 12183

ab initio MO studies on aldol-type addition of enol borinates to imines, 7705

AM1, conformations of Tröger's base-crown ether composites, 11859

Amber force field calculations on binding of alkali metal ions to tetrahydrofuranyl-substituted long-chain carboxylic acids, 7403

Amber, solution state conformation of cycloleonurinin, a cyclic dodecapeptide from the fruits of *Leonurus heterophyllus*, 7469

bilirubin analogues lacking carboxylic groups, conformation and dimer formation, 14547

conformational analyses of trisubstituted δ -lactones by molecular mechanics and molecular orbital calculations, 2013

docking of thianthrene within zeolites, 4947

effect of acidity and π - π interaction on benzylation of 1,3-diphenylpropanone, 3659

effect of aromatic ring on reactions of a nearby unsaturated imide in nitrile oxide cycloaddition of acryloyl derivs of the Rebek imide benzoxazole, 1971

FMO analysis and experimental results of substituent effects on regiochemistry of enone-alkene 2+2 photocycloadditions, 3545

MM2, bicyclo[3.2.0]hept-6-ene and bicyclo[4.2.0]-oct-7-ene, and corresponding unsaturated (6- and 7-) methyl carboxylates, conformation and cycloadditions of 1,3-dipolar species, 9279

MM3 parameters for carbocations, 2767

MMX method, structural study of 3-azabicyclo-[3.3.1]nonane derivs functionalised at 1 and/or 9-positions, 13099

modelling of methyl 3-methyljasmonate and related derivs. 8181

molecular mechanics calculations on 2,2,6- and 2,3,5-trimethylpiperazines as monocyclic analogues of the μ-opioid agonist 3,8-diazabicyclo[3.2.1]- octanes, 1481

molecular modelling characterisation of the *N*-t-butoxycarbonylphenylalanyl enol family HIV-1 protease inhibitors, 4231

N-pertosylated polyaza-9,10-anthracenophanes, synth and conformation by MM2* and x-ray, 2629

PM3 MO calculations on reaction of imidate derived from dimethyl aminomalonate with aldehydes as dipolarophiles, general route to 2-oxazoline derivatives, *ortho* and *meta* bis(2'-oxazoline-5'-vl)benzenes, 6351

podophyllotoxin derivs lacking the lactone ring, prep from naturally occurring lignans, 15743

polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105

reaction of 1,8-dichloroanthraquinone with (S)-(—)-2-(tetrahydropyranyloxy)-1-propanol, generation of the 1,8-disubstituted product and a monosubstituted-monodechlorinated product, 4179 semiempirical and *ab initio* methods for investigating the conformation of 4-aryl-dihydropyrimidine calcium channel modulators, 2803

structural determination of the regio and diastereoisomers obtained in the addition of 2-phenylcyclohexanone to chalcone, 11693

synth of [4.4]spirononene dimethyl gloiosiphone A by ring expansion of a 2'-(dimethoxymethyl)-1'- (cyclopenten-1'-yl)-4-hydroxy-2-cyclobuten-1-one, 8913

1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), barriers to rotation, AM1 and PM3 calculations, 5379

yunnanin A, cyclic heptapeptide, conformational study by X-ray, NMR and MM calculations, 1607 see also Theoretical studies

Molecular recognition

of alkylamines by calix[4] crowns containing an ester group in the crown ether segment, 10345

2-boronylphenylmethyl groups attached to binol system, a rigid saccharide acceptor, association constants, UV, CD, fluorescence effects, 8335

calix[5]arene-crown hosts, binding with cationic guests, complexation equilibria from NMR titrations, 4901

enantiomeric — of alkyl phenyl sulfoxides by crystalline (R)-phenylglycyl-(R)-phenylglycine, 8315 enhanced Li⁺ ion-selective ionophoric properties of double armed diaza-12-crown-4 derivs, 3487 strapped Zn-porphyrin receptor for benzyloxycarbonyl amino acids, 9115

see also Receptors

Molluscs

Aplysia dactylomela, anaspidean — (sea hare), isolation of dactylallene, C₁₅ cyclic 12-membered ether with bromoallene side-chain, 17343

Pleurobrancus testudinarius, ophisthobranch —, isolation and structure of testudinariol A and B, triterpenoids, 16891

Molybdenum and compds

benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent in synth of thiolactones from ω-halo acid chlorides, 11835, corrig. 16607

Morpholines

(S)-(-)-3-(4-t-butyl)phenyl-1-N-(cis-2,6-dimethyl)morpholinyl-2-methylpropane, synth from cis-2,6dimethylmorpholinemethyl immonium tetrachloro-

aluminate via Mannich reaction, 689

Mukaiyama reactions

of ketone silyl acetal catalysed by organotin perchlorates, 14275

tandem Mukaiyama aldol-lactonisation employing thiopyridylsilylketene acetals and various aldehydes, synth of β -lactones, 16471

Naphthalenes

acenaphthylene: kinetic study of concentration dependence of the steric course of bromination of, 785

1-amino-2-naphthols, condensation reaction with methylene-substituted azaheterocycles in the presence of an oxidising agent, synth of photochromic spirooxazines, 9669

anodic oxidation of methylnaphthalenes and 9methylanthracene, formation of quinone acetals, 8613

bromoacetylenic oxy-Cope rearrangements, formation of reduced bromo-indenes, -naphthalenes, -benzocyclooctenes, -cyclodecadienones, 12637

1,8-di(3'-pyridyl)naphthalene, proton NMR spectra in the presence of R-camphorsulfonic acid, dynamic equilibration of diastereomeric salts of atropisomers, 465

ethyl 4-nitro-8-oxo-*trans*-decalin-2-carboxylate, synth, crystal structure, 16711

cis fused hydronaphthalenols, synth by oxy-Cope rearrangement of a trans-1,2-divinylcyclohexanol, 14235

1,2,3,4,9,9-hexachloro-1α,4α,4aα,8aβ- and 1α,4α,6,7-tetrahydro-1,4-methanonaphthalene, Diels-Alder cycloadditions to MTAD, PTAD and N-methylmaleimide, 14895

meso decahydronaphthalene glycol system, lipasemediated ring differentiation to afford an enantiomeric pair of decalin type chiral building blocks bearing an oxygenated angular substituent, 6313

6-methoxytetralins, transformation into 8-methoxytetralins through action of zirconium tetrachloride, 15771

naphthalene milled on alumina, H-transfer and carbonisation, 4051

2,3-naphthalonitriles, synth, naphthalocyanine formation, 9087

naphthols, phenyliodonium diacecate oxidation to yield quinone monoketals which react with phthalide sulfones to provide benz[a]anthraquinones, 2177

naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, synth of dihydroxy-anthraquinones, 1823

1,4-naphthoquinones with reduced indenyl dienes,

synth of steroid-anthraquinone hybrids, 10871

(1,8-naphthylene)bispyridines, synth by Stille coupling reactions, structural analysis, 3557

nodusmicin, 10-membered macrolide antibiotic with 1,5-epoxy-octahydronaphthalene moiety, synth of O-bridged decalin, 3083

phenyl and naphthyl esters, Fries rearrangements of in montomorillonite clays, 17171

2-substituted 1,4-naphthoquinones, addition of silyloxydienes to, 7715

substituted 2-amino-1,4-naphthoquinones, reaction with Wittig reagents, 3649

1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by Suzuki coupling, barriers to rotation, conformation, AM1 and PM3 calculations, 5379 3,3',4,4'-tetrahydro-1,1'-binaphthalene, Diels-Alder reactions of, synth of pentahelicenebenzoquinone,

yaoundamine A, a naphthyldihydroisoquinoline alkaloid isolated from *Ancistrocladus korupensis*, absolute axial configuration by experimental and theoretical Circular Dichroism, 2817

Natural products

see Alkaloids, Antibiotics, Marine metabolites, Steroids and sterols, Terpenes and terpenoids, and other classes

Nazarov reactions

azadiradione, synth of 13β-analogs from agathic acid using —, 14131

Neighbouring group effects

neighbouring tin effect in oxidation of α -stannyl phenyl vinyl sulfides, 12273

participation of neighbouring amide group in acid hydrolysis of N-(2-ethyl-6-methylphenyl)-N-(methoxyprop-2-yl)choroacetamide and intramolecular S_N2 reaction, 10513

on rates of thermolysis of 4-azidothiazoles, 9657 tetrahydrothiopyran derivs by rearrangement of thiepanes, 16731

Nenitzescu reactions

reaction of azaenamine-benzaldehyde phenylhydrazone with p-benzoquinone and chlorobenzoquinone, synth of 5-hydroxyindazoles and indazole quinones, 15005

reaction of β-(benzofur-2-yl)- and -(indol-2-yl)enamines with benzoquinone, formation of 3heteroarylbenzofurans, 177

Nickel and compds

homo- and heteroorganometallic tripodaphyrins, synth from 5-(4-iodophenyl)-10,15,20-triphenyl-porphine, 6835

Ni-bpy catalytic system for electroreduction of an organic halide-metal carbonyl mixture, synth of ketones, 17089

nickel-2,2' bipyridine complexes as catalysts for electroreductive coupling of organic halides in alcoholic solvents, synth of biaryls, 11569

Ni peroxide, glycine-selective α-C-N bond cleavage of dipeptides by, 5609

polymerisation of alkyl allenes using $(\pi-\text{allyl-NiOCOCF}_3)_2$, formation of poly(1-alkyl-2-alkylidene)ethylene systems, 15187

Raney-nickel/sodium hypophosphite combination for reductive desulfurization of secondary alcohols, 12883

selective esterification of aliphatic nonconjugated carboxylic acids catalysed by NiCl₂.6H₂O, 7335

Nitration

N-acetyl enamines, — by acetyl nitrate, formation of nitro-enamides and fused 1,2,5-oxadiazoles, 16161 of imidazo[2,1-b]oxazoles, 6959

of 4-methyl-A-homo-4-azacholest-4a-en-3-one, 10565 nitrodesilylation reactions using dinitrogen pentoxide, synth of nitramines and nitrate esters, 4371

Nitrenes

3-alkoxy-2,1-benzisoxazole-4,7-diones, photorearrangement and stereoselective synth of 4cyanoalkylidenebutenolides, 3363

Nitric acid and derivs

cycloalkyl nitrite esters, photolysis, study of the radical intermediates by EPR spectroscopy, 6401 nitric oxide addition to 1,5-dimethylhexa-2,4-diene, synth of (*E*)-2,5-dimethyl-2,5-dinitrohex-3-ene, 17221

Nitriles

bis(acetonitrile) palladium(II) chloride as catalyst for cyclisation of δ-alkenyl oximes to nitrones which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051

acrylonitrile and crotonitrile, electrochemical oxidation of, prep of 2,3-bis(2,2,2-trifluoro-ethyl)succinonitrile and 3,4-dicyano-2,5-bis-(trifluoromethyl)-n-hexane, 4437

1-aryl-2-bromoethylidenemalononitriles, use in synth of fused pyridines, 13351

N-arylnitrilium salts, reaction with nucleophilic alkenes to afford 3,4-dihydroquinolinium salts, 625 bromonitrile oxide addition to pregnatrienone to provide bromoisoxazoline which can be converted to 16α -carboxyprednisolones *via* the hydroxynitrile, 14317

1,4-dicyanobenzene and 2,3-dimethyl-2-butene, photoreaction in presence of nucleophiles, 2573

1,5-dinitrile systems, cyclisation with hydrogen halides, search for the undetected tautomer, 4487 1,3-dioxane-nitriles, tandem radical nitrile transfercyclisation of, synth of spirocyclic systems, 16489 3-ethoxy-1,1,2,2-cyclobutanetetracarbonitrile or dimethyl 3-ethoxy-2,2-dicyanocyclobutane-1,1-dicarboxylate, copolymerisation with 2-oxazolines,

head-to-head cyclobutane 1,2-dicarbonitriles, photo-dimers of 3-[2-furyl-, 2-thienyl-, and (3,4,5-trimethylphenyl)]-acrylonitriles, 17307

formation of regular terpolymers, 15603

isonitriles, radical cascade reaction of — as key step in synth of (S)-mappicine and mappicine ketone from methylacetoacetate, 8881

2,3-naphthalonitriles, synth, naphthalocyanine formation, 9087

2-(p-substituted phenyl)cyclopropane-1,1-dicarbonitriles, anionic ring-opening polymerisation, 15157 (R,R)-tartaric acid ester, amide and — derivs, conformations by X-ray, CD, NMR, ab initio, 6113 7,7,8,8-tetracyano- and 7-alkoxycarbonyl-7,8,8tricyano-p-quinodimethanes, synth and polymerisation, 15247

see also Cyano compds, Cyanohydrins

Nitrile oxides

N-arylbenzamidoximes, reaction with —, formation of 1,2,4-oxadiazole 4-oxides and 1,2,4-benzotriazines, 1089

cycloaddition to 2-crotyl-1,3-dithiane 1-oxides, regioselectivity, stereoselectivity, 1045

cycloaddition to N,N-diethylamidoximes, formation of 1,2,4-oxadiazole 4-oxides and their deoxygenation by ArCNO with generation of ArCO-NO, 1787

1,3-dipolar cycloadditions of benzonitrile oxide and with methyl 3,4-dimethyl-(trimethylene-, tetramethylene-)cyclobutene-1-carboxylates, facial selectivity, 9279

mesitonitrile oxide cycloaddition to 2-(αβ-unsaturated acyl)-1,3-dithiane 1-oxides, reversal of stereoselectivity in presence of Lewis acids, 7365 nitrile oxide cycloaddition of acryloyl derivs of the Rebek imide benzoxazole, effect of aromatic ring on reactions of a nearby unsaturated imide, 1971

Nitrilimines

N, N'-diaryloxalodihydrazonoyl dichlorides, conversion into — and cycloaddition to diarylacrylonitriles, synth of 3,3'-bipyrazolines and 3,3'bipyrazoles, 9293

intramolecular cycloadditions of, synth of pyrazolecontaining azacrown ethers, 3005

Nitro compds

- N-acetyl enamines, nitration by acetyl nitrate, formation of nitro-enamides and fused 1,2,5-oxadiazoles, 16161
- 1-(alkyl- and dialkyl-amino)-4-methylthio-2-nitro-1,3-butadienes, formation from 3-nitrothiophene, structure, 8531
- 15-crown-5 complex of the sodium salt of 2-nitroimidazole, synth and structure, 13177
- (E)-2,5-dimethyl-2,5-dinitrohex-3-ene, synth by addition of nitric oxide to 1,5-dimethylhexa-2,4-diene, 17221
- 4-nitro-pyrazoles and -pyrazolium salts, reaction with complex hydrides and organometallic reagents, synth of 4-nitro-3-pyrazolines and 4-oximino-2pyrazolines, 8585
- nitroalkanes, asymmetric Michael addition to prochiral acceptors catalysed by proline rubidium salts, 11223
- nitroalkenes and enol ethers, high-pressure promoted tandem [4+2]/[3+2] cycloaddition of, 11929
- (2-nitroaryl)ethanes, synth and conversion into 1-hydroxy-indoles by intramolecular oxidation/reduction and cyclization, 5501
- o-nitrobenzyloxycarbonyl for photolabile protection of nucleoside 5'-hydroxyls, 4247
- α-nitrocycloalkanones, oxidative cleavage by persulfate in methanol/acid to α,ω-diesters, 16131 tris-1,2,3-p-nitrophenylcyclopropene, synth from the tosylhydrazone of an enone, use as a precursor of the corresponding cyclopropyl anion, 4129
- reductive alkylation of 2-nitropropane anion by 4-chloromethyl-2-methyl-5-nitrothiazole by S_{RN}1 mechanism, 5471
- β-substituted aliphatic nitro compds, silylation with N, O-bis(trimethylsilyl)acetamide, synth of β,β'-functionalised N, N-divinyl-N-trimethylsilyloxy-amines, mechanism, 13085

Nitrogen heterocycles

- amino azanoradamantane hexahydro-2,5b-methano-1H-3aS,3aa,6aa-cyclopenta-[c]-pyrrole-4a-amine, synth, 1
- 3-azabicyclo[3.3.1]nonane derivs functionalised at 1 and/or 9-positions, structural study by molecular mechanics and NMR, 13099
- (S)-(-)-3-(4-t-butyl)phenyl-1-N-(cis-2,6-dimethyl)morpholinyl-2-methylpropane, synth from cis-2,6dimethylmorpholinemethyl immonium tetrachloroaluminate via Mannich reaction, 689
- 1,4-dichlorophenazines, convenient synth, 6183 heterocyclic Tröger's bases derived from C-amino heterocycles, synth and molecular structures, 2233 isoxazolidine derived heterocycles by 1,3-dipolar

- cycloaddition of nitrones derived from δ -alkenyl oximes, 15051
- lesopitron anxiolytic compd, hydroxylation using Rhodococcus erythropolis and Agrobacterium bacteria together with Beauveria bassiana fungus, 6421
- 7-oxo-1,6-diazaphenalene and 6-aza-1-oxaphenalene, synth by transformation of 5,8-dimethoxy-4-one, 4511
- see also Lactams, and the individual ring systems Nitrogen oxides
- furoxan mass spectrometry, fragment loss of NO and (NO)₂, 17395

Nitrones

- by reaction of indol-3-yl-carbaldehyde oximes with electrophilic alkenes/alkynes, 747
- chiral spiro 3-oxazolin-5-one 3-oxides by cycloaddition of chiral cyclic ketones to nitrosoketene, use in EPC synth of modified amino acids, 5725
- cycloaddition with alkenes, synth of optically active isoxazolidines, 403
- cycloadditions of ethene onto cyclic —, synth of [n.3.0]heterobicyclicalkanes devoid of substituents in the ring skeleton, 11869
- 3,4-dihydro-2*H*-pyrrole 1-oxide, cycloaddition to olefins, subsequent sequence of oxidation-cycloaddition, 2979
- 3,4-dihydro-2*H*-pyrrole 1-oxide, cycloadditions to methylene-γ-butyrolactones, 14763
- 1,3-dipolar cycloadditions of cyclic to C_6 - $\alpha\beta$ -unsaturated esters and lactones, 16803
- 1,3-dipolar cycloadditions of 3,4-dihydroisoquinoline *N*-oxide with methyl 3,4-dimethyl-(trimethylene-, tetramethylene-)cyclobutene-1-carboxylates, facial selectivity, 9279
- from cyclisation of δ-alkenyl oximes which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051
- glyceraldehyde derived nitrone, reaction with 2-trimethylsilyloxyfuran to form tetrahydrofuro-[2,3-d]isoxazol-5(2H)ones which after hydrogenolysis provides 5-amino-2,5-dideoxy-heptono-1,5-lactams, 11721
- 3,4,5,6,7,8-hexahydroazocine 1-oxide, formation, cycloadducts, polymerisation, 5581
- homoadamantane-incorporated —, cycloadditions, formation of 3-oxa-2-azatetracyclo[7.3.1.1^{7,11}.0^{2,6}]-tetradecanes, 5413
- C-(1-methylindol-3-yl)-N-methylnitrone, 1,3-dipolar cycloaddition with carbonyl substituted dipolarophiles, formation of indolyl-isoxazolidines which could be further reduced to pyrrolidinones, 707

- Z- and E-nitrones, 1,3-dipolar cycloaddition with ethyl vinyl ether and 2,3-dihydrofuran catalysed by chiral oxazaborolidines, 11843
- oxime-nitrone-isoxazolidine cascade reactions involving nucleophilic opening of epoxides with oximes followed by 1,3-dipolar cycloaddition reactions with dipolarophiles, 14339
- reactions with NaI/TFAA, formation of imines, amides and imides by reduction and Beckmann-type reactions, 14169
- C-(2-thiazolyl) —, cycloaddition to chiral acrylates, synth of 2-(α-aminoalkyl)thiazoles and 5-formyl-pyrrolidin-2-ones, 3301

Nitrosamines

α-acetoxy-dialkyl—, pH-independent decay in water, secondary α-deuterium isotope effects consistent with nitrosoiminium ion intermediates, 10671

Nitroso compds

- arylnitroso compds: reaction with conjugated azoalkenes to provide α-(arylimino-N-oxide)-hydrazones and subsequent conversion to pyrazol-5(4H)-ones, 1467
- dimeric nitrosochlorides, reaction with 1,2phenylenediamine, synth of hexahydrophenazines, 9761
- N-methyl-N-nitroso-urea, mechanism of decomposition in water and reactions with deoxyguanosine, nucleotide and oligonucleotide, 4063
- 2-methyl-2-nitrosopropane, nitrosodurene, use as spin traps in polymerisation studies, 15297
- 4-nitroso-pyrazoles, reaction with complex hydrides and organometallic reagents, synth of 4-oximino-2pyrazolines, 8585
- nitrosocarbonyl compds, generation by O transfer from 1,2,4-oxadiazole 2-oxides to nitrile oxides, 1787
- nitrosoketene, cycloaddition of chiral cyclic ketones to, synth of chiral spiro 3-oxazolin-5-one 3-oxides for use in EPC synth of modified amino acids, 5725

Nitrous acid and derivs

- alkyl nitrites, conversion of alkyl radicals into oximes by, 16847
- photolysis of cyclopentyl nitrites, formation and ESR of δ-valerolactam N-oxyl radicals, 3205

Nitroxides

"living" free radical polymerisation of styrene mediated by —, acceleration by additives, 15225

NMR

- carbon, 1-(t-butoxy methyl)-1,2-dihydro[6]fullerene, 3587
- carbon, characterisation of (2-furyl)pyridines,

- (2-thienyl)pyridines and furan-pyridine and thiophene-pyridine oligomers, 11529
- carbon, proton, cyclo-tryprostatins A-D, 59
- carbon, 1H-cyclopenta[b]benzofuran lignans from Aglaia elliptica, 17625
- carbon, monohalo-cyclooctatetraenes, bond shift rates and activation energies, 10093
- carbon, 6-(3-indolyl)-2-piperidones and 4-substituted 6-(3-indolyl)-2-piperidones, 719
- carbon, of lithiated tertiary oligoethylenepolyamines, 9977
- carbon, nitrogen-15, proton, MAS, 3(5)-amino-5(3)-(substituted phenyl) pyrazoles, annular tautomerism, 10783
- carbon, nortricyclanes from reaction of norbornene and norbornadiene with dimethyl (trifluoromethane-sulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), 8173
- carbon, proton, alboinon, 1,3,5-oxadiazin-2-one alkaloid from ascidian *Dendrodoa grossularia* of the Baltic Sea, structure, 2055
- carbon, proton, alkoxylated p-phenylenevinylene oligomers, 13811
- carbon, proton, 2-aryl-1,3-dihydroxy-4,4,5,5-tetramethylimidazolidines, 16911
- carbon, proton, benzastatins E-G, indoline alkaloids with neuronal cell protecting activity from *Streptomyces nitrosporeus*, 4309
- carbon, proton, bicarbocyclic dideoxynucleosides, 1957
- carbon, proton, bis(2,2'-biphenylylene)difluoropertellurane, 12183
- carbon, proton, 7,7'-bitriazolopyridines, 8257
- carbon, proton, bromo- and iodo-o-xylenes, conformation (atropisomerism) effects in $\alpha,\alpha,\alpha',\alpha'$ -tetrabromo-o-xylene, 10113
- carbon, proton, bromocompds from Aplysina aerophoba and Aplysina cavernicola, 6565
- carbon, proton, C4a-adduct from amine oxidation of 3-methyl-5-ethyllumiflavinium perchlorate, 5027
- carbon, proton, calix[4]arenes capped by diamide bridges in 1,3-position on the lower rim, 9799
- carbon, proton, characterisation of the *N*-t-butoxycarbonylphenylalanyl enol family HIV-1 protease inhibitors, 4231
- carbon, proton, of chiral spiro-1,3-dioxanes, synth and stereochemistry, 6215
- carbon, proton, circinamide, a papain inhibitor from cyanobacterium *Anabaena circinalis* Rabenhorst (NIES-41), 5747
- carbon, proton, cyclolignans with an isoxazoline ring fused to the cyclolignan core, 6555

- carbon, proton, cytohalasins from the fermentation broth of *Xylaria hypoxylon*, 6485
- carbon, proton, dammarane triterpenes from Maytenus macrocarpa, 6465
- carbon, proton, N-deoxyribosides of agroclavine, lysergol and 9,10-dihydrolylsergol, 4503
- carbon, proton, [1α,2β,3β,5α,6β,9β]-2,3-diacetoxy-5,6-epoxy-6,10,10-trimethylbicyclo[7.2.0]undecane, 7035
- carbon, proton, 2,6-bis(dimethylaminomethyl)phenyl silyl and germyl chlorides, and 2 H- and 15 N-labelled isotopomers, exchange in λ^4 -Si and λ^5 Ge systems, kinetics, 10133
- carbon, proton, 2,5-distyryl-heteroarylenes and 1,4-bis[2-(hetero-aryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, 15069
- carbon, proton, conformational changes in diethyl 2-oxo-8-oxa-6,7-diazabicyclo[3.2.1]oct-3-ene-6,7-dicarboxylate, 9313
- carbon, proton, of hexaspiro[2.0.4.0.2.0.4.0.2.0.4.0]tetracosane(alternately cyclopropa-cyclopenta-fused
 cyclohexane), conformation and dynamics, 6011
- carbon, proton, dolastatin I from the Japanese sea hare Dolabella auricularia, 8149
- carbon, proton, flavones from reaction of 2-hydroxy-α-bromoacetophenones with piperidine or morpholine aminals of benzaldehydes, 9813
- carbon, proton, fluorine, α-fluoro-β-thio-α,β-unsaturated carbonyl compds, 647
- carbon, proton, of glycosides, the fucofuranoside method for determining the absolute configuration of secondary alcohols using PMR/CMR, 5973
- carbon, proton, heteronuclear nOe analysis of bilirubin solution, conformation and intramolecular hydrogen bonding, 2697
- carbon, proton, (1S,2S,6R,8R)-1-isopropyl-5-(hydroxymethyl)-8-methyltricyclo[4.4.0.0^{2,8}]dec-4-ene, 11563
- carbon, proton, konbu'acidin A, 15681
- carbon, proton, lamellarian alkaloids from an unidentified mollusc from the Arabian Sea, 3457
- carbon, proton, N,N'-linked 1,2-ethanediyl-poly-(benzimidazoline-2-ones), 7689
- carbon, proton, magdalenic acid and bismagdalenic acid from Vellozia magdalenae, 2005
- carbon, proton, ma'ilione and allo-isoobtusol sesquiterpenes from Hawaiian red alga Laurencia cartilaginea, 521
- carbon, proton, 1-[α-mannopyranosyl-(1α-3)-(6-O-acyl-α-mannopyranosyl)]-3-O-acylglycerol, 3593 carbon, proton, microginins 299-A and -B, leucine

- aminopeptidase inhibitors from the cyanobacterium *Microcystis aeruginosa*, 10281
- carbon, proton, octahydroxyorthocyclophane and octamethoxydiketoneorthocyclophane, 17633
- carbon, proton, of organo-Zn reaction species in asymmetric Reformatsky reactions, 6065
- carbon, proton, phenanthrene derivatives from Domohinea perrieri, 15663
- carbon, proton, plorantinone A-C, protoilludane sesquiterpenes from basidiomycete *Russula delica*, 9735
- carbon, proton, polygonapholine, alkaloid from the rhizome of *Polygonatum alte-lobatum*, 2025
- carbon, proton, products from biotransformation of prednisolone by T76 Scenedesmus quadricauda (green alga), 8273
- carbon, proton, of quinazoline-2,4-diones, 8457
- carbon, proton, rearranged hydroperoxide products from reduction of artemisinin, 7493
- carbon, proton, saundersioside A and B from bulbs of *Ornithogalum saundersiae*, 11549
- carbon, proton, scanlonenyne, halogenated C₁₅ acetogenin from the red alga *Laurencia obtusa*, 4271
- carbon, proton, sesterterpenes from the New Caledonian marine sponge *Patrosaspongia nigra* (Bergquist), 10451
- carbon, proton, solution state conformation of cycloleonurinin, 7469
- carbon, proton, structural determination of the regio and diastereoisomers obtained in the addition of 2-phenylcyclohexanone to chalcone, 11693
- carbon, proton, structural study of 3-azabicyclo-[3.3.1]nonane derivs functionalised at 1 and/or 9-positions, 13099
- carbon, proton, study of ring A steroidal quinones, 14073
- carbon, proton, tetraalkylated dihomooxacalix[4]-arenes, 11791
- carbon, proton, 3,7,11,15-tetramethyl-hexadecan-1,19-sodium disulfate and heneicosane-1,21-sodium disulfate from the Mediterranean tunicate *Ascidia* mentula, 5877
- carbon, proton, toxicarioside A, cardenolide isolated from *Antiaris toxicaria* latex, 13557
- carbon, proton, toxicarioside B and toxicarioside C, cardenolides isolated from *Antiaris toxicaria* latex-derived dart poison, 16959
- carbon, proton, tridesmosides rhoiptelesides A and B and bisdesmoside rhoipteleside E, 16999
- carbon, proton, [1α,2β,3α,5β,6β,9β]-6,10,10-trimethyltricyclo[7.2.0.0^{3,5}]undecane-2,6-diol, 7035 carbon, proton, verrucosins, diterpenoid acid

glycerides from Mediterranean dorid nudibranch Doris verrucosa, 1491

carbon, proton, yaoundamines A and B from Ancistrocladus korupensis, 8121

carbon, rearrangement of substituted bicyclic cycloheptatriene endoperoxides, 10401

carbon, series of methyl ester peracetate (5β) -bile acid derivs, 435

carbon, silicon, mediation of substituent effects *via* monoatomic SiMe₂, CMe₂ and CH₂ σ-spacers, 5825 carbon, *N*-substituted fused pyrazoles and pyrazolinols, 17735

carbon, tri- and tetracyclic dithiolanes, 2261

coupling constants relative to (R,R)-tartaric acid ester, amide and nitrile conformations, 6113

fluorine, imidazoles bearing 1-fluorinated substituents, 8211

fluorine, lithium, nitrogen, products of deprotonation of 4-substituted cyclohexanones by chiral bidentate lithium amides having an alkyl- or a fluoroalkyl substituent at the amide nitrogen, 13641

lithium, sodium, enhanced Li⁺ ion-selective ionophoric properties of double armed diaza-12-crown-4 derivs, 3487

lithium-6, nitrogen-15, chiral bidentate Li amides for enantioselective deprotonation, 7191

phosphorus, 1-phenyl-1-phospha-5-thiacyclooctane and *trans*-1,5-diphenyl-1,5-diphosphacyclooctane, solution conformation, 7461

proton, absolute configuration of alcohols by NMR, anisotropic effects on remote positions, 8541

proton, 4-amino-5-hydroxy-4,5-dihydrofuran-2-one hydrochloride, 15807

proton, aromatic hydrocarbons complexed with a macrocycle containing four tropolone units in water. 11913

proton, asymmetric Diels-Alder reactions catalysed by bis(oxazoline)-magnesium perchlorate, 7671

proton, aziridines derived from 5,6-dihydro-2*H*-pyran and from 3-(benzyloxy)cyclohexene, 2-(benzyloxy)-3,6-dihydro- and 2-benzyloxy)-6-methyl-3,6-dihydro-2*H*-pyran and ring-opened products, 1417 proton, 1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, 9965 proton, cation-induced shifts in spectra of dioxyacetamide ionophores, 17235

proton, CIDNP study of rigid vinylcyclopropane radical cations, 10051

proton, conformational mobility of calix[4]- and calix[5]arenes, 13037

proton, 1,8-di(3'-pyridyl)naphthalene in the presence of R-camphorsulfonic acid, 465

proton, of an acetylated amino-disaccharide deriv,

1665, corrig. 5357

proton, large shieldings in 3r, 4, 5, 6(E), 7, 8-hexahydroparacyclophane structures, 16123

proton, light-switched metal-tunneling across a π -basic tube of 1,3-alternate-calix[4]arenes, 13609 proton, 3,3'-(1,8-naphthylene)bispyridine, 3557

proton, polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105

proton, porphyrins bearing *meso*-linked straps of variable length, rigidity and redox activity, 6755 proton, N-(2-propyl)-3-(4-chlorobenzoyl)-4-ethoxy-

carbonylmethylpyrrolidine-2,5-dione, 17643 proton, spirofurochromanone derivs, 15799

proton, [4.4]spirononene dimethyl gloiosiphone A, 8913

proton, temperature-dependence of J values and conformational flexibility in α - and β -D-nucleosides, 14043

proton, tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, 17691

proton, tetracyclo[6.4.0.0^{3,5}.0^{4,8}]dodecan-6-ones, 13053

selenium, polychalcogenadisilabicyclo[k.l.m]alkanes, 12215

Nucleic acid

branched RNA and DNA/RNA chimaeras, solid-phase synth, 11317

cyclodecenediyne conjugates of dibenz[e,g]indole, DNA intercalative delivery template, DNA cleavage, 14599

discussion of — as information-containing linear polymers, 15495

DNA aptamer targets translating editing motif in a t-RNA synthetase, 11985

6-methylene-3,7-dihydro-6*H*-purine cyanine dyes containing other heterocyclic rings, fluorescent stains for parasites and DNA markers, synth, structure, applications, 12595, 12605

5'-polyarene-tethered oligo-DNAs, synth by solid-phase synth, thermal stability and spectroscopic properties of their duplexes and triplexes, 10409

prebiotic synthesis of RNA, 11493, 11595

recognition of abasic site lesions in DNA using N-[2-(6-amino-9H-purin-9-yl)ethyl]-N'-[3-(6-chloro-2-methoxyacridin-9-ylamino)propyl]-4-hydroxyiminomethylpyridine-2,6-dicarboxamide, 13749

selective base-pair destabilisation enhances binding of DNA methyltransferase, 12041

O-substituted hydroxylamines as fluorescent probes for detection of abasic sites in DNA, 5485

6-thio-2'-deoxyinosine, synth for solid-phase oligonucleotide synth, 11191

Nucleic acid analogues

- oligodeoxynucleotides containing quinazoline-2,4diones, triplex stability, 8457
- peptide nucleic acid monomers, and PNA-DNA linker synth, 14671

Nucleosides

- 5-fluorouracil acyclo-, synth, effectiveness against rhabdomyosarcoma cells, 7319
- N-[2-(6-amino-9H-purin-9-yl)ethyl]-N'-[3-(6-chloro-2-methoxyacridin-9-ylamino)propyl]-4-hydroxy-iminomethylpyridine-2,6-dicarboxamide, synth for recognition of abasic site lesions in DNA, 13749
- 5'-amino-3'-deoxy-2',3'-didehydrothymidine (5'-amino-d4T), synth, reaction with 1,3,8-trioxaspiro-[4.5]decane-4,7,9-trione, 5537
- arabino, ribo, and xylofuranosyl nucleosides with hydrogen isotopes at C2' and C3', synth by reduction of 2' and 3'-ketonucleoside derivs, 447 hierarchogoglic didenayrus leosides, synth as potential
- bicarbocyclic dideoxynucleosides, synth as potential antiviral agents, 1957
- carbocyclic —, synth from 2-aza-3-oxabicyclo[2.2.1]-heptene hydrochloride, 3347
- citrates and citramides as models for triphosphate isosteres, 5537
- S-(2-cyanoethyl)isothiouronium chloride, use in prep of 2-cyanoethyl disulfide which could be converted into 2-(2-cyanoethyl)sulfanyl-1*H*-isoindole-1,3-(2*H*)-dione and related sulfur-tranfer agents, 14411
- 9-deazaadenosine and formycin B, determination of ionisation constants, 6903
- 2'-deoxy-2'-phenylselenofuranosyl from glycals, formation of 2'-deoxy-—, 10921
- 2',3'-dideoxy-3'-hydroxymethylcytidine, antiviral nucleoside, synth by two routes from protected uridine and cytidine 2',3'-epoxide and from 2',3'-didehydro-2',3'-dideoxycytidine, 8085
- ethynyladenosine, potential agonists for the adenosine A₂ receptor, synth using triflic enolates in palladium-catalysed cross-coupling reactions, 6747 fluoro-carbocyclic —, adenosine and guanosine analogues, synth, 1861
- 4'-C-(fluoromethyl) —, synth as antineoplastic agents, 13315
- (1'R,3'R)-trans-3'-hydroxycyclopentyladenine·HCl, a carbocyclic —, purification, calculations, thermochemistry, 7181
- medium-dependent flexibility of β compared with α -D—, experimental data from NMR, 14043

- neplanocin A, antiviral carbocyclic nucleoside, synth from adenosine, 13621
- nucleoside 5'-hydroxyls, o-nitrobenzyloxycarbonyl as photolabile protection, 4247
- protected thymine polyoxin C, synth using prochiral ketone 8-oxabicyclo[3.2.1]octan-3-one, 14417
- purine —, cleavage of ribofuranose ring by DIBAL-H, acyclo—synth, 16683
- purine nucleosides, removal of sugar O-tosyl groups and heterocycle halogens with sodium naphthalenide, 6295
- β-pyrimidine nucleoside analogues, synth from 2,3-difluoro ribofuranosyl acetate derivs, 6327
- pyrrolo[2,3-d]pyrimidine and 1,2,3-triazole isonucleosides, synth, 3831
- ribo- and 2'-deoxyribo— with 3',5'-bridges and 5'-nitrogen substituent, 4727
- 6-thio-2'-deoxyinosine, synth for solid-phase oligonucleotide synth. 11191
- trisubstituted cyclobutane nucleoside analogue by nucleophilic substitution between adenine and a mesylate; unexpected C4-C3 ring contractions in related reactions, 5797
- tunable transmission of the aromatic character of the aglycone through the anomeric effect in C-nucleosides drives its own sugar conformation, thermodynamic study, 6433
- 6-vinylpurine derivs, synth and addition of N, S and O-nucleophiles, 3035

Nucleotides

- bis-(3→5)-cyclic bis(1,4-anhydro-2-deoxy-Derythro-pentitol-3-phosphate), bis-abasic cyclic dinucleotide inhibitor of HIV-1 integrase, synth from 2-deoxy-D-ribose, 11033
- deoxyguanosine, and oligo—, reactions with N-methyl-N-nitrosourea, 4063
- fluoro analogues of adenine —, unsaturated products from elimination reactions; difluoroallyl and fluorobutadienyl phosphonic acids, 5389
- guanosine analogues, 9-[2-(difluorophosphonomethyl)cyclopropylmethyl] guanine, synth of enantiomers, inhibition of purine nucleoside phosphorylase by, 11297
- oligo—, phosphoric diester and phosphorothioate oligonucleotides, synth using *N*-pent-4-enoyl nucleoside phosphoramidites, 2731
- oligodeoxy— containing quinazoline-2,4-diones, triplex stability, 8457
- oligodeoxynucleotides, solid-phase synth by incorporation of 6-thio-2'-deoxyinosine, 11191
- oligonucleotide binding by use of a linker containing a 2,4-bis(4-carboxyphenoxy)-6-methoxy-S-triazine

amide group, 321

oligonucleotide derivs having a dansyl fluorescence label at the 2'-position of a ribonucleoside, synth using 5'-dimethoxytrityl 2'-(dansylamino)uridine 3'-phosphorobisdiethylamidite, 4265

oligonucleotides with 3-hydroxy-N-acetylprolinol as sugar substitute, synth, 14957

oligonucleotides, automated solid phase synth using O-β-cyanoethyl-O-octyl-N,N-diisopropyl phosphoramidite (Lipocap) as a capping reagent, 9629

N-substituted 6-(1-aminoethyl)-9-(2-phosphonomethoxyethyl)purine derivs by Stille coupling of 9-[2-[bis(2-propoxy)phosphonylmethoxy]ethyl]-6-chloropurines with 1-(ethoxyvinyl)tributyltin followed by acid hydrolysis/deprotection, 2291

Olefination

modified Horner-Wadsworth-Emmons — of base-sensitive chiral β-hydroxy-α-aminoaldehydes, Z-selective — using trifluoroethyl phosphonates, 1707

taxol AB ring system, synth by — by Meyer-Schuster reaction or allylic rearrangement of vinyl-Ce adduct of A-ring C1-ketone, and B-ring closure, 7139

Wittig and selenium-mediated — of α -oxo-esters, 16767

Olefins

addition of 1-, 2- and 3-phosphonyl-substituted radicals derived from corresponding iodoalkane-phosphonates, 7291

allylic oxidation with copper(I) bisoxazoline catalysts and peresters, synth of allylic benzoate esters, 16229

asymmetric cyclopropanation of — with diazoacetate using chiral copper complexes with 2-(2-aryl- or 2-alkyl-sulfonylamino)phenyl-4-phenyl-1,3-oxazolines as catalysts, 9599

asymmetric methoxyselenylation and intramolecular oxyselenylation of olefins using diselenides having a chiral tertiary amino group, 2029

1,2-diol diperchlorates, synth from — by reaction with phenyliodine(III) diperchlorate, 16877

1,1-diphenylethylene, adsorption on acid zeolites, nature of blue species, 4715

G2 calculations on heats of reduction of compounds with C=C, C=O and C=S groups, conformations, 10123

halogen atom transfer radical addition of α-polychloroesters to — promoted by Fe⁰ filings, 17761

3-oxo-2-phenyliodonio-dihydrobenzothiophene 1,1-dioxide ylid, reactions with —, cyclopropane formation, 9365

photoelectron spectra of monocyclic -, 14713

ring-opening metathesis, synth of neoglycopolymer inhibitors of selectins using, 11937

styrene, nitroxide-mediated "living" free radical polymerisation, acceleration by additives, 15225

styrene, a slow termination process in atom transfer radical polymerisation, 15321

styrenes, enantioselective cyclopropanation using chiral Co(III)-salen as catalyst, 7201

vinyl groups, Wacker oxidation, regiochemistry in presence of neighbouring oxygen functions, 10733 see also Alkenes

Oligomers

alkoxylated *p*-phenylenevinylene oligomers, synth, spectroscopic and electrochemical properties, 13811 diarylperfluorocyclopentenes having thiophene oligomers as the aryl groups, synth and photochromic reactivity, 12263

2,5-distyryl-heteroarylenes and 1,4-bis[2-(heteroaryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, synth, characterisation and electronic properties, 15069

(2-furyl)pyridines, (2-thienyl)pyridines and furan-pyridine and thiophene-pyridine oligomers, synth and characterisation, 11529

oligomers constructed from benzene and thiophene rings by transition metal coupling reactions, 10357 2,6-septipyridine, tri-(4-t-butylphenyl)-, synth of soluble pyridine oligomer, 1715

sterically constrained phenyleneethynylenes and dioxapropylphenylethynylene oligomers, synth, 11881, 11899

Organoleptics

see Flavours and fragrances, Pheromones

Orthoesters

7-methoxy-3,4-dihydro-2*H*-1-benzopyran-2-one, dimethyl ortho-ester formation and reactions, 3863

Osmium and compds

see Hydroxylation

Oxadiazines

alboinon, 1,3,5-oxadiazin-2-one alkaloid from ascidian *Dendrodoa grossularia* of the Baltic Sea, structure, 2055

Oxadiazoles

N-arylbenzamidoximes with nitrile oxides, formation of 1,2,4-oxadiazole 4-oxides and 1,2,4-benzo-triazines, 1089

1,4-dialkyl/aryl 2,3-di(hydroxyimino)butane, conversion into 1,2,5-oxadiazole 2-oxides and 2-phenyl-2*H*-1,2,3-triazole 1-oxides, 1751

diarylfuroxans, photochemistry, generation of

- acetylenes by (NO)₂ loss and trapping by alkenes, 17395
- fused 1,2,5-oxadiazoles, formation from N-acetyl enamines on nitration by acetyl nitrate, 16161
- 1,2,4-oxadiazole 4-oxides, synth by nitrile oxide cycloaddition to N,N-diethylamidoximes, deoxygenation by ArCNO with generation of ArCO-NO, 1787
- 1,2,4-oxadiazoles, photo-irradiation in presence of S nucleophiles, synth of 1,2,4-thiadiazoles, 12629
- 5,6,7,7a-tetrahydroimidazo[1,5-b][1,2,4]oxadiazol-2 (H)-ones by addition of Δ^3 -imidazoline 3-oxides to aryl isocyanates, 13873

Oxathiins

chiral β-keto-α-thioxo-esters, asymmetric hetero-Diels-Alder reactions, formation of 2,3-dihydro-1,4-oxathiins (with enes) and 2-acyl-3,6-dihydro-2*H*-thiopyran-2-carboxylates (with dienes), 17383

Oxathioles

4-amino-1,2-oxathiole 2,2-dioxides and 4-amino-2,3dihydroisothiazole 1,1-dioxides, synth and anti-HIV activity of derivs of, 17795

Oxazepines

2- and 4-trifluoromethyl-1*H*-arylo-1,5-oxazepines, synth by condensation of 1,1,1-trifluoro-3-(isobutoxymethylene)-2-propanones with *o*-aminophenols, 5847

Oxazines

- 2-aza-3-oxabicyclo[2.2.1]heptene hydrochloride (3,6-dihydro-3,6-methano-2*H*-1,2-oxazine),synthon for carbocyclic sugars and nucleosides, 3347
- 3,5-dichloro-2*H*-1,4-oxazin-2-ones, use in synth of 2-aryl-6-chloropyridine-3-carboxylic esters, 12699 dihydrooxazine deriv by reaction of 3-amino acridine with formaldehyde, 2871
- 2,5-diketomorpholines, solid-phase synth, 6573
- 3-isopropylmorpholin-2-one and N-substituted derivs, synth, 14591
- 1,4-oxazines with carbonyl ylid structure, from α -diazo-carboximides with Rh(II) catalysis, 7777
- 5-phenyl-1,4-oxazin-2-one, generation and trapping of azomethine ylid from 4-t-butyloxycarbonylmethyl deriv; other potential 4-aminal-derived ylid sources, 12671
- photochromic spirooxazines, synth through condensation of methylene-substituted azaheterocycles on 1-amino-2-naphthols in the presence of an oxidising agent, 9669
- tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, synth by condensation of a C-pentyl resorcarene with long chain aliphatic diamines and

formaldehyde, 17691

(6R)-2,3,5,6-tetrahydro-3,6-diaryl-N-[(2'R)-2'-methyl)phenyl-methyl]-4H-1,4-oxazin-2-ones, alkylation of, synth of α-substituted N-[((2S)-2-hydroxy-2-phenyl)-ethyl]-2-phenylglycine derivs, 17711

tetrahydro-1,3—, ring-chain tautomerism of 3-amino-1,2-propanediol adducts with aromatic aldehydes, 1081

Oxaziridines

oxaziridinium tetrafluoroborate salt for epoxidation of olefins, 13727

perfluoro-cis-2-butyl-3-propyloxaziridine, use in bridgehead adamantane hydroxylation, 5995

Oxazoles

imidazo[2,1-b]oxazoles; Mannich, bromination, nitration and Vilmeier-Haack formylation of, 6959 isomünchnones (4-oxidooxazolium betaines) and 1,4-oxazines with carbonyl ylid structure, from α-diazo-carboximides with Rh(II) catalysis, 7777

oxazolo[4,5-*b*]pyridin-2(3*H*)-ones, 2-phenyloxazolo-[4,5-*b*]pyridines and pyrrolo[2,3-*b*]pyridin-2(2*H*)-ones, palladium-catalysed acylation of, 5159 2-(1,1,1-trifluoroacetonyl)oxazoles by reaction of

trifluoroacetyl ketene diethyl acetal with *o*-aminophenols, 5847

1,2-Oxazoles

see Isoxazoles

Oxazolidines/oxazolidinones

- 2-acyl-N-tosyl oxazolidines, diastereoselective addition of nucleophiles to C=O, 1759
- 3-Boc-4-ethynyl-2,2-dimethyloxazolidine and its 4-[(2-tributylstannyl)ethenyl] analogue, synth and Suzuki coupling reactions, 17489
- 4-methoxy-5-hydrazino-2-oxazolidinones, synth from $3-[(1S)-2-alkoxy-1-apocamphanecarbonyl]-2-oxaz olones as <math>\alpha$ -aminoaldehyde templates for synth of α -amino acids, 1275
- 1,3-oxazolidines and 1,3-dimethylimidazolidine, reaction with alkyl chlorosilanes and with 2-methylfuran, 14381
- oxazolidinone enoates, Lewis acid promoted Michael addition of 2-(trimethylsilyloxy)furans to in the presence of hexafluoroisopropanol, synth of 4-substituted butenolides, 17015
- ring-chain tautomerism of 3-amino-1,2-propanediol adducts with aromatic aldehydes, 1081
- ring-chain tautomerism of Schiff bases of 4-nitrophenylserinol, 1873, 1891
- αβ-unsaturated 3-acyl oxazolidin-2-ones, diastereoselectivity of thiol addition, formal synth of (+)-diltiazem, 2421

Oxazolines/oxazolinones

- chiral copper complexes with 2-(2-aryl- or 2-alkyl-sulfonylamino)phenyl-4-phenyl-1,3-oxazol ines as catalysts for the cyclopropanation of olefins, 9599
- chiral ferrocenyl phosphine oxazoline ligands, role in copper catalysed conjugate addition of *n*-butyl Grignard reagents to enones, 16503
- chiral spiro 3-oxazolin-5-one 3-oxides by cycloaddition of chiral cyclic ketones to nitrosoketene, use in EPC synth of modified amino acids, 5725
- copolymerisation of 2-oxazolines with 3-ethoxy-1,1,2,2-cyclobutanetetracarbonitrile or dimethyl 3-ethoxy-2,2-dicyanocyclobutane-1,1-dicarboxylate, formation of regular terpolymers, 15603
- copper(I) bisoxazoline catalysts for allylic oxidation of olefins with peresters, synth of allylic benzoate esters, 16229
- Cu(II)-tris(oxazoline) complex as catalyst for enantioselective allylic oxidation of cycloalkenes, 6337
- 2-oxazoline derivatives, ortho and meta bis(2'-oxazoline-5'-yl)benzenes, synth by reaction of imidate derived from dimethyl aminomalonate with aldehydes, 6351
- bis(oxazoline)-magnesium perchlorate as catalyst for asymmetric Diels-Alder reactions, enantioselectivity, 7671
- 2-(o-vinylphenyl)oxazolines, synth of chuangxinol and other phthalides, 14127

Oxazolones

5-alkylidene-3-amidofuran-2(5H)-ones from 4-(acyl-methylene)azlactones by translactonization, acid and base effects, 1843

Ovening

6,7-dihydrooxepin-2(5H)-ones, 1,3-dipolar cyclo-additions of cyclic nitrones, 16803

Oxetanes/oxetanones

enantioselective ring-opening of 3-phenyloxetane by organo-Li controlled by external chiral ligand, 10699

Oxidation

- of alkanes to ketones using Fe^{III}(PA)₃ and Fe^{III}(PA)₂Cl₂Pyr₂H with bis(trimethylsilyl)peroxide, 487, 511
- of alkyl, aryl and diaryl sulfides with clay-supported iodosylbenzene, mechanism, 7635
- allylic of olefins with copper(I) bisoxazoline catalysts and peresters, synth of allylic benzoate esters, 16229
- amine oxidations of 3-methyl-5-ethyllumiflavinium perchlorate, kinetic aspects of, 5027

- anodic of methylnaphthalenes and 9-methylanthracene, formation of quinone acetals, 8613 cyclohexane, adamantane, functionalisation using Cu(II)/H₂O₂ and Cu(I)/H₂O₂ systems in pyridine, mechanism, 16017
- of 2H,5H,-3,4-dihydropyrano[3,2-b]indoles, formation of indolin-3-one-2-spirolactones, 987 electrochemical of cyclic ketones in methanol in an undivided cell in the presence of sodium halides, effect of ring size, mediator and supporting electrolyte, 4427
- enantioselective allylic of cycloalkenes under Kharash-Sosnovsky conditions using Cu(II)tris(oxazoline) complex as catalyst, 6337
- enantioselective of some dithioacetals and dithioketals using whole-cell cultures of microorganisms, synth of thioacetal and thioketal sulfoxides, 9695
- Gif oxidation system for functionalisation of saturated hydrocarbons: role of the iron-carbon bond in Gif chemistry, 7417
- Gif-type reactions, evaluation of stereoselectivity using *trans*-1,4-dimethylcyclohexane as a probe, 2997
- glycine-selective α -C-N bond cleavage of dipeptides by nickel peroxide, 5609
- of 6α-hydroxy-7-*epi*paclitaxel with TPAP, synth of a 6-formyl-C-*nor*-paclitaxel derivative, 3441
- of ketones by in situ formation of FOH, 15833
- of Messel shale kerogen using ruthenium tetroxide, synth of a series of hopanoid triterpenes, 5767
- 8a-methoxy-2H,6H-chromen-6-ones and 2H-chromenes, synth by phenolic oxidation route, 3879 of 4-methoxyphenethyl phenyl sulfide and 3,4-dimethoxyphenethyl phenyl sulfide with potassium 12-tungstocobalt(III)ate, implication for the mechanism of microsomal and biomimetic oxidation of sulfides, 12287
- of 4-methyl-A-homo-4-azacholest-4a-en-3-one, 10565 microbial of halobenzenes with *E. coli*, synth of *cis*-diols which could be converted to fluorinated hexoses. 11541
- microbial oxidation of bromobenzene with *P. putida* to produce bromocyclohexadiene *cis*-diol, transformation into 5-deoxy-5-fluoro-*myo*-inositol and 3-deoxy-3-fluoro-L-*chiro*-inositol, 8807
- microwave-assisted of saturated and unsaturated alcohols with t-butyl hydroperoxide and zeolites, 15867
- α-nitrocycloalkanones, oxidative cleavage by persulfate in methanol/acid to α,ω-diesters, 16131 of organic substrates using a combination of

- molecular oxygen and 2-methylpropanal catalysed by Co(II) porphyrin and Co(II)-schiff base, 7641, 7649
- syn-oxidation methodology for synth of the C₁₂-C₂₁ bistetrahydrofuran region of monensin antibiotic, 16435
- oxidative functionalisation of unactivated carbon-hydrogen bonds in heptacyclo-[6.6.0.0^{2.6}.0^{3,13}.0^{4,11}.0^{5.9}.0^{10,14}]tetradecane using Gif-type reactions, 1257
- oxidative rearrangement of imines to formamides using sodium perborate, 3805
- oxodiperoxo-Cr(VI) pyrazine complex, multifarious —, deprotection of oximes, oxidative deprotection of silyl ethers, 7889
- peroxidases, catalysed by (Report), 13183
- phenyliodonium diacecate oxidation of naphthols to yield quinone monoketals which react with phthalide sulfones to provide benz[a]anthraquinones, 2177
- of phosphine oxide-dithioether macrocycles, synth of macrocyclic phosphine oxide-disulfoxides, steric control on selectivity, 12249
- photooxidation of aliphatic disulfides, sulfides and n-butanethiol in alcohols or acetonitrile, 2087
- of polychalcogenadisilabicyclo[k.l.m]alkanes and their germanium analogues, 12215
- pyrrolo[2,1-c][1,4]benzodiazepines, oxidation of cyclic secondary amines by tetrapropylammonium perruthenate, 3223
- of α -stannyl phenyl vinyl sulfides, neighbouring tin effect, 12273
- of substituted phenols with phenyliodonium diacetate, synth of cyclohexadienones, subsequent annulation with the anion of 3-cyanophthalide affords anthraquinones, 4387
- sugar hydroperoxides, synth for use as chiral oxidants of allylic alcohols and prochiral sulfides, 185
- sulfide to sulfoxide using Cr(V) reagent catalyzed by heterocyclic bases, 1131
- uracil-5- and 6-acetic acids, and 5,6-dihydrouracil-1-acetic acids, anodic decarboxylative —, formation of acetoxymethyl and trideuteriomethyl derivs, 2609
- using the reagent O₂-H₂O₂-vanadium complexpyrazine-2-carboxylic acids, 3603
- Wacker of vinyl groups, regiochemistry in presence of neighbouring oxygen functions, 10733 Wacker-type—of(\pm)-17 α -vinyl-1,3,5(10)-gonatriene derivs bearing a lactonic bridge on the β -face, regiochemistry of, 7577

see also Baeyer-Villiger reactions, Epoxidation, Hydroxylation

N-Oxides

- amine N-oxides, synth by treatment of heterocyclic aromatic amines and anilines with dimethyl-dioxirane, 15877
- 4-amino-2-ethoxy-2*H*-3,1,2 λ^5 -benzoxazaphosphorin 1,2-dioxides, formation from 3-amino-2,1-benzisoxazoles and from diethyl α -amino-2-nitrobenzylphosphonates, 11399
- 1,4-dialkyl/aryl 2,3-di(hydroxyimino)butane, conversion into 1,2,5-oxadiazole 2-oxides and 2-phenyl-2*H*-1,2,3-triazole 1-oxides, 1751
- 2,2-dimethyl-3,4-dihydro-2*H*-pyrrole *N*-oxide and *N*-(benzylidene)methylamine *N*-oxide, cycloadditions with α,β-unsaturated lactones and esters, 7057
- (S)-2-methyl tetrahydropyridine-N-oxide, synth as key intermediate to trans-2,6-disubstituted piperidines, 11203
- cis-1,2,3,4,4a,7,8,8a-octahydroquinoline —, and their epoxides, synth as haptens in catalytic antibody formation for terpenoid cascade cyclization, 11237
- substituted 3,4-dihydroisoquinoline *N*-oxides, 1,3-dipolar cycloadditions with allenes, synth of 5-methylene isoxazolidines, 9575

see also Nitrile oxides, Nitrones

Oximes

- δ-alkenyl oximes, cyclisation to nitrones which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051
- co-ozonolysis of oxime O-methyl ethers with diketones, formation of diozonides, 5463
- 1,4-dialkyl/aryl 2,3-di(hydroxyimino)butane, conversion into 1,2,5-oxadiazole 2-oxides and 2-phenyl-2*H*-1,2,3-triazole 1-oxides, 1751
- formation from alkyl radicals in presence of nitrites, 16847
- indol-3-yl-carbaldehyde oximes, reaction with electrophilic alkenes/alkynes, synth of nitrones and γ-carbolines, 747
- nucleophilic substitution-1,3 dipolar cycloaddition reactions of with epoxides and dipolarophiles, 13165
- oxime- and Schiff base-containing aza- and diazacrown ethers which can be used for heteronuclear binding with hard and soft metal ions, synth from aza-15-crowns, 17595
- oxime-nitrone-isoxazolidine cascade reactions involving nucleophilic opening of epoxides with oximes followed by 1,3-dipolar cycloaddition reactions with dipolarophiles, 14339
- oxodiperoxo-Cr(VI) pyrazine complex, deoximation

using, 7889

reductive Beckmann fragmentation of cyclic α -amino-oximes, formation of amino-nitriles, 2535 reductive Beckmann rearrangement of α -hydroxyl-amino-oximes, formation of cyclic amidoximes, 2527

steroidal acetoxyimines, formation of N-acetyl enamines on chromatography, 16161

Oxiranes

enantioselective ring-opening of cyclohexene oxide by organo-Li controlled by external chiral ligand, 10699

1-phenyloxiranemethanamines, Lewis acid-catalysed rearrangement/reduction of, synth of β-phenethylamines, 21

see also Epoxides

Oxocanes

prelaureatin conversion into laurallene by enzymatic and chemical bromo-etherification, 8371

Oxocarbon acids and derivs

2'-(dimethoxymethyl)-1'-(cyclopenten-1'-yl)-4hydroxy-2-cyclobuten-1-one, ring expansion in synth of [4.4]spirononene dimethyl gloiosiphone A, 8913

Oxygen heterocycles

- γ-alkylidenebutenolides and related compds, regioand stereoselective synth, 6707
- (S)-(-)-3-(4-t-butyl)phenyl-1-N-(cis-2,6-dimethyl)morpholinyl-2-methylpropane, synth from cis-2,6dimethylmorpholinemethyl immonium tetrachloroaluminate via Mannich reaction, 689
- dihydro-benzofurans and -benzopyrans from 2-cinnamylphenols by photocyclization via singlet excited state proton transfer, 14729
- dihydrobenzopyrans and dihydrobenzofurans, formation by acid-promoted rearrangements of *ortho-*(1,1-dimethylpropenyl)phenols, 5573
- 2,7-dimethyl- and 1,2,7-trimethyl-2*H*-furo[2',3':6,5]naphtho[3,2-*b*]pyran-2-one, and 1,8,9-trimethyl-3*H*-furo[3',2':6,7]naphtho[2,1-*b*-]pyran-3-one, synth, photooxygenation, 13329
- 2,6-disubstituted tetrahydropyrans, 2,5-disubstituted tetrahydrofurans, synth, stereochemistry, 6171
- furo[3,2-b]furanones, bicyclic tetronate esters and reduced derivs related to goniofufurone, synth by intramolecular Wittig reactions, 4815
- heteroatom-containing bicyclic endoperoxides with antimalarial activity, synth by Tebbe methylenations of heteroatom-substituted ketones, 37
- 1,2,6b,12,12a,12b-hexahydro-2,2,12,12-tetramethyl-cyclopenta[1,2-c:5,4,3-de]di[1]benzopyran, and its 1,6-diacetyl deriv, from precocene II on protonation/acetylation, 16177

naphtho[2,3-b]furano-4,9-quinones, synth of diodantunezone and 2-ethylfuronaphthoquinones, 3195

- 4-oxo- and 4-anti-formyl-8,10,12,13-tetraoxapenta-cyclo[5.5.1.0^{2,6}.0^{3.11}.0^{5,9}]tridecanes, synth by ozonolysis, 17653
- cis-3,5 and trans-3,5-substituted β-alkoxy-δ-valerolactones, synth from 8-oxabicyclo[3.2.1]oct-6-en-3-one, 14929
- syringolide I, trioxa-triquinanone elicitor from Pseudomonas syringae pv. tomato, synth, 16029
- 1,3,5,7-tetraoxadecalins, synth, incorporation into metacyclophane host systems, 4821
- 2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3,11}.0^{5,9}.0^{8,12}]tridecanes, synth by ozonolysis of 2-endo-7-antidiacylnorbornenes, 2401

see also Lactones, and the individual ring systems

Oxygen, singlet

photodegradation of lignin models, role of -, 7877 Oxygenation

- microbial of cycloheptyl-N-phenylcarbamate and (±)-trans-2-fluorocycloheptyl-N-phenylcarbamate with Beauveria bassiana, 17055, 17067
- organo-Zn compds, in perfluorohydrocarbons, formation of alcohols and hydroperoxides, 9135
- photo—of 2,3-bis(bromomethyl)-1,3-butadiene, synth of unsaturated cyclic peroxides which rearrange to 3,4-disubstituted furans, 13867

Ozonides

- diozonides by co-ozonolysis of oxime O-methyl ethers with diketones, 5463
- tri-substituted ozonide containing three reactive centres which could be transformed to different functional groups, synth by ozonolytic cleavage of cyclohexene, 5217

Ozonolysis

- alk-3-enoic acids, synth from dilithium $\alpha\beta$ -unsaturated acids and —, synth of ketones and aldehydes, 10883
- co-ozonolysis of oxime O-methyl ethers with diketones, formation of diozonides, 5463
- of L-1,4-cyclohexadienylalanine followed by cyclisation with hydroxylamine, synth of two isomers of L-isoxazolylalanine, 4457
- 2-endo-7-anti-diacylnorbornenes, and synth of 2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3,11}.0^{5,9}.0^{8,12}]trid ecanes, 2401
- ozonolytic cleavage of cyclohexene in the presence of methyl pyruvate, synth of tri-substituted ozonide containing three reactive centres which could be transformed to different functional groups, 5217 propargyl derivs of sugar aldehydes, —, 2653

Paddlanes

1,2- and 1,2,4,5-paddlanes with cyclophane shaft and cyclobutane blades, photo-dimerization of o- and p-divinyl and 1,2,4,5-tetravinyl benzenes, 4593

Palladium and compds

- bis(acetonitrile) palladium(II) chloride as catalyst for cyclisation of δ-alkenyl oximes to nitrones which undergo 1,3-dipolar cycloaddition reactions to afford isoxazolidine derived heterocycles, 15051
- benzylchlorobis(triphenylphosphine)palladium as catalyst for reaction of 3-amino-4-arylisothiazole 1,1-dioxides with vinyl-, aryl-, heteroaryl- and alkynylstannanes, 15859
- di-μ-chlorobis[1-[1-(dimethylamino)ethyl]-2-naphthalenyl-C,N]dipalladium, interconversion between diastereomers, 4083
- 3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl phosphine, ligand to chiral palladacycle as catalyst for asymmetric Pd allylation, 4035

see also Catalysis, Catalysts

Pauson-Khand reactions

- chiral with acetylenic thioethers, synth of alkylthio-cyclopentenones, 8651
- [3+2]-cycloaddition, radical cyclisation/ionic cyclisation and reductive Pauson-Khand for synth of amino azanoradamantane hexahydro-2,5b-methano-1*H*-3a*S*,3aa,6aa-cyclopenta-[*c*]-pyrrole-4a -amine, 1
- intermolecular of norbornene-derived substrates with polymer bound α, ω -alkynols, 6791
- intramolecular in synth of fused bicyclic amino acid derivs, combinatorial chemistry "scaffolds", 6611

Penams/penems

2-alkylcarbapenems, synth by cross-coupling of carbapenem-2-yl triflates with alkylborane, 539

Penicillins

adenophostin A from *Penicillium brevicompactum*, expeditious route to and synth of 2',3",4"-triphosphate and 3",4"-bisphosphate-containing analogues, 6509, 6523, 6539

Peptides and polypeptides

- alamethicin F-30 and trichovirin I 4A, peptaibol linear antibiotics, synth using a 2-chloro-1,3-dimethylimidazolidium hexafluorophosphate, 567
- artificial proteins comprising helices with different amino acid sequences, synth by assembling a α-helical peptide unit *via* selective disulfide cross-linking, 7479
- atrial natriuretic factor, synth of analogues by replacing the alkyl or glycol spacer with octapeptide sequence, 6977

- N(terminal)-chloro-Ala-Gly, base-decomposition, formation and hydrolysis of N-imine intermediate, 12615
- cycloleonurinin, a cyclic dodecapeptide from the fruits of *Leonurus heterophyllus*, solution state conformation of, 7469
- cycloleonuripeptide D, cyclic decapeptide from Leonurus heterophyllus, structure by X-ray, NMR and degradation, 1617
- deoxybouvardin, synth of precursor N,N-dimethylcycloisodityrosine, 10753
- di- and tripeptides incorporating non-proteinogenic amino acids, synth by reaction of C-terminal diand tripeptide organozinc reagents with electrophiles, 13905
- dolastatin I, cytotoxic cyclic hexapeptide from the Japanese sea hare *Dolabella auricularia*, isolation and stereostructure, 8149
- enantiomeric recognition of alkyl phenyl sulfoxides by crystalline (R)-phenylglycyl-(R)-phenylglycine, 8315
- glycine-selective α-C-N bond cleavage of dipeptides by nickel peroxide, 5609
- α-hydroxyglycine peptides, synth in optically pure form by enzymic resolution, 7267
- leuprolide, synth on Nbb resin, peptide alkyl esters and alkylamides, 3179
- MeCys tripeptides in synth of (-)-mirabazole B, 8323 microginins 299-A and -B, leucine aminopeptidase inhibitors from the cyanobacterium *Microcystis aeruginosa*, structures, 10281
- oriamide, a cyclic cytotoxic sponge peptide containing a novel amino acid, 2-[1-amino-2-(p-hydroxyphenyl)ethyl]thiazole-4-acrylic acid, 16147
- peptide nucleic acid monomers, and PNA-DNA linker synth, 14671
- pyoverdin G4R, peptidic siderophore from N₂-fixing strain of *Pseudomonas putida*, 12539
- stereospecific H-labelling by asymmetric deuteriation of methyl N-acetyl-(Z)-α,β-didehydrotryptophan-(L-phenylalaninate using Rh(I) catalysts, 16115
- template assembled synthetic proteins, 3-loop receptor mimetic on a solid-phase anchored cyclotetradecapeptide, 7231
- D- and L-allo-threonine, preparation of protected derivs for peptide synth, 3369
- tripeptide inhibitors ofpeptidylglycine α-amidating monooxygenase containing D- and L-styrylglycine, 8295
- triple-helical peptides which mimic the ligand binding site of the human macrophage scavenger

receptor, synth and structural characterisation, 14263

two-armed receptor consisting of arms of oligomers of isophthalic acids and *trans*-1,2-diaminocyclohexane which binds certain peptides sequenceselectively in water, design and synth, 8739

yunnanin A, cyclic heptapeptide, conformational study by X-ray, NMR and MM calculations, 1607 see also Glycopeptides, glycoproteins Peptide analogues/mimetics

carbohydrate-based non-peptide mimetics of peptidic antagonist of α_v, β_3 and α_v, β_5 pentapeptide cRGDFV, design and synth, 8751

design and synthesis of conformationally constrained amino acids as versatile scaffolds and peptide mimetics, 12789

Fmoc-protected — mimetic based on cyclohexane framework, incorporation into angiotensin II, 12497 ketomethylene dipeptide isosteres, stereoselective synth, 7119

peptoids and depsipeptides, secondary effects in flexible hydrogen bonding networks, 9881

pseudo-tri- and -penta-peptides containing (1S,2R)-2-aminocyclopropanecarboxylate residue, 17417

1,4,7-thiadiazonane-3,6-diones and -thiadiazecane-3,6-diones, β-turn peptidomimetics, solid-phase synth, 6635

Perfluoroalkyl compds

α-amido trifluoromethyl alcohols and ketones, metallo-β-lactamase inhibitors, synth using Ruppert reagent, 7275

chiral β-trifluoromethyl ethenesulfonamides, synth, conformation study, Michael additions, 823

oxygenation of organo-Zn compds in perfluorohydrocarbons, formation of alcohols and hydroperoxides, 9135

perfluoro-xylenes and -p-cymene, hydrodehalogenation and other reactions using Zn(Cu)/DMF/H₂O, 1797

perfluoroacylaminoaryl Mn(III)-porphyrins, synth and catalytic activity in epoxidation of olefins, 6145 polyfluorinated silyl group as fluorous label, use in isoxazoline synth, 6681

β,β,β-trifluoroalanine, from α-keto-perfluorocarboxylic esters by biomimetic transamination, 8307

Perfluoroalkyl groups

poly(arylene thioether)s containing hexafluoro-2,2-propylidene units, monomers and polymerisation, 15237

Perfumes

see Flavours and fragrances

Peroxides

bicyclic endoperoxides derived from substituted cycloheptatrienes, mechanism of rearrangement, 10401

t-butyl hydroperoxide for microwave-assisted oxidation of saturated and unsaturated alcohols, 15867

dialkyl — and alkyl hydro— cleavage in Fenton-type reactions, role of Fe(II), alkoxy radical formation, 14565

furylhydroperoxides, chemical, photochemical and enzymatic approach, 17139

heteroatom-containing bicyclic endoperoxides with antimalarial activity, synth by Tebbe methylenations of heteroatom-substituted ketones, 37

methacrylic-derived allylic —, synth and homolytic decomposition, 2513

 $\alpha\text{-nitrocycloalkanones},$ oxidative cleavage by persulfate in methanol/acid to $\alpha,\omega\text{-diesters},$ 16131 $O_2\text{-H}_2O_2\text{-vanadium}$ complex-pyrazine-2-carboxylic acids as an oxidation reagent, 3603

optically pure sugar hydroperoxides by oxidation of 2-deoxy-2-C-methylene methyl glycosides with hydrogen peroxide: subsequent use as chiral oxidants of allylic alcohols and prochiral sulfides, 185

oxygenation of organo-Zn compds in perfluorohydrocarbons, formation of alcohols and hydroperoxides, 9135

rearranged hydroperoxide products from reduction of artemisinin by lithium aluminium hydride, 7493

3β,5β,7β-trihydroxy cycloheptenes, Pd-mediated asymmetric synth *via* endoperoxides, 5433

bis(trimethylsilyl)peroxide for oxidation of alkanes using Fe^{III}(PA)₃ and Fe^{III}(PA)₂Cl₂Pyr₂H, 487, 511 unsaturated cyclic peroxides, synth from photooxygenation of 2,3-bis(bromomethyl)-1,3-b

photooxygenation of 2,3-bis(bromomethyl)-1,3-b utadiene, subsequent rearrangement to 3,4-disubstituted furans, 13867

see also Dioxiranes, Ozonolysis

Petrochemistry

see Geochemistry

Phase transfer

benzylation of ketone enolates under PTC conditions, effect of π - π interaction between substrate and reactant, 11437

chloroform, phase-transfer reactions with alkenyl carbonates, effect of catalyst, 1053

regioselective epoxide opening to β-amido alcohols under solid-liquid PTC, 4787

Phenazines

hexahydrophenazines by treatment of dimeric nitrosochlorides, (derived from unsaturated hydrocarbons 1-methylcyclohexene, (+)-3-carene and limonene), with 1,2-phenylenediamine, 9761

Phenolics

phenolic acids by enzymatic deacetylation of peracetates of methyl and ethyl esters of polyphenolic acids using *Candida cylindracea* lipase and porcine pancreatic lipase, 2163

photodegradation of lignin models, role of singlet oxygen, 7877

polygalloyl glucopyranoses, synth, 10725

Phenols

- acid dissociation constants of substituted phenols by kinetic method together with rate constants for reactions of aryl benzoates with Z-substituted phenoxide and EtO, 5073
- acid-promoted rearrangements of *ortho*-(1,1-dimethylpropenyl)phenols, migrations, formation of dihydrobenzopyrans and dihydrobenzofurans, 5573
- 2-aminothiophenol, reaction with acetylenic acetals, synth of 2,4-substituted quinolines *via* benzo[*b*]-[1,4]thiazepine intermediates, 641
- asymmetric desymmetrization of 2,2',6,6'-tetrahydroxybiphenyl using *l*-menthone, synth of resolved 2,2'-biaryldiols, 16663
- calix[4]-, -[6]- and [8]-arenes from o-t-butylphenol, synth, structure, conformation, of calixarenes with exo-hydroxy groups, 3287
- o-cinnamylphenols, irradiation of using 2,4,6triphenylpyrylium tetrafluoroborate as photosensitiser, 681
- 2-cinnamylphenols, photocyclization *via* singlet excited state proton transfer, 14729
- conversion into thiophenols, Newman-Kwart reactions, 6073
- N,O-diacylated 2-aminophenols, treatment with p-toluenesulfonic acids, synth of benzoxazoles, 457 dibenz[a,c]anthracene-derived —, synth, 15947
- glycosidation of with 1,2-anhydro-3,4,6-tri-O-methyl-α-D-glucopyranose, lifetime of the glucosyl oxocarbenium ion, 10471
- 2,6-bis-(2'-hydroxyphenyl)pyridine and 3,5-bis-(2'-hydroxyphenyl)pyrazole, synth and molecular structure, 11645
- hydroxystilbenes, screening a "library" for selective inhibition of B cell antigen receptor kinase cascade, 11995
- novolac resins, prep by ion assisted *ortho*-specific phenol-formaldehyde condensation incorporating selective protecting-deprotecting methodology,

13915

substituted phenols, oxidation with phenyliodonium diacetate, synth of cyclohexadienones, subsequent annulation with the anion of 3-cyanophthalide affords anthraguinones, 4387

vicarious nucleophilic substitution of H in nitrophenyl tosylates, 4739

Phenothiazines

methylene blue analogues, synth from 3,7-dibromophenothiazinium bromide by substitution reactions, 10083

Pheromones

- 3-n-butyl-4-vinylcyclopent-1-ene, multifidene, viridiene and caudoxirene, constituents of brown algae pheromones, synth from bicycloheptenone by Baeyer-Villiger oxidation using the fungus Cunninghamella echinulata, 145
- (2S,6R,8S)-2,8-dimethyl-1,7-dioxaspiro[5.5]undecane (bee pheromone), synth by ring closure of (S)-6-phenylthio-2-hexanol, 9487
- (±)-lamoxirene, gamete-releasing/attracting of Laminaria digitata, synth, 14651
- (-)-periplanenes C and D, synth and activity in *Periplaneta* spp., 7209

Phosphetanes

1-menthylphosphetane sulfide, synth from menthylphosphine and 1-bromo-3-chloropropane, subsequent alkylation of the phosphetane provides a diastereoselective route to chiral phosphetane sulfides, 4363

Phosphines

adduct of tri-n-butylphosphine and carbon disulfide, cycloaddition for direct conversion of strained double bonds to 2-alkylidene-1,3-dithiolanes, 2261 benzylchlorobis(triphenylphosphine)palladium as catalyst for reaction of 3-amino-4-arylisothiazole 1,1-dioxides with vinyl-, aryl-, heteroaryl- and alkynylstannanes, 15859

- Bu₃P.CS₂, cycloaddition with norbornene, norbornadiene, norbornadiene ester and aromatic diand trialdehydes, formation of extended bis- and tris-1,3-dithiolanes and dithiolane-containing esters, 10441
- chiral ferrocenyl phosphine oxazoline ligands, role in copper catalysed conjugate addition of *n*-butyl Grignard reagents to enones, 16503
- chiral hybrid phosphine-phosphine oxide ligands, synth and coordination studies, 11577
- cyclohexadiene and cyclohexadienyl Fe(CO)₂ with phosphinite- and —containing bridges from Fe to ring, synth, reactivity, 12553
- (R)-2-(diphenylphosphino)-1,1'-binaphthalen-2-yl

(S)-1,1'-binaphthalene-2,2'-diyl phosphite, chiral ligand for Rh(I)-catalyzed hydroformylation, 7795 3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl —, ligand for chiral Pd catalysis, 4035

triphenylphosphine reaction with (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, 15041

Phosphine imines

2-(phosphoranylideneamino)nicotinateesters, reaction with aryl isocyanates, synth of 4-arylimino-1,3,5-triazin-2-ones and fused derivs, 16061

Phosphine oxides

[(α-chloro)sulfinylmethyl]diphenylphosphine oxides, Horner-Wittig reactions of, synth of (Z)-1-chlorovinyl sulfoxides, 10527

macrocyclic phosphine oxide-disulfoxides, synth by oxidation of the corresponding dithioethers with m-CPBA, steric control on selectivity, 12249

β-phosphine oxide and phosphonate enamines as starting materials for synth of 3-phosphorylated 4-aminoquinolines, 2931

Phosphine sulfides

the β-heteroatom effect, silylmethyl and thiophosphinoylmethyl carbenes, 9989

Phosphine ylids

see Phosphoranes

Phosphinous acids and derivs

cyclohexadiene and cyclohexadienyl Fe(CO)₂ with phosphinite- and phosphine—containing bridges from Fe to ring, synth, reactivity, 12553

Phospholidines

2-phenyl-1,3,2-oxazaphospholidine, Michaelis Arbuzov reaction with halide compds, synth and coordination studies of chiral hybrid phosphinephosphine oxide ligands, 11577

Phospholipids

chemoenzymatic synth of — containing acetylenic fatty acids, 14627

phosphoethanolamine —, polymerisation in supramolecular assemblies, comparison of lamellar and inverted hexagonal phases, 15397

Phosphonic acids and derivs

diethyl 1-fluoromethylphosphonocarboxylates and diethyl 1-fluoromethylphosphonocarboxylic acid, synth by reaction of chloroformates with 1-lithio-1-fluoro-1-(trimethylsilyl)methylphosphon ate. 6391

3-hydroxy-3-(1,2,4-triazol-3-yl)cyclobutylphosphonic acid, inhibitor of imidazole glycerol phosphate dehydratase, synth from diethyl 3-oxocyclobutylphosphonate by addition of 5-lithio-1-trityl-1,2,4-triazole, 10289

1-amino-2-hydroxy- and 2-amino-1-hydroxysubstituted ethylene-1,1-bisphosphonic acids and their N-methylated derivs, synth from N-phthaloylglycine, 17795

α-aminoalkylphosphonates, synth from vinylphosphonates via aziridinylphosphonates, 13603

α-amino-2-nitrobenzylphosphonates, conversion into 3-amino-2,1-benzisoxazoles by base, 11399

α-aminooxyphosphonic acids, synth by Mitsunobu reaction, 4627

anomeric difluoromethylenephosphonates and difluoromethylenephosphonothioates by free radical chain reactions in the presence of carbohydrate gem-difluoroenol ethers, 15085

aryl(difluoro)methanephosphonates, synth by Cu-promoted coupling of diethyl difluorozincomethanephosphonate with iodoarenes, 815

diaryl benzyl- and trityl-phosphonates, formation by Michaelis-Becker reactions, 12691

1-diazo-2-oxo-(2-N,N-disubstituted aminophenyl)ethylphosphonates, Wolff rearrangement on thermolysis giving rise to 2-oxoindolinium enolate derivs, 7557

(dichloromethylene)bisphosphonic acid mono-esters, selective synth, 16153

α,α-difluoro-β-ketophosphonates, synth by addition of diethyldifluoromethylphosphonate to LDA containing cerium(III) chloride followed by reaction with esters and DMF, 10623

9-[2-(difluorophosphonomethyl)cyclopropylmethyl] guanine, synth of enantiomers, inhibition of purine nucleoside phosphorylase by, 11297

2,3- and 1,2-disubstituted 4-oxophosphonates via asymmetric Michael addition of lithiated SAMP hydrazones to alkenylphosphonates followed by oxidative cleavage, 12961

fluoro analogues of adenine nucleotides, unsaturated products from elimination reactions in 1,1-difluorophosphonates; difluoroallyl and fluorobutadienyl phosphonic acids, 5389

1-phosphonyl radicals derived from 1-mono and 1,1-di-heterosubstituted 2-oxoalkylphosphonates as useful phosphoroorganic intermediates in organic synth, 2199

phosphotyrosine mimetic L-4-[diethylphosphono(difluoromethyl)]-phenylalanine derivs, solution and solid phase synth from L-4-iodophenylalanine, 11171

(R)- and (S)-piperidin-2-yl-phosphonic acid by diastereoselective addition of trialkyl phosphite onto 2-ethylphosphonate-6-oxazolopiperidineor2-cyano-6-oxazolopiperidine, 3627

synth via 1-, 2- and 3-phosphonyl-substituted radicals

from corresponding iodoalkanephosphonates and addition to olefins, 7291

synthesis of nonracemic phosphonates (report), 16609 vinylphosphonates, tandem Michael addition alkylation of, 9623

Phosphonylation

phosphonyl and thiophosphonyl radicals, generation in the presence of carbohydrate *gem*-difluoroenol ethers, route to anomeric difluoromethylenephosphonates and difluoromethylenephosphonothioates, 15085

Phosphoramidates

secondary-alkyl amines and N-(tertiary-alkyl) —, synth by nucleophilic ring-opening of N-phosphorylated aziridines 4935

Phosphoramides

derived from (S)-proline as catalysts for asymmetric allylation of aromatic aldehydes, synth of homo-allylic alcohols. 3513

Phosphoramidites

- O-β-cyanoethyl-O-octyl-N,N-diisopropyl phosphoramidite (Lipocap) as a capping reagent in the automated solid phase synth of oligonucleotides, 9629
- 5'-dimethoxytrityl 2'-(dansylamino)uridine 3'-phosphorobisdiethylamidite for synth of oligonucleotide derivs having a dansyl fluorescence label at the 2'-position of a ribonucleoside, 4265
- N-pent-4-enoyl nucleoside phosphoramidites, use in synth of phosphoric diester and phosphorothioate oligonucleotides, 2731

Phosphoranes

for Imino- see Phosphine imines

alkylidenephosphoranes, reaction with symmetrically substituted *p*-quinones, 13945

iminophosphorane derived from (Z)-5-(o-azido-arylidene)hydantoin, reaction with isocyanates, synth of the imidazo[1,5-c][1,3]benzodiazepine ring system, 15895

Wittig reagent reaction with substituted 2amino-1,4-naphthoquinones, 3649

Phosphoric acid and derivs

1D-3-deoxy- and -2,3-dideoxyphosphatidylinositol, synth using viburnitol 1,2:4,5- and 1,2:5,6-diacetonides as starting materials, 14903

bis-(3→5)-cyclic bis(1,4-anhydro-2-deoxy-Derythro-pentitol-3-phosphate), bis-abasic cyclic dinucleotide inhibitor of HIV-1 integrase, synth from 2-deoxy-D-ribose, 11033

dihydroxyacetone phosphate, synth using L-α-glycerophosphate oxidase/catalase co-immobilised system, 14645

hydrogen-bond mediated complexation of dihydrogen phosphate anion by bis-thiourea hosts, 1647

membrane-permeant esters of inositol polyphosphates, synth, applications, 12017

phosphoric diester and phosphorothioate oligonucleotides, synth using *N*-pent-4-enoyl nucleoside phosphoramidites, 2731

- α-phosphoryl sulfoxides, sulfenylation and selenenylation with S-methylmethanethiosulfonate and phenylselenenyl bromide respectively, synth of α-methylsulfenyl and α-phenylselenenyl-α-phosphoryl sulfoxides, 2959
- (+)-(1S)-1-pyrophosphoryl-(2R,3R)-2,3-dihydroxy-(4S)-4-(phosphoryloxymethyl)cyclopentane, carbocyclic analogue of PRPP, synth, 7077
- 2',3'',4''-triphosphate and 3'',4''-bisphosphate-containing analogues of adenophostin A, 6509, 6523, 6539

see also Inositols, Nucleic acids, Nucleosides, Phospholipids

Phosphorinanes

oxazaphosphorinane, synth as precursors to chiral phosphite triesters, diastereoselective synth of DNA phosphorothioates, 16945

Phosphorothioic acids and derivs

anomeric difluoromethylenephosphonothioates by free radical chain reactions in the presence of carbohydrate *gem*-difluoroenol ethers, 15085

DNA phosphorothioates, synth from oxazaphosphorinane, 16945

phosphorothioate and phosphoric diester oligonucleotides, synth using N-pent-4-enoyl nucleoside phosphoramidites, 2731

Phosphorous acid and derivs

diaryl phosphites (H-phosphonates), P-tritylation/ benzylation reactions, Michaelis-Becker reactions, 12691

2,6-di-O-α-D-mannopyranosyl-1-phosphatidyl-D-myoinositol, glycosylation and phosphatidylation both employing phosphite chemistry, 903

(R)-2-(diphenylphosphino)-1,1'-binaphthalen-2-yl (S)-1,1'-binaphthalene-2,2'-diyl phosphite, chiral ligand for Rh(I)-catalyzed hydroformylation, 7795 Raney-nickel/sodium hypophosphite combination for reductive desulfurization of secondary alcohols, 12883

Phosphorus and compds

catalyst-derived P incorporation into Suzuki polycondensation materials; reproducibility of molecular weights, 15459

Phosphorus heterocycles

4-amino-2-ethoxy-2H-3,1,2λ⁵-benzoxazaphosphorin

- 1,2-dioxides, formation from 3-amino-2,1-benzisoxazoles and from diethyl α-amino-2-nitro-benzylphosphonates, 11399
- 1,3,2-diazaphospholes, *ab initio* calculations, aromaticity, 2357
- 1-phenyl-1-phospha-5-thiacyclooctane and trans-1,5diphenyl-1,5-diphosphacyclooctane, solution conformation, 7461

Phosphorylation

- 2,6-di-O-α-D-mannopyranosyl-1-phosphatidyl-D-myoinositol, glycosylation and phosphatidylation both employing phosphite chemistry, 903
- 3-phosphorylated 4-aminoquinolines from β-phosphine oxide and phosphonate enamines, 2931
- 3-O-phosphorylated product from Horner-Wadsworth-Emmons reaction of 3,4-enuloses using the enolate of dimethyl(methoxycarbonyl)methyl phosphonate and its ethyl analogue, mechanism, 7397

Photochemistry

- 3-alkoxy-2,1-benzisoxazole-4,7-diones, photorearrangement and stereoselective synth of 4-cyanoalkylidenebutenolides, 3363
- alkyl phenylglyoxylates containing thioether groups, photocyclization and photodimerisation, 7165, corrig. 12771
- α-arylaminoalkylidene esters and lactams, photocyclization to 3,3-disubstituted (spiro) indolines, 16083
- carbamoyl derivatives of photolabile benzoins, flash photolysis, 3917
- chromium carbene complex photochemistry in organic synthesis, 4105
- 2-cinnamylphenols, photocyclization *via* singlet excited state proton transfer, 14729
- cyclobutane-1,2,3-tricarboxylic acids, phenyl and methyl subst, synth by photocyclization, 14701
- 7-desmethylasteriscanolide, synth by photocycloaddition and aza-de Mayo cleavage of cyclobutane ring, unexpected photocyclization of an αβ-unsaturated acid on irradiation through quartz, 12319
- diarylfuroxans, irradiation at 254 nm, generation of acetylenes by (NO)₂ loss and trapping by alkenes, 17395
- 1,4-dicyanobenzene and 2,3-dimethyl-2-butene, photoreaction in presence of nucleophiles, 2573
- 2,7-dimethyl- and 1,2,7-trimethyl-2*H*-furo[2',3':6,5]-naphtho[3,2-*b*]pyran-2-one, and 1,8,9-trimethyl-3*H*-furo[3',2':6,7]naphtho[2,1-*b*]pyran-3-one, synth, photooxygenation, 13329
- dipyrrylmethane and tripyrrylmethane derivs, photochemical synth, 1157

- enantioselective intramolecular allene/enone photocycloadditions using 1,3-disubstituted allene, 16253
- intramolecular electron transfer reactions of N-alkylcyclopropyl phthalimides, synth of spiro lactams, 3475
- irradiation of o-cinnamylphenols and o-hydroxystilbenes using 2,4,6-triphenylpyrylium tetrafluoroborate as photosensitiser, 681
- laser photolysis of 2-propanone, 2-butanone, 3-pentanone and 3-buten-2-one in the gas phase, 3757 light-switched metal-tunneling across a π -basic tube of 1,3-alternate-calix[4]arenes, 13609
- 5-methoxy- and -methylthio-pyrrole-2,3(1*H*)-diones, photo-cycloaddition to olefins, 1813
- oxa-di- π -methane photoisomerisation in rearrangement of carbocycles possessing bridgehead unsaturation, 11099
- 1,2,4-oxadiazoles, irradiation in presence of S nucleophiles, synth of 1,2,4-thiadiazoles, 12629
- 1,2- and 1,2,4,5-paddlanes with cyclophane shaft and cyclobutane blades, photo-dimerization of *o* and *p*-divinyl and 1,2,4,5-tetravinyl benzenes, 4593
- photo-dimerisation of 3-[2-furyl-, 2-thienyl-, and (3,4,5-trimethylphenyl)]-acrylonitriles,head-to-head cyclobutane dimers, 17307
- photo-enolization of bicyclic aldehydes and ketones, trapping of bicyclic hydroxy-quinodimethanes, 15969
- photochemical reactions of mercapto/amino substituted alkyl phenylglyoxylates induced by intramolecular electron transfer, 2751
- photochemical reactions of pentacyclo-[8.2.1.1^{2,5}.1^{4,7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv, 9727
- photochromism of diarylethenes having thiophene oligomers as the aryl groups, effect of oligomer chain length and temperature, 12263
- photocyclization of β-aminoketones, formation of 2-aminocyclopropanols and oxidative ring-opening to enaminones, 7855
- photodegradation of lignin models, role of singlet oxygen, 7877
- photoelectron transfer induced decarboxylation across a liquid-liquid interface, 16817
- photoinduced addition of *N*-carbomethoxymethylpyrrolidine to 5(*S*)-t-butyldimethylsiloxymethylfuran-2(5*H*)-one, 1457
- photoinduced electron transfer (PET) for functionalisation of [60]fullerene, synth of 1-substituted 1,2-dihydro[6]fullerenes, 3587
- photoinduced electron transfer reactions of benzyl

phenyl sulfides promoted by 9,10-dicyanoanthracene, 4469

photolabile protection of nucleoside 5'-hydroxyls by o-nitrobenzyloxycarbonyls, 4247

photolysis of cycloalkyl nitrite esters, study of the radical intermediates by EPR spectroscopy, 6401 photolysis of cyclopentyl nitrites, formation and ESR of δ-valerolactam N-oxyl radicals, 3205

photooxidation of aliphatic disulfides, sulfides and n-butanethiol in alcohols or acetonitrile, 2087

photooxygenation of 2,3-bis(bromomethyl)-1,3-butadiene, synth of unsaturated cyclic peroxides which rearrange to 3,4-disubstituted furans, 13867 self-sensitised photo-oxidation of furan- and oxazole-linked [60]fullerene o-quinodimethane adducts, 9067

stereospecific photodecomposition of optically pure pyrazolines to cyclopropanes, 3777

zinc porphyrin-pheophorbide dyads, synth from methyl pheophorbide-a by *trans*esterification of β-keto methyl ester with hydroxymethyl substituted porphyrins, energy and electron transfer props, 13657

Photoelectron spectra

see Electronic spectra

Phthalazines

2,3-dihydroimidazo[2,1-a]phthalazin-4-ium-6-olates, ring transformation by acetic and propionic anhydrides, substituent effects, 7021

Phthalides

see Isobenzofurans

Phthalocyanines

2,3-naphthalocyanines, synth of substituted derivs and spectral properties, 9087

Phytoalexins

hexanor(C23-C28)castasterone-20,22-diethyl diether, synth from 16-dehydeopregnenolone acetate, plant growth promoting activity, 4909

phenylphenalenonic phytoanticipins, acenaphthylene and dimeric phenylphenalenones from the resistant *Musa* selected hybrid SH-3481, structures, 8249

(—)-solavetivone, phytoalexin from potato tubers infected with the blight fungus *Phytophthora infestans*, synth *via* conjugate addition of Me₃Al to a cyclohexa-2,5-dienone intermediate, 603

syringolide I, trioxa-triquinanone elicitor from *Pseudomonas syringae* pv. tomato, synth, 16029 yendolipin, polyene lipid betaine from alga *Neodilsea yendoana*, inhibitor of morphogenesis in *Monostroma oxyspermum*, 869

Pictet-Spengler reactions

for synth of (-)-laudanosine, (+)-glaucine and

(+)-xylopinine, 16327

Pigments

bilirubin, heteronuclear nOe analysis, conformation and intramolecular hydrogen bonding, 2697

sepia melanin, relative proportion of 5,6-dihydroxyindole *versus* 5,6-dihydroxyindole-2-carboxylic acid units, 8281

see also Bilins

Piperazines/piperazinones

cyclotryprostatins A-D, diketopiperazine derivs from Aspergillus fumigatus, inhibitors of mammalian cell cycle at G2/M phase, isolation and structure, 59

2,5-diketopiperazines, solid-phase synth, 6573

(R)-(+)-α-(4-fluorophenyl)-4-(2-pyrimidinyl)-1piperazinebutanol, synth as potential antipsychotic agent involving lipase-mediated resolution, 15115

2,2,6- and 2,3,5-trimethylpiperazines as monocyclic analogues of the μ-opioid agonist 3,8-diazabicyclo-[3.2.1]octanes, synth, modelling and activity, 1481 see also Pyrazines

Piperidines/piperidinones

1-anilino— by PhSeBr-promoted cyclization of alkenyl phenylhydrazones, 7311

2-aryl-6-chloropyridine-3-carboxylic esters, synth *via* 1,4-oxazin-2-ones and conversion into piperidin-3-amines and -3-methanamines, potential substance P antagonists, 12699

1-carboxylic ester and -ketone analogues of 1-deoxynojirimycin and castanospermine, synth from 1-amino-1-deoxy-D-glucitol, 12739

(-)-carnavaline, — alkaloid, synth of both 11'-epimers and assignment of (S) — to natural compd, 7255

6-deoxy-6-phenylisofagomine deriv, synth as glycosidase inhibitors, 6917

1-deoxy-D-galactostatin derivs, galactosidase inhibitors, synth by double reductive amination of L-arabino-hexos-5-uloses, 3407

(+)- and (-)-trans-2,6-dimethyl—, synth via perhydro-oxazolo[3,2-a]pyridines, 8447

trans-2,6-disubstituted piperidines, synth from (S)-2-methyl tetrahydropyridine-N-oxide via [3+2] nitrone cycloaddition, 11203

3-ethyl-3-(4-aminophenyl)glutarimide, synth in chiral forms, 7917

(R)-(+)-α-(4-fluorophenyl)-4-methyl-1-piperidinebutanol, synth as potential antipsychotic agent involving lipase-mediated resolution, 15115

6-(3-indolyl)-2-piperidones, prep by amidoalkylation of piperidones with indole, subsequent conjugate addition to a 3,4-didehydro deriv, 719

(R)- and (S)-piperidin-2-yl-phosphonic acid by diastereoselective addition of trialkyl phosphite onto

2-ethylphosphonate-6-oxazolopiperidine or 2-cyano-6-oxazolopiperidine, 3627

synth of 4-piperidinones by Lewis acid promoted [4+2] cycloadditions of aldimines with 2-silyloxy-1,3-butadienes, 5423

synth of C₂-symmetric ferrocenylalkylamines, diferrocenyl pyrrolidines and piperidines, 7219

trans(2,3)-cis(2,6)-trisubstituted piperidines, synth by Michael reaction of didehydropiperidinecarboxylate: application to synth of *Dendrobates* alkaloids, 9553

Plants

Aglaia elliptica, isolation of cytotoxin 1*H*-cyclopenta[*b*]benzofuran lignans from stems and fruits of, 17625

Allium porrum, 12-ketoporrigenin and 2,3-secoporrigenin, spirostane steroidal sapogenins, isol, structure, 3401

Alpinia blepharocalyx (Zingiberaceae), isolation of diarylheptanoids with flavanone and chalcone moieties from seeds, 7833

Antiaris toxicaria latex, structure of toxicarioside A isolated from, 13557

Artemisia annua, arteannuin B is the secondary metabolite, boron trifluoride-acetic anhydride catalysed rearrangement of dihydroarteannulin B, 14975

Betula pendula, Salix fragilis, leaf components, potential origin of defensive secretion (esters of C₆ and C₁₀ alcohols) of leaf beetle Chrysomela lapponica, 9203

Breynia officinalis (Taiwanese plant), cycloaddition approach to synth of breynolide sesquiterpene, 8997 Caesalpinia pulcherrima, structure of pulcherrimins A-D, diterpene dibenzoates, 1583

Castanospermum australe and Alexa leiopetala containing castanospermine alkaloid, synth of analogues of castanospermine modified at C-1 or C-7, 245

Catharanthus roseus, Oryza sativa, ¹³C-NMR analysis of 24-methyl- and 24-ethyl-Δ²⁴-cholesterols, biosynthetic precursors of 24-alkylsterols, 877

Cyperus rotundus (nutgrass), base treatment of kobusone isolated from —, synth of two diols, one of which could be reduced to a diol, 7035

Dictyota dichotoma, brown alga, isolation of new dolabellane and hydroazulene diterpenoids, 8675

Domohinea perrieri, structures and cytotoxic activity of phenanthrene derivs from, 15663

Euphorbia paralias, isolation of paralinones A, B, diterpene esters with tetracyclo[7.6.1.0^{3,7}.0^{10,14}]-hexadecane skeleton, 3215

Gardenia coronaria and Gardenia sootepensis,

cytotoxic activity of coronalolide methyl ester, coronalolide and coronalolic acid isolated from, 529 Heterospemma brownii, synth of heteroamine A, a new purinium natural product originally isolated from, 8269

Ipomoea tricolor, tricolorins F-J, cyclic glycolipid trisaccharides from resin, PMR, MS, 9007

Kopsia tenuis, bis-indole alkaloids tenuisines A-C and tenuiphylline, 12661

Leonurus heterophyllus, solution state conformation of cycloleonurinin, a cyclic dodecapeptide from the fruits of, 7469

Leonurus heterophyllus, structure of cycloleonuripeptide D, cyclic decapeptide, by X-ray, NMR and degradation, 1617

Ligularia veitchiana, isolation and structure of ligularins A-E, eremophilanes with novel carbon skeleton, 6195

Maesa lanceolate (East African medicinal plant), synth of maesaquinone from 1,4,5-trimethoxymethyloxy-2-methoxybenzene, 16969

Martinella iquitosenis, synth of the tricyclic pyrrolo[3,2-c]quinoline core of martinelline by radical cyclisation of N-(2'-iodophenyl)pyrrole-3-carboxamides, 8287

Maytenus macrocarpa, structures of dammarane triterpenes isolated from, 6465

Mercurialis leiocarpa, formation of d,1 and meso forms of isochrysohermidin, a pyrrolic plant product from, 8731

Musa paradisiaca selected hybrid SH-3481, structures of phenylphenalenonic phytoanticipins, acenaphthylene and dimeric phenylphenalenones isolated from, 8249

Nardostachys jatamansi (Indian medicinal plant), synth of (+)-spirojatamol and (+)-dihydroepispirojatamol, spirosesquiterpenes isolated from, 1439

Neodilsea yendoana, structure of lipid betaine yendolipin, 869

Nicotiana plumbaginifolia, metabolism of vanillin followed by in vivo (cell suspension) NMR, 927

Nicotiana umbratica, isolation of (1S,2S,6R,8R)-1-isopropyl-5-(hydroxymethyl)-8-methyltricyclo-[4.4.0.0^{2,8}]dec-4-ene sesquiterpene from, structure, 11563

Ornithogalum saundersiae, characterisation and cytostatic activity of saundersioside A and B isolated from bulbs of, 11549

Panax ginseng, stereostructures of polyacetylenic constituents of Ginseng Radix Rubra, 15691

Plagiochila siophila liverwort, synth of (+)-bicyclohumelenone, sesquiterpene from

liverwort, from diethyl 3,3-dimethylglutarate, 16277 Polygonatum alte-lobatum, structure of the alkaloid polygonapholine isolated from the rhizome of, 2025

Ranunculaceae sp. containing protoanemonin lactone, intramolecular cycloaddition of 4-substituted protoanemonin with non-stabilised azomethine ylids, 10633

Rhoiptelea chilantha, isolation and structures of tridesmosides rhoiptelesides A and B and bisdesmoside rhoipteleside E, glycosides of euphanetype triterpene from leaves and fruits of, 16999

Russula delica (Basidiomycete), structure and absolute configuration, 9735

Salvia haenkei, clerodane diterpenoids and an ursane triterpenoid, 14719

T76 Scenedesmus quadricauda (green alga), biotransformation of prednisolone by, 8273

Taxus canadensis, Canadian yew, taxoid constituents, rearrangement and acyl migration in 9-dihydro-13-acetylbaccatin-III, isol of wallifoliol, 15991

Vellozia magdalenae (Brazilian plant), structures of magdalenic acid and bismagdalenic acid, diterpenoid acids isolated from, 2005

Podands

dipyrazolic podands and ester crowns, synth of intermediates by regioselective lipase catalysed hydrolysis of 1,3-bis[3,5-bis(ethoxycarbonyl)-1*H*-pyrazol-1-yl]propane, 2907

N,N'-linked 1,2-ethanediyl-poly(benzimidazoline-2-ones), prep and characterisation, 7689

see also Complexation, Host molecules

Polyamines (polyaza-alkanes/-cycloalkanes)

philanthotoxin-343 analogs, synth and pharmacological activity, 12391

N-(4-picolyl) 2,6,9,13-tetraaza[14]paracyclophanes, selectivity in N-functionalisation, 16169

reactions of butyllithiums with tertiary oligoethylenepolyamines, complexation and lithiation reactions, 9977

solid-phase synth of — conjugates in study of trypanothione reductase, 17317

Polyarenes

5'-polyarene-tethered oligo-DNAs, synth by solidphase synth, thermal stability and spectroscopic properties of their duplexes and triplexes, 10409

Polyaryls

dendritic and hyper-branched polyphenylenes, synth by Diels-Alder route using tetracyclone analogues, 15349

functionalised poly- and oligo-phenylenes, Suzuki couplings of 1,4-phenylenediboronic esters with aryl dibromides, 15553

polyphenylenes by thermolysis of enediynes and o-dialkynyl aromatics, Bergman cycloaromatisation, 15515

Suzuki polycondensation, catalyst-derived phosphorus incorporation; reproducibility of molecular weights, 15450

Polycyclic aliphatic compds

heptacyclo[6.6.0.0^{2.6}.0^{3.13}.0^{4.11}.0^{5.9}.0^{10,14}]tetradecane, oxidative functionalisation using Gif-type reactions, 1257

tetracyclo[7.3.1.0^{2,8}.0^{4,12}]trideca-5,10-diene, synth and degenerate Cope rearrangement, 9903

tetracyclo[5.3.2.0^{2,10}.0^{3,6}]dodeca-4,8,11-triene (homotropilidene system), electrophilic additions mediated by TCNE, and dichloroketene cycloaddition, 4869

U-shaped cavity molecules, synth using isobenzofuran, cyclopentadiene and cyclopentadienone cycloadditions, 3975

see also Adamantanes, Cage molecules, Cubanes

Polycyclic aromatic compds

benz[a]anthracene, 9- and 10-fluoro-7-, -12-, and -7,12-di-methyl derivs, synth of 1,2-epoxy-3,4-dihydroxy-1,2,3,4-tetrahydro- and 3,4-dihydroxy-3,4-dihydro- compds, 7101

dibenz[a,c]anthracene, bromination, deuteriation, synth of phenols, 15947

dicyclopentapyrenes, dicyclopentanthanthrenes and their congeners, magnetic susceptibilities by use of the London-Hoarau method in framework of Wheland-Mann-type SCF MO approximation, 12875

energetic and geometric contributions to aromaticity, effect of introduction of CH₂⁺ group, *ab initio* calculations of HOMA, EN and GEO contributions, 11383

hydrocarbons milled on alumina, H-transfer and carbonisation, 4051

phenanthrene derivatives from *Domohinea perrieri*, structures and cytotoxic activity, 15663

see also Calixarenes, Fullerenes, and the individual ring systems

Polycyclic heterocyclic compds

acridino[3,4-j]-benzo[b][1,7]phenanthroline by reaction of 3-amino acridine with formaldehyde, 2871

benzo[1,2-c:4,5-c']bis[1,2,5]thiadiazoles-2S^{IV}, synth, spectra, cycloadditions, MO calculations, 10169

[1]benzopyrano[2,3-b]pyrrol-4(1H)-ones, synth from 2-chlorochromones and α -aminoketone derivs, 16185

4.6-bis(acetamidomethyl)-dibenzofuran and

- -dibenzothiophene, H-bonding and conformation as spacer for parallel β -sheet formation, 17425
- 5-(p-carboranylalkyl)-3,8-diaminophenanthridinium salts, synth, 17519
- 3,10-diaryl pyrimido[4,5-b]quinoline-2,4(3H,10H)-diones (5-deazaflavins), atropisomerism when 3-aryl group is o-substituted, 4601
- 3,4-di(arylamino)-1-(2-pyridyl)-9-hydroxybenzo[g]isoquinoline-5,10-diones, tetra-arylamino-di-2pyridyl-2,7-anthrazolinequinones; synth by cycloadditions, 5455
- 4,5-diazafluoren-9-one, synth, electronic and spectroscopic properties of derived imine and diimine ligands, 12377
- 6,7-diazaphencyclone, synth and cycloadditions, synth of rigid molecular racks with end 1,10-phenanthroline units, 3991
- dibenz[e,g]indoles, DNA intercalative delivery template, cyclodecenediyne and nitrogen mustard hybrids, 14599
- 1,4-dichlorophenazines, convenient synth, 6183
- dihydroazeto[2,1-b]quinazolines and 1H-2,8-dihydroazeto[2,1-b]quinazolin-1-ones, synth by intramolecular [2+2] cycloadditions, reactivity, 13449 1,2-dihydro-2,4-dimethyl-6H-pyrazino[2,1-b]-
- quinazoline-3(4H),6-dione, regio- and diastereoselective dialkylation reactions of anion at C-1, 16795
- 2H,5H,-3,4-dihydropyrano[3,2-b]indoles, synth and oxidation reactions, 987
- dipyrrolo[1',2':1,2;3',4':2,3]azepino[5,4-b]indoles, aza-analogues of cephalotaxine, 3269
- dissymmetric indolocarbazole glycosides, synth by Mitsunobu reactions, 5937
- 4-ethyl-1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]-quinolizine-2-carbaldehydes, synth by N-indolyl-ethyl tetrahydropyridine cyclization, 9407
- eupomatidines 1-3, naphtho[1,2,3-ij][2,7]-naphthyridine alkaloids, synth, 6001
- 6-N-formylamino-12,13-dihydro-1,11-dihydroxy-13 -(β-D-glucopyranosyl)-5*H*-indolo[2,3-*a*]-pyrrolo-[3,4-*c*]carbazole-5,7(6*H*)-dione (NB-506), anticancer agent, synth, 585
- fused isoxazolidines by cycloadditions of 3,4-dihydro-2*H*-pyrrole 1-oxide to methylene-γ-butyrolactones, 14763
- trans-fused seven-membered cyclic ethers corresponding to subunits of brevetoxin B and hemibrevetoxin B, synth based on 6-endo cyclisation and ring expansion, 12917
- heterocyclic Tröger's bases derived from C-amino heterocycles, synth and molecular structures, 2233

- hexahydrophenazines by treatment of dimeric nitrosochlorides, (derived from unsaturated hydrocarbons 1-methylcyclohexene, (+)-3-carene and limonene), with 1,2-phenylenediamine, 9761
- indolizino[8,7-a]indoles, byproducts of N-indolylethyl tetrahydropyridine cyclization, 9407
- kuanoniamine A, 11-hydroxyascididemin and neocalliactine acetate, polycyclic aromatic alkaloids from marine organisms *Amphicarpa meridiana*, *Leptoclinides* and *Calliactis parasitica*, synth, 17029
- lamellarin D and H, [1]benzopyrano[4',3':4,5]pyrrolo[2,1-a]isoquinolines from molluscs and ascidians, synth, 5951
- α-methacraldehyde dimethylhydrazone cycloadducts with quinoline-5,8-quinones, synth of 1,8-anthrazolines, 3231
- 7-oxo-1,6-diazaphenalene and 6-aza-1-oxaphenalene, synth by transformation of 5,8-dimethoxy-4-one, 4511
- phenanthridines, synth by treatment of N-(o-bromobenzyl)anilines with n-tributyltinhydride, 269
- phenyl 4,6-dihydro-2H-pyran-4-yl sulfoxides, acid-catalysed cyclization to 3,4-dihydro-1H-[1]benzothieno[3,2-c]pyrans, 12651
- pyrazino[2,3-g]quinoxalines, tetraethynyl derivs, synth and Bergman cyclization, 14655
- pyrido[2,1-a]isoquinolin-4-one derivs, synth by diastereoselective acyliminium ion cyclization, 3045 pyrrolo[2,1-c][1,4]benzodiazepines, oxidation of cyclic secondary amine by TPAP, 3223
- pyrrolo[2,3-b]quinolines, synth from a diazide by four-step process, 3281
- 4(1H),5,8-quinolinetriones, hetero-Diels-Alder reactions with 1-azadienes, 1,5- and 1,8- anthrazoline-9,10-quinone (pyrido[3,2- and 2,3-g]quinoline-4(1H,5,10-trione) synth, 11465
- 1-substituted 4-oxygenated β-carbolines, synth by formation of pyridine ring, 1593
- 1,2,5,6-tetrahydro-1-hydroxy-3-oxopyrrolo[2,1-a]-isoquinoline-10b(3*H*)-acetic acid lactone, synth, 2449
- 2,2a,3,4-tetrahydro-2-methoxy-2a-methylthio-1*H*-azeto[2,1-*d*][1,5]benzothiazepin-1-ones, ring-opening with CH₂S migration, 8439
- 2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3.11}.0^{5.9}.0^{8,12}]tridecanes, synth by ozonolysis of 2-endo-7-antidiacylnorbornenes, 2401
- thieno- and benzo-fused pyrrolo- and pyrido-[2,1-a]isoindolones, synth by acyliminium ion cyclizations, 2495
- thieno[2,3-b:4,5-b']dipyridines, pyrido[3',2':4,5]-

- thieno[3,2-d]pyrimidines, synth using 1-aryl-2-bromoethylidenemalononitriles, 13351
- (--)-tjipanazole F1, an indolocarbazole glycoside, synth by cyclisation of unsymmetrical bis-1,2-(3-indolyl)ethanes, 16553
- [1,2,3]triazolo[1,5-a]quinolines, ylids derived from 2-phenacyl and 2-methoxycarbonylmethyl quaternary salts, reactivity towards dipolarophiles, 12765

Polyenals

aryl-capped polyenals and polyenedials of various conjugation lengths, one-pot synth, 2717, corrig. 6233

Polyenes

- aryl-capped polyenals and polyenedials of various conjugation lengths, one-pot synth, 2717, corrig. 6233
- bond shift in monohalo-cyclooctatetraenes, kinetics, energetics, 10093
- decacyanooctatetraene dianion, model for poly-(dicyanoacetylene) polymers, 15593
- monoprotected bis(allylic alcohol), chemo- and enantioselective cyclopropanation of using a chiral dioxaborolane-derived ligand and Zn(CH₂I)₂ as key step in synth of (+)-bicyclohumulenone, 16277
- protomycinolide IV, polyene macrolide, model studies involving alkylation of (4,6-heptadien-3-one)- and (methyl 3,5-hexadienoate)Fe(CO)₃, 4185

Polyethers

- fused cyclic related to marine toxins, biomimetic synthesis, 12425
- monensin, polyether antibiotic from *Streptomyces*, biomimetic approach to the C₁₂-C₂₁ bistetrahydrofuran region by application of a series of *syn*-oxidations, 16435

Polyketides

- andibenin B, andilesin A, meroterpenoid metabolites of Aspergillus variecolor, biosynthesis, 4013
- angucyclines, polyketide antibiotics with a benz[a] framework, synth of the framework by anionic annulation of phthalide sulfones with quinone monoketals, 2177
- (-)-denticulatins A and B, synth using group-selective aldolization of a meso-dialdehyde, 9169
- herboxidiene, polyketide herbicide, determination of absolute configuration by degradation and synthetic studies, 2785
- murayaquinone, rearranged -, biosynthesis, 4561

Polymer support

ionoselective polymers bearing different pendant crown ethers, synth and complexation behaviour, 1343 polymer-supported distannane, synth by treatment of tin halide resin with lithium or sodium naphthalenide, application of the distannane to radical cyclisations of acyclic α -haloesters to yield γ -butyrolactones, 1301

Polymerisation

- alkyl allenes, using (π-allyl-NiOCOCF₃)₂, formation of poly(1-alkyl-2-alkylidene)ethylene systems, 15187
- allylic ethers, Co₂(CO)₈-catalysed -, 15167
- chiral polymers by free-radical cyclo— of tartratederived dioxolane-dimethacrylates, high isotacticity, CD spectra, 15469
- co— of 3-ethoxy-1,1,2,2-cyclobutanetetracarbonitrile or dimethyl 3-ethoxy-2,2-dicyanocyclobutane-1,1dicarboxylate with 2-oxazolines, formation of regular terpolymers, 15603
- donor-acceptor olefin -, spin-trapping/ESR study, 15297
- ene reactions of maleimides with allyl aromatics, potential cross-linking reaction in -, 13473
- living radical of methyl methacrylate mediated by Ru(II), initiator design, 15445
- modern organic chemistry of (symposium-inprint), 15157
- nitroxide-mediated "living" free radical of styrene, acceleration by additives, 15225
- polymers by thermolysis of enediynes and o-dialkynyl aromatics, Bergman cycloaromatisation, 15515
- polyrotaxanes by *in situ* self-threading during of functional macrocycles: poly(ester crown ether)s, 15197
- 1,4-quinodimethanes, 7,7,8,8-tetracyano- and 7-alkoxycarbonyl-7,8,8-tricyano-, synth and -, 15247
- solid state polycondensation within cyclodextrin channels, water soluble polyamide rotaxanes, 15575 stereospecificity of methacrylate —, effect of bulky aluminium phenoxides, 15263
- styrene, a slow termination process in atom transfer radical —, 15321
- 2-(p-substituted phenyl)cyclopropane-1,1-dicarbonitriles, anionic ring-opening -, 15157
- supramolecular assemblies, —, comparison of lamellar and inverted hexagonal phases, 15397
- Suzuki polycondensation, catalyst-derived phosphorus incorporation; reproducibility of molecular weights, 15459

Polymers

aryl-capped polyenals and polyenedials of various conjugation lengths, one-pot synth, 2717, corrig. 6233

bimetallic samarocene(III) catalysts via electron transfer initiation, formation of well-defined (meth)acrylate triblock copolymers, 15367

covalent connectivity and complexity, a survey, 15495

dendritic and hyper-branched polyphenylenes, synth by Diels-Alder route using tetracyclone analogues, 15349

functionalised poly- and oligo-phenylenes, Suzuki couplings of 1,4-phenylenediboronic esters with aryl dibromides, 15553

germanium enolate —, synth from germylenes [Ge(II) di(silylamides)], 15281

ionoselective polymers bearing different pendant crown ethers, synth and complexation behaviour, 1343

mixed aryl-thienyl oligomers and polymers, synth by transition metal coupling reactions, 10357

poly(3-hydroxybutyrate) formation by *Alcaligenes latus* DSM 1122, modification of end group structure and mol. weight by poly(ethylene glycol), 15209

poly(arylene thioether)s containing fluorene and hexafluoro-2,2-propylidene units, monomers and polymerisation, 15237

poly(dialkoxy-p-phenylene-vinylene-2,5-pyridinylene-vinylene) and related systems, synth by Heck coupling, UV, protonation and quaternisation, solid-phase organisation, 15487

poly(dicyanoacetylene), model studies and stability, 15593

silyl enol ethers incorporated into vinyl —, reactivity with electrophiles, 15429

sterically constrained phenyleneethynylenes and dioxapropylphenylethynylene oligomers, synth, 11881, 11899

Polyols

see also Carbohydrates, Cyclitols, Inositols

Porphyrins and analogues

acid-catalysed condensation synth, effect of salts on reaction efficiency, 12339

chiral — as ligands for chiral epoxidation, D_4 symmetric tetraaryl — with two octahydroanthracene units the outer rings of which are
derived from (+)-nopinone, 7753

Co(II) porphyrin as catalyst for oxidation of organic substrates using a combination of molecular oxygen and 2-methylpropanal, 7641

deoxophylloerythroetioporphyrin (DPEP), synth from chlorophyll A, unexpected methylation and propylation reactions of ring E by CH₂Cl/Br₂ and 1.5,7-triazabicyclo[4.4.0]dec-5-ene, 16107

homo- and heteroorganometallic tripodaphyrins, synth from 5-(4-iodophenyl)-10,15,20-triphenyl-porphine, 6835

manganese and iron complexes of 5,10,15,20-tetrakis(2,6-dimethoxyphenyl)porphyrin as catalysts for epoxidation and hydroxylation reactions, 4497 perfluoroacylaminoaryl Mn(III)-porphyrins, synth and catalytic activity in epoxidation of olefins, 6145 porphyrins bearing *meso*-linked straps of variable length, rigidity and redox activity, one-pot synth by reaction of dialdehydes with pyrrole, 6755

strapped Zn-, receptor for benzyloxycarbonyl aminoacids, 9115

meso-tetraalkyl — Co(III), axially (substitutedimidazole)-coordinated, barriers to rotation, 12487

tetrakis(-meso-trans-1,4:5,8-dimethano-1,2,3,4,5,6,7,8-octahydroanthracen-9-yl)—, other D_4 -symmetric metallotetraaryl —, synth for asymmetric epoxidation catalysis, 11257, 11277

zinc porphyrin-pheophorbide dyads, synth from methyl pheophorbide-a by transesterification of β-keto methyl ester with hydroxymethyl substituted porphyrins, energy and electron transfer props, 13657

see also Chlorins and derivs, Purpurins

Potassium and compds

methyl-K, theoretical study of metallodehydrogenation and addition to crotonaldehyde dimethyl acetal, 7937

Pressure, reactions under

catalytic enantioselective Baylis-Hillman reactions with methyl vinyl ketone, 1015

effect of high pressure on 1,3-dipolar cycloaddition of Z- and E-nitrones with ethyl vinyl ether and 2,3-dihydrofuran catalysed by chiral oxazaborolidines, 11843

high pressure and selectivity on organic reactions, report, 2669

high-pressure promoted tandem [4+2]/[3+2] cycloadditions of nitroalkenes and enol ethers, 11929

Prins reaction

Prins-pinacol spiroannulations of methylenecyclohexane siloxy acetals, 8927

Prostanoids

 Δ^7 -prostaglandin C_1 , primary metabolite of antitumour Δ^7 -prostaglandin A_1 on the sera, 17009 see also Carbacyclins, Prostacyclins, Prostaglandins, Thromboxanes

Protecting groups

alcohol prop-1- and 2-enyl ethers, deprotection by

PdCl₂/CuCl-catalysed Wacker reactions, 17501 allyl, benzyl and sulfonyl substituted alcohols, amines and amides, reductive deprotection using naphthalene-catalysed lithiation, 14355

- allylic protecting groups and their use in a complex environment, 13509
- allylic protection of imidazole ring in histidine, 12525
- cleavage of aromatic benzyl ethers located *ortho* to a carbonyl group by magnesium bromide, 215
- deprotection of 2-methyl-2-t-butyl-1,3-dithiolane and corresponding oxathiolane by photosensitisation using catalytic aromatic nitriles, role of SET, 2219 electrochemical methodology for the protection of o-hydroxy-p-benzoquinones, 469
- methylene bridge as protecting group in prep of 4-alkyl-1,2,4-triazoles from bis(1,2,4-triazol-1-yl)-methane. 2253
- o-nitrobenzyloxycarbonyl for photolabile protection of nucleoside 5'-hydroxyls, 4247
- N-pent-4-enoyl (PNT) group as nucleobase protector, use in synth of phosphoric diester and phosphorothioate oligonucleotides from nucleoside phosphoramidites, 2731
- removal of sugar O-tosyl groups and heterocycle halogens from purine nucleosides with sodium naphthalenide, 6295
- D- and L-allo-threonine, preparation of protected derivs for peptide synth, 3369

Proteins

- artificial proteins comprising helices with different amino acid sequences, synth by assembling a α-helical peptide unit *via* selective disulfide cross-linking. 7479
- coelenterazine, apoprotein from luminescent jellyfish Aequorea victoria, chemi- and bioluminescence of coelenterazine analogues possessing an adamantylmethyl group, 12903
- α-ketoisocaproate dioxygenase [α-KICD] from rat liver, isolation and purification, sequence determination shows hom 6993
- nitrogenase from "A. vinelandii", effect of cofactor binding on conformation, 11971
- selectins, synth of neoglycopolymer inhibitors, use of ring-opening metathesis, 11937
- site-directed oxidative cross-linking, ³²P-radio-labelling, 11953
- sulfated trisaccharide ligands for selectins, 16391

Purines

- adenine and guanine substituted Fmoc-protected amino acids, synth, 1167
- (+)-agelasimine A and B, adenine-related bicyclic

diterpenoids from the orange sponge Agelas mauritiana, synth and absolute configuration, 16977 heteroamine A (6-methoxy-7,9-dimethyl-2-N,N-dimethylaminopurinium chloride) from the aerial parts of Heterospemma brownii, synth from 5-amino-4-cyano-1-methylimidazole and N,N-dimethyldichlomethyleniminium chloride, 8269

organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7231

purine nucleosides, removal of sugar O-tosyl groups and heterocycle halogens with sodium naphthalenide, 6295

N-substituted 6-(1-aminoethyl)-9-(2-phosphonomethoxyethyl)purine derivs by Stille coupling of 9-[2-[bis(2-propoxy)phosphonylmethoxy]ethyl]-6-chloropurines with 1-(ethoxyvinyl)tributyltin followed by acid hydrolysis and deprotection, 2291 6-vinyl —, ZnCl₂-mediated Diels-Alder diene addition, 1777

6-vinylpurine nucleoside derivs, synth and addition of N, S and O-nucleophiles, 3035

see also Nucleosides, Nucleotides

Pyranones

see Pyrones

Pyrans

- 5,6-dihydro-4*H*-pyran-4-ones, synth by condensation of titanium enolates derived from β-hydroxy ketones, 11211
- 2,3-dihydro-4*H*-pyran-4-ones (hex-1-en-3-uloses), reactions with C-nucleophiles, approach to thromboxane analogues, 7867
- 2,6-disubstituted tetrahydropyrans, synth, stereochemistry, 6171
- cis- and trans-linally oxides (pyranols), synth from (Z)- or (E)-6,7-dihydroxy-3,7-dimethyl-oct-2-enyl carbonate, 4353
- pyrancarboxylic acid analogues of GLA-60, synth of 2,6-anhydro-3-deoxy-5-O-phosphono-3-tetradecan amido-4-O-[(3-tetradecanoyloxy)tetradecanoyl]-heptonic acid, and a dimeric analogue, 16041
- (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, reactions with triphenylphosphine, 15041

Pyrazines

- fused 2,3-dialkynyl-, synth, Bergman cyclization, 14655
- O₂-H₂O₂-vanadium complex-pyrazine-2-carboxylic acids as an oxidation reagent, 3603

Pyrazoles

- 5-amino —, synth from 1-cyano-1-alkylhydrazines and enolisable ketones, 1729
- 3(5)-amino-5(3)-(substituted phenyl) -, annular

- tautomerism, NMR, X-ray and theoretical study, 10783
- α-azido five-membered heterocycles, thermal decomposition in the ground singlet state, *ab initio* molecular orbital study, 9647
- 3,3'-bipyrazolines by cycloadditions of cyanogen di-*N*-(arylimine)s to 3-aryl-2-(2-benzotriazolyl)-acrylonitriles, bipyrazoles by base-promoted loss of HCN, 9293
- diester crowns containing 1,1'-trimethylenebis-(pyrazole-3,5-dicarbonyloxy-) units, enzymecatalysed synth, 11481
- 1,3-bis[3,5-bis(ethoxycarbonyl)-1*H*-pyrazol-1-yl]-propane, enzyme catalysed hydrolysis of, synth of intermediates to dipyrazolic podands and ester crowns, 2907
- 3,5-bis-(2'-hydroxyphenyl)pyrazole, synth an molecular structure, 11645
- 4-nitroso- and 4-nitro-— and pyrazolium salts, reaction with complex hydrides and organometallic reagents, synth of pyrazolines and pyrazolidines, 8585
- pyrazol-5(4H)-ones by reactions of arylnitroso compds with azoalkenes and subsequent cyclisation, 1467
- pyrazole derivs by phenylselenenyl sulfate induced cyclisation of allylhydrazines, 4441
- pyrazole and isoxazole annulated sultams, synth by intramolecular 1,3-dipolar cycloaddition of substituted α- and β-sulfonamides, 13855
- pyrazole, isoxazole and pyrimidine orthodicarboxylic acid derivs, synth by reaction of β-alkoxycarbonyl-β-enaminoketoesters with hydrazines, hydroxylamine and amidines respectively, 14497
- pyrazole-containing azacrown ethers by intramolecular cycloadditions of functionalised nitrilimines, 3005
- NH-pyrazoles, semi-empirical study of Mills-Nixon effect on annular tautomerism, 1403
- N-substituted fused pyrazoles and pyrazolinols, synth by treatment of β -diketones and the corresponding β -enaminoketones, having modified carane and p-menthane skeletons, with aryl- and alkyl-hydrazines, 17735

Pyrazolidines/pyrazolidinones

4-nitropyrazolium salts, reaction with organometallic reagents, synth of 4-nitro-pyrazolines and -pyrazolidines, 8585

Pyrazolines/pyrazolinones

4-nitroso- and 4-nitro-pyrazoles and 4-nitropyrazolium salts, reaction with complex hydrides and organometallic reagents, synth of

- 4-oximino-2-pyrazolines, 4-nitro-3-pyrazolines, 2-pyrazolin-4-ones, 8585
- optically pure pyrazolines, synth by cycloaddition of diazomethane to homochiral amino pentenoates, stereospecific photodecomposition to cyclopropanes, 3777
- 1*H*-pyrazol-5(2*H*)-ones (1,2-dihydro-3*H*-pyrazol-3-ones), 4-alkoxy-, 4-benzoylthio-, synth by azoalkene cyclizations, tautomerism, theoretical calculations, structure, 5617
- N-substituted fused pyrazoles and pyrazolinols, synth by treatment of β -diketones and the corresponding β -enaminoketones, having modified carane and p-menthane skeletons, with aryl- and alkyl-hydrazines, 17735

Pyridazines

- 7-amino and 7-glycosylaminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-amino and 2-glycosylaminopyridines, 8225
- 1-aryl-1,2,3,4-tetrahydropyridazines, synth by PhSeBr-promoted cyclization of alkenyl phenylhydrazones, 7311
- 4,5-dicyanopyridazine, Diels-Alder reactions with alkenes, structures of the resulting dicyanocyclohexa-1,3-dienes, aromatic phthalonitriles and polycyclic bis-adducts, 11711
- (±)-5-fluoro-4-hydroxy-3-hydroxymethylhexahydro pyridazine and 3-fluoromethyl-4,5-dihydroxy analogue, synth of 1-azafagomine analogues, hydrazino-defluorination reactions, 9357
- pyridazine or pyrrolidinamine derivs from selenium-induced cyclisation of alkenyl hydrazines, factors affecting, 10591
- 1-substituted 1,4,5,6-tetrahydropyridazines and 1-(*N*-substituted)-aminopyrrolidines from hydrazines and 2,5-dimethoxytetrahydrofuran, 3707

Pyridines

- 5-amino and 5-glycosylaminopyrrolo[3,4-c]pyridin-1,3(2H)dione derivs and 7-amino and 7-glycosylaminopyrido[3,4-d]pyridazin-1,4(2H3H)-dione derivs, synth from 2-amino and 2-glycosylaminopyridines, 8225
- annelated pyrido[4,3-b], synth by cyclisation of 1-azatriene, 4447
- 4-aryl and 4-methyl substituted Hantzsch-type 1,4-dihydropyridines having a chiral sulfinyl group as an electron-withdrawing group, synth from β-ketosulfoxides, 4279
- 2-aryl-6-chloropyridine-3-carboxylic esters, synth via 1,4-oxazin-2-ones and conversion into piperidin-3-amines and -3-methanamines, 12699
- bispyridine tetramide macrocycles, complexation of Ag^+ and the role of preorganisation on selectivity,

10841

- 2-(o-carboranylmethylthio)-3-cyanopyridines, synth, 7911
- 1,8-di(3'-pyridyl)naphthalene, proton NMR spectra in the presence of R-camphorsulfonic acid, dynamic equilibration of diastereomeric salts of atropisomers, 465
- (2-furyl)pyridines, (2-thienyl)pyridines and furan-pyridine and thiophene-pyridine oligomers, synth and characterisation, 11529
- 5-, 6- and 7-halogenotriazolopyridines, synth from 2-picoline N-oxide, reactions with nucleophiles to yield 7,7'-bitriazolopyridines, 8257
- 2,6-bis-(2'-hydroxyphenyl)pyridine, synth and molecular structure, 11645
- 2-methoxy-3-pivaloylamino—, 4-lithiation in synth of 4-alkyl derivs, 12505
- methyl (R)-6-[2-(triphenylmethylthio)-1-hydroxyethyl]pyridine-2-carboxylate (Ro 25-8210), enantioselective synth by oxazaborolidine-catalysed reduction, 12405
- (1,8-naphthylene)bispyridines, synth by Stille coupling reactions, structural analysis, 3557
- nickel-2,2' bipyridine complexes as catalysts for electroreductive coupling of organic halides in alcoholic solvents, synth of biaryls, 11569
- 2-nitraminopyridine, tautomeric and conformational preferences in, comparison of theoretical and experimental data, 17211
- organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7231
- oxazolo[4,5-b]pyridin-2(3H)-ones, 2-phenyloxazolo-[4,5-b]pyridines and pyrrolo[2,3-b]pyridin-2(2H)-ones, palladium-catalysed acylation of, 5159 pentasubstituted pyridines by cycloadditions of N-vinylic heterocumulenes with 1-(N,N-diethylamine)prop-1-yne, 4521
- pyrido[2,3-b]acridine-5,11,12-triones, synth from N-protected quinolones, 341
- 3-pyridyl p-tolyl sulfoxide, dihydro(pyridine) and 2-methyl analogues, and deuteriated derivs, enantioselective reduction of ketones using, 3073
- 2,6-septipyridine, tri-(4-t-butylphenyl)-, synth of soluble pyridine oligomer, 1715
- 2-substituted-1*H*-pyrrolo[2,3-*b*]pyridines from 7-azaindole by lithiation followed by addition of electrophiles, 3637
- 2-substituted-1*H*-pyrrolo[2,3-*b*]pyridines, synth from 7-azaindole by lithiation followed by addition of electrophiles, 3637
- 3-(p-tolylsulfinyl)-1,4-dihydropyridines, NADH model compds for asymmetric reduction of ketones,

593

2-(1-p-tolylsulfinyl)alkylpyridines and the corresponding sulfide-pyridines as ligands for palladium catalysed allylic substitution and addition of diethylzine to benzaldehyde, 3843

Pyridinium salts

- N-acetyl- and N-alkylpyridinium, quinolinium or isoquinolinium salts, addition reaction with pyrrole and indole, synth of dihydroazines, 13959
- chromogenic pyridinium derivs of calix[4]arenes, solvato- and halo-chromism, 16867
- (-)-laudanosine, (+)-glaucine and (+)-xylopinine, synth by Pictet-Spengler reaction, 16327
- 1-(penta-2,4-dien-1-yl) -, ylid formation and electrocyclisation, 14687

Pyridones

4-chloro-3-nitro-2-pyridones and -quinolinones, nucleophilic substitutions in attempts at 4-alkylation, 12505

Pyrimidines/pyrimidinones

- 7-alkyl-5*H* and 6-amino-7,7-dialkyl-7*H* pyrrolo-[3,2-*d*]pyrimidines, intermediates to 9-deaza analogues of DHPA, synth by cyclisation of 6-cyanomethyl-5-nitropyrimidines, 391
- 4-aryl-dihydropyrimidine calcium channel modulators, conformational analysis by *ab initio*, semiempirical and X-ray crystallographic methods, 2803
- cytosine-substituted Fmoc-protected amino acids, synth, 1167
- (R)-(+)- α -(4-fluorophenyl)-4-(2-pyrimidinyl)-1-pipe razinebutanol, synth as potential antipsychotic agent involving lipase-mediated resolution, 15115
- lesopitron anxiolytic compd, hydroxylation using Rhodococcus erythropolis and Agrobacterium bacteria together with Beauveria bassiana fungus, 6421
- pyrazole, isoxazole and pyrimidine orthodicarboxylic acid derivs, synth by reaction of β-alkoxycarbonyl-β-enaminoketoesters with hydrazines, hydroxylamine and amidines respectively, 14497
- pyrimidinone and fused pyrimidinones by regioselective [4+2] cycloadditions of *N*-arylamino substituted 1,3-diaza-1,3-butadienes with ketenes, 13829, 13841
- pyrrolo[2,3-d]pyrimidine, synth of nucleoside analogues where the pyrimidine ring is linked to a 2-hydroxymethyl-3-hydroxytetrahydrofuran, 3831 tetrahydropyrimidine derivs by reaction of 3-amino
- acridine with formaldehyde, 2871 2.4.6-trichloropyrimidine, nucleophilic substitution

with 4-dimethylaminopyridine, 1-methylimidazole and 4-(pyrrolidin-1-yl)pyridine, synth of (pyrimidin-2,4,6-triyl)-tris-hetarenium salts, 1295 see also Nucleosides, Nucleotides, Uracils

Pyrimidones

1,3-diazabutadienes, [4+2] and [2+2] cycloadditions with ketenes, formation of dihydropyrimidinones, 14107

Pyrindines

perhydro[2]pyrindine α-amino acid analogues, synth by intramolecular Pauson-Khand reactions, 6611

Pyrolysis

gas-phase — of methylbis(trimethylsilyl)germane, generation of methyl(trimethylsilyl)germylene, reactivity, 10179

of isobenzofurylmethyl benzoates, 17115

Pyrone:

- ab initio study of sequential pericyclic reactions of 2-pyrone with cycloocta-1,5-diene, 12415
- 5,6,7,8-tetrahydro-2*H*-1-benzopyran-2,5-diones and 5-acetyl-2*H*-pyran-2-one, reactions with hydrazines, synth of 5-hydrazono-2*H*-1-benzopyran-2-ones and quinoline-2,5-diones, 1383

Pyrroles

- acid-catalysed condensation of with benzaldehyde, effect of salts on efficiency of porphyrin synth, 12339
- addition to *N*-acetyl- and *N*-alkylpyridinium, quinolinium or isoquinolinium salts, synth of dihydroazines, 13959
- 7-alkyl-5*H* and 6-amino-7,7-dialkyl-7*H*-pyrrolo[3,2-*d*]pyrimidines, intermediates to 9-deaza analogues of DHPA, synth by cyclisation of 6-cyanomethyl-5-nitropyrimidines, 391
- 3-chloro- and 3-bromo-2-arylpyrroles, agrochemically and pharmaceutically active compds, synth from 2-aryl-1-pyrrolines by α,α-dihalogenation with *N*-halosuccinimides followed by monodehydrohalogenation, 3693
- 5,10-dihydro-5,10-dimethyl-2,5,10-triazadibenzo-[a,e]pentalene, the pyrroloindole analogue of ellipticine: synth and DNA intercalative properties of, 479
- 2,2-dimethyl-3,4-dihydro-2H-pyrrole N-oxide, cycloaddition with α,β -unsaturated lactones and esters, 7057
- dipyrrylmethane and tripyrrylmethane derivs, photochemical synth, 1157
- 1,2-disubstituted mitosenes or pyrrolo[1,2-a]indole, synth based on the intramolecular cyclisation of diazoesters, 16521
- d,l and meso forms of isochrysohermidin, pyrrolic

plant product of *Mercurialis leiocarpa*, formation from 3-hydroxy monopyrrole, 8731

- 6-N-formylamino-12,13-dihydro-1,11-dihydroxy-13 -(β-D-glucopyranosyl)-5*H*-indolo[2,3-*a*]-pyrrolo-[3,4-*c*]carbazole-5,7(6*H*)-dione (NB-506), indolopyrrolocarbazole anticancer agent, synth, 585
- konbu'acidin A, bromopyrrole alkaloid with cdk4 inhibitory activity from *Hymeniacidon* sponge, structure and enzyme inhibitory activity, 15681
- lamellarian alkaloids from an unidentified mollusc from the Arabian Sea, structures, 3457
- 2-mercapto-1-methylpyrrole and the analogous selenol, formation by hydrolysis of 1-methyl-2-trimethylsilylthiopyrrole and corresponding seleno deriv, subsequent transformations of, 13079
- 1-(methoxyphenyl) —, lithiation in pyrrole and in benzene ring, effect of lithiation reagent/amine additive, 4883
- 1-methylpyrrole-2-thiol and -2-selenol, synth, tautomerism, thione and selone formation, 16783
 1-methylpyrrole-2-acetonitrile, ring annelation forming condensed and substituted indoles, 14737 mycalazols 1-12 and mycalazal 1-2, 5-acyl-2-hydroxymethylpyrroles and 5-alkylpyrrole-2-carbaldehydes from Mycale micracanthoxea Atlantic sponge, structures, 331
- perhydropyrrolo[1,2-a]indole alkaloid nucleus by cyclisation of amino-cyclohexadienone, 8871 porphobilinogen and analogs, synth, β -pyrrolyl
 - methylation of C-nucleophiles by β-hydroxymethyl

 –, 7731
- pyrrolo[2,3-d]pyrimidine, synth of nucleoside analogues where the pyrimidine ring is linked to a 2-hydroxymethyl-3-hydroxytetrahydrofuran, 3831 pyrrolo[3,2-c]isoquinolines and 3,6-methano-2,5-benzodiazocine from regioselective reduction of
- 3-aminosuccinimides, 2075
 7-(2-pyrrolyl)indoles and 7-indolyl 2-pyrrolyl ketones, and 2- and 7-(3*H*-4,5-dihydropyrrol-2-yl)indoles, synth, 8565, 8573
- reactions with aldehydes, synth of porphyrins bearing meso-linked straps of variable length, rigidity and redox activity, 6755
- 2-substituted-1*H*-pyrrolo[2,3-*b*]pyridines from 7-azaindole by lithiation followed by addition of electrophiles, 3637
- tauroacidins A and B, bromopyrrole alkaloids with taurine residue from *Hymeniacidon* sp., Okinawan sponge, 16679
- tricyclic pyrrolo[3,2-c]quinoline core of martinelline alkaloid, synth by radical cyclisation of N-(2'-iodophenyl)pyrrole-3-carboxamides, 8287

Pyrrolidines/pyrrolidinones

- *N*-alkyl-3,4-disubstituted pyrrolidine-2,5-diones, synth by condensation of α -oxoketene *O*,*N*-acetals and maleic anhydride, 17643
- 1-anilino-pyrrolidines by PhSeBr-promoted cyclization of alkenyl phenylhydrazones, 7311
- α-arylaminoalkylidene pyrrolidinones, photocyclization to 3-spiro-indolines, 16083
- azinomycins A and B, construction of the C6-C13 aziridino[1,2a]pyrrolidine core substructure involving Wadsworth-Horner-Emmons olefination and intramolecular addition-elimination reaction sequence, 16313
- N-benzyl-3-halo-4-halomethyl2-pyrrolidinones,synth by halogen atom transfer/cyclization in N-allyl-N-benzyl-2,2-dihaloamides, Fe⁰-FeCl₃ or CuCl-TMEDA promotion, 14031
- by reduction of indolyl-isoxazolidines derived from 1,3-dipolar cycloaddition of C-(1-methylindol-3-yl)-N-methylnitrone with carbonyl substituted dipolarophiles, 707
- N-carbomethoxymethylpyrrolidine, photoinduced addition to 5(S)-t-butyldimethylsiloxymethylfuran-2(5H)-one, 1457
- chiral 1-aryl-2,5-dimethyl Mn(CO)₃ complexes, nucleophile additions promoted by chiral auxiliary, 3849
- chiral N-(β-trifluoromethylsulfonyl) —, synth, conformation study, Michael additions, 823
- DAB-1 and LAB-1, pyrrolidine type aza sugar glucosidase inhibitors, synth from diethyl tartrate, 7501
- 5-formylpyrrolidin-2-ones, synth *via C*-(2-thiazolyl) nitrones and cycloaddition to chiral acrylates, 3301 functionalised pyrrolidinones by cycloaddition reactions of α,β-unsaturated bicyclic lactams prepared from (S)-pyroglutamic acid, 11731
- (S)-3-hydroxy-2-pyrrolidinone, synth from (S)-malic acid, 9213
- kainoids, pyrrolidine dicarboxylic acids, towards a synth of kainoids from trans-4-hydroxy-L-proline, 5233, 5255, 5273
- (2S,3R,4S)-3,4-methanoproline and analogues, synth by intramolecular cyclopropylidene insertion into an *N*-benzyl or *N*-allyl group, 14773
- pyridazine or pyrrolidinamine derivs from seleniuminduced cyclisation of alkenyl hydrazines, factors affecting, 10591
- pyrrolidine from tandem Michael addition reaction as template for azanorbornane derivs with substance P receptor affinity, 11121
- pyrrolidines, use of lithiated β-aminoalkyl sulfones in

synth, 4791

- 1-substituted 1,4,5,6-tetrahydropyridazines and 1-(*N*-substituted)-aminopyrrolidines from hydrazines and 2,5-dimethoxytetrahydrofuran, 3707
- synth of C₂-symmetric ferrocenylalkylamines, diferrocenyl pyrrolidines and piperidines, 7219

Pyrrolines/pyrrolinones

- 2-aryl-1-pyrrolines, α,α-dehalogenation with *N*-halosuccinimides followed by monodehydro-halogenation, synth of 3-chloro- and 3-bromo-2-arylpyrroles, 3693
- 3,4-dihydro-2*H*-pyrrole 1-oxide, cycloadditions to methylene-γ-butyrolactones, 14763
- fused 1,3-dihydro-3-oxopyrrol-2-ylideneacetic esters, products of DMAD reactions with a Ritter product and with 6,7-dimethoxy-1-methyl-3,4-dihydro-isoquinoline, 10899
- 5-methoxy- and -methylthio-pyrrole-2,3(1*H*)-diones, cycloaddition to diazomethane and photo-cycloaddition to olefins, 1813
- Vilsmeier synthetic route to indolylpyrroles, formation of 3*H*-4,5-dihydropyrrol-2-yl indoles, 8573
- 3-vinyl D²-pyrrolines by tandem cyclopropyliminium ion rearrangement-Hofmann elimination cascade, 8941

Pyrylium ions

2,4,6-triphenylpyrylium tetrafluoroborate as photosensitiser for irradiation of o-cinnamylphenols a n d o-hydroxystilbenes, 681

Quaternisation

[1,2,3]triazolo[1,5-a]quinolines, 2-phenacyl and 2-methoxycarbonylmethyl quaternary salts, ylid formation and their reactivity towards dipolarophiles, 12765

Quinanes

- (±)-isocomene, angular triquinane, synth by intramolecular cationic [5+2] cycloaddition promoted by trimethylsilyl triflate in lithium perchlorate-ethyl acetate, 8975
- (±)-silphinene sesquiterpene from Silphium perfolatium and (±)-pentalene sesquiterpene from Streptomyces griseochromogenes, synth, 2103, 2111

Quinazolines

4-substituted quinazolines, regioselective lithiation of the benzene moiety, 2871

Quinazolinones

- azeto-fused by intramolecular [2+2] cycloadditions, followed by oxidation, 13449
- 6-chloro-2-(5-chloro-2-hydroxyphenyl)quinazolin-4(3*H*)-one *O*-glucuronide, fluorogenic β-glucuronidase substrate, 7159

quinazolin-4-one-based antifolates with modified glutamate side-chains, potential thymidylate synthase inhibitors, 13383

quinazoline-2,4-diones, oligodeoxynucleotides containing, triplex stability, PMR and CMR of quinazolinediones, 8457

Quinolines

- N-acetyl- and N-alkylquinolinium, pyridinium or isoquinolinium salts, addition reaction with pyrrole and indole, synth of dihydroazines, 13959
- 4-aryl-7,7-dimethyl-5-oxo-2-thioxo-1,2,5,6,7,8-hexa hydroquinoline-3-carbonitriles, synth from dimedone and conversion into 1-glycosides, 17441 3,4-dihydroquinolinium salts, prep by reaction of N-arylnitrilium salts with alkenes, 625
- cis-1,2,3,4,4a,7,8,8a-octahydro— N-oxides, and their epoxides, synth as haptens in catalytic antibody formation for terpenoid cascade cyclization, 11237 organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7231
- 3-phosphorylated 4-aminoquinolines from β-phosphine oxide and phosphonate enamines, 2931 N-protected quinolones, 2-lithiation of followed by addition to aldehyde-ester and subsequent oxidation, synth of pyrido[2,3-b]acridine-5,11,12-triones, 341 quinoline-2,5-diones from reaction of 5,6,7,8-tetrahydro-2H-1-benzopyran-2,5-diones with hydrazines to yield 5-hydrazono-2H-1-benzopyran-2-ones and subsequent transformation, 1383
- 4(1*H*),5,8-quinolinetriones, hetero-Diels-Alder reactions with 1-azadienes, synth of 1,5- and 1,8-anthrazoline-9,10-quinones, 11465
- 2,4-substituted quinolines, synth from 2-aminothiophenol and acetylenic acetals *via* substituted benzo[b][1,4]thiazepines, 641
- synth by Pd-catalysed coupling of acetylenic carbinols with o-iodoanilides, 13397
- 1,2,3,4-tetrahydroquinolines, multicomponent synth by the Yb(OTf)₃ catalysed reaction of an imine, an aldehyde and a nucleophile, 9715
- tricyclic pyrrolo[3,2-c]quinoline core of martinelline alkaloid, synth by radical cyclisation of N-(2'-iodophenyl)pyrrole-3-carboxamides, 8287

Ouinolinones

- 4-aryl-3-cyano-7,7-dimethyl-5-oxo-5,6,7,8-tetrahydroquinoline-2-thiones, synth from dimedone and conversion into 1-glycosides, 17441
- 4-aryl-3,4-dihydro-5,8-dimethoxy-2(1*H*)-quinolinones, synth by Michael addition of lithiated 2,5-dimethoxy-*N*-pivaloylanilines, 3231
- 2,3-dihydro-4(1H)-quinolinones, synth by Pd-catalysed coupling of acetylenic carbinols with

- o-iodoanilides, 13397
- 1,4-dihydro-4-oxoquinoline-2-butanoic acid derivs, conversion into acridones by cyclization and aromatization, 12717
- 5,8-dimethoxy-4-one, transformation into 7-oxo-1,6-diazaphenalene and to 6-aza-1-oxaphenalene, 4511 Quinolizines/quinolizidines
- (--)-epilupinine, quinolizidine alkaloid, synth from proline via a spirocyclic ammonium ylid, 16565
- 1-, 2- and 3-monosubstituted 1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizine alkyl derivs, epimerisation of, 5349
- substituted benzo[b]quinolizidines and benzo[b]quinolizidines by ring-opening of 3-bromo-2,5-dimethylthiophene-1,1-dioxide, 771

Ouinones

- 3-alkoxy-2,1-benzisoxazole-4,7-diones, photorearrangement and stereoselective synth of 4-cyanoalkylidenebutenolides, 3363
- anodic oxidation of methylnaphthalenes and 9-methylanthracene, formation of quinone acetals, 8613
- 2-aryliodonio-1,4-naphtho- and -benzo-quinone-3imides, synth, reactivity, 6097
- 2-aza and 2,7-diazaanthraquinones, 3,4,5,6-tetra-(phenylamino-1,8-di-2-pyridyl-, by cycloadditions of 3-aminopyrido[1,2-a]pyrazin-4-imines, 5455
- benzo[b]carbazole-6,11-diones and benzo[a]carbazole-5,6-diones, synth, N-cyano derivs, 16835 benzo[g]quinoline-5,10-quinones, synth by cycloadditions of 1,4-naphthoquinone to αβ-unsaturated aldehyde dimethylhydrazones, 6001
- o-benzoquinones, cycloaddition reactions with 6-styrylfulvene, 17361
- 2,3-dichloro-5,6-dicyanobenzoquinone, reaction with alkylidenephosphoranes, 13945
- 3,6-dichloro-o-benzoquinone, convenient synthetic equivalent in 3,3,6,6-tetrachlorocyclohexane-1,2-dione, 6183
- dihydroxy-anthraquinones from naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, 1823
- frondosins A-E, sesquiterpene hydroquinone derivs from the sponge *Dysidea frondosa*, structures and biological activity, 5047
- indazole quinones, synth by Nenitzescu reaction of azaenamine-benzaldehyde phenylhydrazone with p-benzoquinone and chlorobenzoquinone, 15005
- methoxyhydroquinone, 2,6-, 2,5- and 2,3-dialkoxyhydroquinone, reaction with cycloalkene diol, synth of cycloalkenobenzofurans and monoalkoxybenzofurans, 9789
- murayaquinone, rearranged polyketide phenanthra-

- quinone, 4561
- naphtho[2,3-b]furano-4,9-quinones, synth of diodantunezone and 2-ethylfuronaphthoquinones, 3195
- 4(1H),5,8-quinolinetriones, hetero-Diels-Alder reactions with 1-azadienes, synth of 1,5- and 1,8-anthrazoline-9,10-quinones, 11465
- quinone monoketals by phenyliodonium diacecate oxidation of naphthols, reaction with phthalide sulfones provides benz[a]anthraquinones, 2177
- ring-A substituted steroidal —, synth by quinol rearrangement, biological evaluation, structure by NMR, 14073
- 2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, addition of silyloxydienes to, 7715
- substituted 2-amino-1,4-naphthoquinones, reaction with Wittig reagents, 3649

see also Anthraquinones

Quinonoid compds

- bicyclic o-quinodimethanes, generation by photo-enolization of bicyclic aldehydes and ketones, trapping, 15969
- dihydroxy-anthraquinones from naphthoquinone monoketals and 5-thio-furan-2(5H)-ones, 1823
- [cd]-fused 1,3-dihydro-2-benzothiophene S,S-dioxides, synth; generation and trapping of bicyclic o-quinodimethanes, 15957
- heterocycle-linked [60]fullerenes by o-quinodimethane cycloaddition, 9067
- 8a-methoxy-2*H*,6*H*-chromen-6-ones, synth by phenolic oxidation route, 3879
- 7,7,8,8-tetracyano- and 7-alkoxycarbonyl-7,8,8-tricyano-p-quinodimethanes, synth and polymerisation, 15247

Ouinoxalines

- fused 2,3-dialkynyl pyrazines, synth, Bergman cyclization, 14655
- 2-(3-nitrophenoxy)quinoxaline, alkaline hydrolysis, micellar and cationic head group effects, 12361

Racemisation

- controlled racemization of optically active organic compounds: prospects for asymmetric transformation, 9417
- of dithiirane 1-oxides, 12203

Radiation chemistry

- gas phase methanolysis of D_1^+ -activated epoxides using γ -ray radiolysis of D_2 for D_3^+ generation, 5515
- nucleogenic (recoil) ¹¹C atoms, reaction with alkanes, alkenes, dienes, aromatic hydrocarbons, 10155

Radicals and radical reactions

reaction of N-(2-bromo-4,5-dimethoxybenzyl)-N-(2'-β-hydroxyethylphenyl)amine with AIBN and

- tri-n-butyltin hydride, synth of β-4-phenanthridinylethyl alcohol which could be converted to alkaloids, 299
- alkenyl α -sulfinyl and α -sulfonyl cyclizations, 7805
- alkyl radical addition onto imines, kinetic studies of, 73
- alkyl radicals from *O*-acyl derivs of *N*-hydroxy-2-thiopyridone, reaction with acrylamide to form 2-(2-pyridylsulfanyl)-carboxamides, 12067
- aromatic radical anionsfor reduction of cumyl phenylsulfide to bicumyl, mechanism, 12089
- asymmetric synth of taxol C-ring by aldol reaction and cyclization, 7127
- bicyclo[10.2.1]pentadec-13-en-3-ones, formation by free-radical macrocyclization, 14807
- CIDNP study of rigid vinylcyclopropane radical cations from sabinene, α- and β-thujene, 10051
- conversion of alkyl radicals generated by tin-mediated reactions into oximes by alkyl nitrites, 16847
- criticism of S_{RN} 1 mechanism of fluoride displacement in aryl fluorides, 9835
- 2-cyanoisopropyl radical addition to arylalkynes, formation of 1:2, 1:3 and 2:1 adducts and others, 7929
- design of a radical translocation step through 1,n (n=5-7) hydrogen transfers for incorporation into new radical cascades, 13797
- 7-desmethylasteriscanolide, unexpected photocyclization of an $\alpha\beta$ -unsaturated acid on irradiation through quartz, 12319
- dialkyl peroxides and alkyl hydroperoxides, cleavage, role of Fe(II), alkoxy radical formation, 14565
- 1,4-dicyanobenzene and 2,3-dimethyl-2-butene, photoreaction in presence of nucleophiles, 2573
- donor-acceptor olefin polymerisation, spin-trapping study, vinyl radicals not involved, results consistent with 1,4-butanediyl diradicals as intermediates, 15297
- free radical cyclisation of enamides leading to β -lactams, 13129
- free radical cyclisations involving nitrogen, 17543 free-radical reduction of Schiff bases by formic acid, spectroscopic evidence, 6907
- fused isoxazolidines, probable radical pathway in cleavage by methyl iodide to quaternary hydroxyalkylammonium salts, 16891
- glycine-selective α -C-N bond cleavage of dipeptides by nickel peroxide, 5609
- halogen atom transfer radical addition of α -polychloroesters to olefins promoted by Fe⁰ filings, 17761

- halogen atom transfer/cyclization in N-allyl-N-benzyl-2,2-dihaloamides to pyrrolidinones, Fe⁰-FeCl₃ or CuCl-TMEDA promotion, 14031
- histidine and histamine, alkylation at C-2, 2365 homolytic decomposition of methacrylic-derived allylic peroxides, 2513
- hydrogen transfer reactions of vinyl radicals; cyclisation of alkynyl iodides by Unimolecular Chain Transfer (UMCT) from silicon hydrides, 5679
- 1-hydroxyalkyl radical addition to 3-hydroxy-1-(methylthio)-1-(p-tolylsulfonyl)-1-alkenes and their acetates, application to prep of optically active compds, 12101
- (2S,3S)-4-hydroxyvaline, stereoselective synth by asymmetric radical HBr addition to β,γ -dehydrovaline deriv, 1151
- intermolecular radical reactions involving formal addition of sulfonyl and allyl fragments of an allylic sulfone across the double bond of an alkene, 6493
- intramolecular carboradical cyclisation of 4-(trichloroacetamido)cyclohexenes substituted with an electron withdrawing substituent, synth of 2-azabicyclo[3.3.1]nonanes, 1391
- intramolecular electron transfer reactions of N-alkylcyclopropyl phthalimides, synth of spiro lactams, 3475
- γ-ketoesters and α-allyl analogues with 10-17membered rings, synth by radical intramolecular carbonylation, 14615
- living polymerisation of methyl methacrylate mediated by Ru(II), initiator design, 15445
- "living" free radical polymerisation of styrene mediated by nitroxides, acceleration by additives,
- nitric oxide for dehydrazination of arylhydrazines in the presence of oxygen, mechanism, 15701
- perfluoro-4-methylbenzyl radical, trapping with 1-hexene, 1797
- α -phenylsulfenyl and α -alkylsulfenyl radicals, generation and intramolecular cyclisation, 4291
- 1-phosphonyl radicals derived from 1-mono and 1,1-di-heterosubstituted 2-oxoalkylphosphonates as useful phosphoroorganic intermediates in organic synth, 2199
- phosphonyl and thiophosphonyl radicals, generation in the presence of carbohydrate gem-difluoroenol ethers, route to anomeric difluoromethylene-phosphonates and difluoromethylene-phosphonothioates, 15085
- 1-, 2- and 3-phosphonyl-substituted radicals from

- corresponding iodoalkanephosphonates, addition to olefins, 7291
- photocyclization of β-aminoketones, formation of 2-aminocyclopropanols and oxidative ring-opening to enaminones, 7855
- photolysis of cyclopentyl nitrites, formation and ESR of δ-valerolactam N-oxyl —, 3205
- protodediazoniation of aryldiazonium fluoroborates by DMF, radical pathway, labelling study, 10009
- radical addition of thiol acetic acid to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, synth of β -C-glycoside sulfoxides and sulfones, 16355
- radical cascade reaction of isonitriles, key step in synth of (S)-mappicine and mappicine ketone from methylacetoacetate, 8881
- radical cyclisation of N-(2'-iodophenyl)pyrrole-3-carboxamides, synth of tricyclic pyrrolo[3,2-c]-quinoline core of martinelline alkaloid, 8287
- radical cyclisation of N-vinylic α-bromo amides, synth of a chiral 1β-methylcarbapenem key intermediate, 9611
- radical cyclisation of unsaturated bromolactones, synth of functionalised cyclopentanes, 6879
- radical cyclisations of acyclic α-haloesters to γ-butyrolactones using polymer-supported distannane, 1301
- radical intermediates from cycloalkyl nitrite esters, identification by EPR spectroscopy, 6401
- radical reactions for synth of phenanthridines, benzopyrans, biphenyl alcohols and *Amaryllidacaea* alkaloids, 269, 285, 299
- reaction of CF with olefins, generation and electrocyclic ring-opening of α -fluorocyclopropyl radicals, 10071
- reaction of N-(o-bromobenzyl)anilines with n-tributyltinhydride, radical C_{aryl}-C_{aryl} coupling to form phenanthridines, 269
- reactivities of partially and fully fluorinated primary alkyl —, synth, experimental, theoretical studies, 9857
- reductive alkylation of 2-nitropropane anion by 4-chloromethyl-2-methyl-5-nitrothiazole by $S_{RN}1$ mechanism, 5471
- a slow termination process in atom transfer radical polymerisation of styrene, 15321
- tandem 5-exo-trig, 6-endo-dig cyclization, stereoselectivity, α -trimethylsilyl effect, reaction scope, 8401
- tandem cyclizations of enyne glycosides forming glycoconjugates with fused cyclohexene rings, 8383 tandem radical cyclisations triggered by *O*-stannyl

- ketyls from ketone and aldehyde precursors, 13583 andem radical nitrile transfer-cyclisation of 1,3-dioxane-nitriles, synth of spirocyclic systems, 16489
- thianthrenium radical cation studied by ESR in acid zeolites, 4947
- tin-mediated radical cyclisation of a bispropargyl compd and a mono-propargyl compd to form functionalised bicyclo[4.4.0] and spiro[5.4] compds, 11685
- tin-mediated vinyl radical cyclization in synth of bicyclic and angularly fused tricyclic compds from *l*-menthone, 6085
- treatment of o-bromobenzylphenylethers and n-tributyltin hydride with AIBN, C_{aryl}-C_{aryl} bond formation, 285
- tributyltin chloride-sodium cyanobotohydride mediated tandem radical cyclisation-reductive demethoxylation of bromoketals, 10479
- tris(trimethylsilyl)silyl —, reactivity, DSP analysis of Br abstractions, kinetics, 8479

Rearrangements

- of 9a-azalide iminoethers producing 9,11-iminoethers, 16923
- acid-promoted of *ortho*-(1,1-dimethylpropenyl)phenols, migrations, formation of dihydrobenzopyrans and dihydrobenzofurans, 5573
- 2-alkyl and 2,2-diakyl-2*H*,4*H*-1,3-benzodioxins and 3,1-benzoxathiins, lithiation and —, formation of *o*-hydroxy- and *o*-mercapto-homobenzyl alcohols, 17373
- 5-alkylidene-3-amidofuran-2(5H)-ones from 4-(acylmethylene)azlactones by translactonization, acid and base effects, 1843
- of allyl aryl ethers; reaction of alkoxyhydroquinone with cycloalkenediols, 9789
- anionic oxy-Cope —, recent applications (report 429), 13971
- Beckman, nitrone in TFAA with NaI, mechanistic considerations, 14169
- of bicyclic endoperoxides derived from substituted cycloheptatrienes, mechanism, 10401
- of bicyclo[4.4.1]undecene to bicyclo[5.3.1]undecene using oxa-di-π-methane photoisomerisation, 11099 boron trifluoride-acetic anhydride catalysed of dihydroarteannulin B, 14975
- Cope of enantiomerically pure, silylated *syn*-aldols, 133
- Cope of thermolabile bis-alkenylcyclopropanes from female gametes of marine brown algae (Phaeophyceae), 13681
- Cope, synth and degenerate of tetracyclo-

[7.3.1.0^{2,8}.0^{4,12}]trideca-5,10-diene, 9903

Curtius — of 5-hydroxyisophthalic acid in synth of aromatic and aliphatic segments of antitumour compd FR900482, 10229, 10239, 10253

125

- 9-dihydro-13-acetylbaccatin-III, acid-catalysed—and acyl migration, formation of *abeo*-taxanes and subsequent products, 15991
- epoxide brought about by lithium dialkylamides or t-butoxide, 1855, corrig. 5357
- epoxide to allylic alcohol in 4,5-epoxycyclohexane-1,2-dimethanol and derivs by lithium amide and KOBu-t, 17527
- of 2,3-epoxy amines and nucleophilic trapping of aziridinium ion intermediates with α -amino esters, synth of bestatin related aminopeptidase inhibitors, 15729
- epoxy ester ortho ester rearrangement catalysed by Cp₂(Cl)Zr⁺, protection of polyfunctionalised carboxylic acids, 16575
- Fries of phenyl and naphthyl esters in montomorillonite clays, 17171
- generation of two rearranged hydroperoxide products from reduction of artemisinin by lithium aluminium hydride, 7493
- a (3-hydroxy-1-aryl-4-oxoazetidin-2-yl) thiazol-2one, conversion into a thiazolo[3,4-a]pyrazine-3,6-dione, 12729
- Lewis acid-catalysed rearrangement/reduction of 1-phenyloxiranemethanamines, synth of β -phenethylamines, 21
- metathesis of enynes to precursors for the cyclic amino acids, 10603
- of 6-methoxytetralins into 8-methoxytetralins through action of zirconium tetrachloride, 15771
- methyl(trimethylsilyl)germylene, gas-phase -- to MeGeCH₂SiHMe₂ and HGeCH₃SiMe₃, 10179
- Meyer-Schuster reaction and allylic of vinyl-Ce adduct of A-ring C1-ketone, in synth of taxol AB ring system, 7139
- Newman-Kwart rearrangements, synth of biphenyland 1,1'-binaphthyl-2,2'-dithiols, atropisomerism in intermediates, 6073
- oxidative of imines to formamides using sodium perborate, 3805
- oxy-Cope —, bromo-acetylenyl vinyl cyclopentanols and cyclohexanols, formation of reduced bromo-indenes, -naphthalenes, -benzocyclooctenes, -cyclodecadienones, 12637
- oxy-Cope of a *trans*-1,2-divinylcyclohexanol, synth of *cis*-5-cyclodecenone and *cis* fused hydronaphthalenols, 14235
- photo-Favorskii of α-chloroacetophenones, effect

of solvent on synth of phenylacetic acids, 16789 photoinduced oxa-di-pi-methane rearrangements in prep of tetracyclo[6.4.0.0^{3,5}.0^{4,8}]dodecan-6-ones from tricyclic precursors, 13053

- pinacol and other reactions of 1,1,2-triphenyl-1,2-ethanediol, brought about by aminium salts and protic acids, solvent effects and mechanisms, 10817 Prins-pinacol spiroannulations of methylenecyclohexane siloxy acetals, 8927
- reductive Beckmann of α-hydroxylamino-oximes, formation of cyclic amidoximes, 2527
- ring-opening of β-lactams, formation of α-methoxyenamino-thiolate esters from 3-methoxy-4-methylthio-azetidin-2-ones, 8439
- seleno-Claisen rearrangement in reaction of selenothioic acid S-alkyl esters with allylic bromides in the presence of Et₃N, synth of 4-penteneselenothioic acid S-alkyl esters, 12237
- [2,3] sigmatropic rearrangement of allylic selenoxides, synth of chiral allylic alcohols, 12115 Smiles of 2-aryloxypropionamide, synth of 2-hydroxy-2-methyl-*N*-arylpropionamides which could be transformed into arylamines by hydrolysis, 6303
- Smiles as a tool for the prep of 5-[(2-hydroxy-acyl)amino]-2,4,6-triiodo-1,3-benzenedicarbox-amides, pathway and side reactions, 11919
- tandem cyclopropyliminium ion rearrangement-Hofmann elimination affording 3-vinyl D²pyrrolines and subsequent onter- and intramolecular [4+2]cycloaddition reactions, 8941
- thermal of N,N-unsaturated dialkyl- and N-unsaturated alkyl-N-alkyl-β-ketoamides, prep of spirolactams, 5775
- thio-Claisen, stereocontrolled of S-allylic ketene aminothioacetals with adjacent hydroxy stereogenic centre. 17253
- of unsaturated cyclic peroxides to 3,4-disubstituted furans, 13867
- Wolff of 1-diazo-2-oxo-(2-*N*,*N*-disubstituted aminophenyl)ethylphosphonates by thermolysis giving rise to 2-oxoindolinium enolate derivs, 7557

Receptors

- hepatic asialoglycoprotein receptor (ASGP-R), solid-phase synth of di- and tri-antennary lysine-based galactose- and *N*-acetylgalactos-amine-containing ligands for, 759
- interleukin-8 receptors, inhibition of by frondosins A-E, 5047
- receptors for uronic acid salts, prep using a chiral bicyclic guanidinium unit and deoxycholic acid derivs as building blocks, 13119

triple-helical peptides which mimic the ligand binding site of the human macrophage scavenger receptor, synth and structural characterisation, 14263

two-armed receptor consisting of arms of oligomers of isophthalic acids and *trans*-1,2-diaminocyclohexane which binds certain peptides sequence-selectively in water, design and synth, 8739 see also Molecular recognition

Reduction

- of 12-substituted analogues of gibberellic acid (GA₃), key step in conversion to 12-hydroxy C₂₀-gibberellins, 2137
- of α -acyl-*N*-[bis(methylthio)methylene]alaninates and phenylalaninates, synth of α , α -disubstituted β -hydroxy α -amino esters, 2189
- of 2-acylaziridines by samarium(II) iodide, synth of β -amino carbonyl compds, 8887
- of artemisinin by lithium aluminium hydride, generation of two rearranged hydroperoxide products, mechanism, 7493
- asymmetric hydroboration of enecarbamates, 4579 baker's yeast reduction of ketolactone in synth of verapamil's optically active intermediates, 10555
- Birch of thiophene-2-carboxylic acid, 6019
- borohydride of ketosteroids adsorbed on solid supports, 3943
- chemoselective of organoselenocyanates to diselenides and selenolates by reaction with metal hydrides, 12147
- of cumyl phenylsulfide with aromatic radical anions to form bicumyl rather than cumyllithium, mechanism, 12089
- diastereoselective of acyclic hydroxyketones and diketones with an indium hydride reagent, synth of meso-diols. 15685
- diastereoselective of β-enaminosulfoxides by 1-benzylDABCO borohydride to the corresponding β-amino-sulfoxides, 16883
- of disaccharides to their per-O-acetates using iodine as the Lewis acid. 11753
- electrochemical of 2-cyano-3-(2-pyridyl)methylacrylates in the presence of chlorotrimethylsilane, synth of substituted indolizines, 81
- electroreduction of an organic halide-metal carbonyl mixture using a Ni-bpy catalytic system, synth of ketones, 17089
- electroreductive coupling of organic halides in alcoholic solvents catalysed by nickel-2,2' bipyridine complexes, synth of biaryls, 11569
- α,β -epoxy ketones, esters, and congeners, organo-Se mediated to β -hydroxy carbonyl compds, 12469 free-radical of Schiff bases by formic acid,

- spectroscopic evidence, 6907
- of the haloketones, key step in stereocontrolled synth of *erythro N*-protected α-amino epoxides, 5325
- hydride of cyclohexanones, origin of π -facial stereoselectivity, theoretical study by analysis of Exterior Frontier Orbital Extension, 9057
- of imines to amines by treatment with catalytic *n*-butyltris(2-ethylhexanoate)tin and stoichiometric polymethylhydrosiloxane, 16349
- of ketene dithioacetals, synth of substituted dithianes, 17151, 17163
- of the keto functionality of α -amino acyl Meldrum's acid followed by hydrolysis to yield γ -substituted γ -amino acids, 12867
- of ketones with 3-(p-tolylsulfinyl)-1,4-dihydropyridines, 593
- of 2' and 3'-ketonucleoside derivs, synth of arabino, ribo, and xylofuranosyl nucleosides with hydrogen isotopes at C2' and C3', 447
- Lewis acid-catalysed rearrangement/reduction of 1-phenyloxiranemethanamines, synth of β -phenethylamines, 21
- methyl (R)-6-[2-(triphenylmethylthio)-1-hydroxyethyl]pyridine-2-carboxylate (Ro 25-8210), enantioselective synth by oxazaborolidine-catalysed —, 12405
- α-nitro- and α-chloro-cumene, reductive cleavage by Na naphthalenide in THF, proposed formation of cumyl carbanion as common intermediate, 5397
- of pentacyclo[8.2.1.1^{2,5}.1^{4,7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv with diimide, 9727
- 7-oxabicyclo[2.2.1]heptanes, reductive cleavage of 2-(α-hydroxydiphenylmethyl) derivs using Et₃SiH/TFA, synth of tetrahydrofurans, 8519
- polymethylhydrosilane-TBAF reduction of carbonyl compds in THF, stereo- and chemo-selectivity, 1627
- protodediazoniation of aryldiazonium salts by DMF, 10009
- purine nucleosides, cleavage of ribofuranose ring by DIBAL-H, acyclo-nucleoside synth, 16683
- 3-pyridyl p-tolyl sulfoxide, dihydro(pyridine) and 2-methyl analogues, and deuteriated derivs, enantioselective of ketones using, 3073
- reductive desulfurization of secondary alcohols using a Raney-nickel/sodium hypophosphite combination, 12883
- reductive ring-opening with formic acid of aziridines bearing an α,β -unsaturated ester group, 12933
- regioselective of 3-aminosuccinimides, synth of pyrrolo[3,2-c]isoquinolines and 3,6-methano-2,5-

benzodiazocine, 2075

sodium borohydride in acetonitrile, for reductive Beckmann rearrangement of α-hydroxylaminooximes and reductive Beckmann fragmentation of cyclic α-amino-oximes, 2527, 2535

see also Hydrogenation

Reformatsky reactions/reagents

- asymmetric reaction, NMR study of the nature of organo-Zn reaction species, 6065
- magnesio-Reformatsky reaction for stereoselective synth of α-substituted ulosonic acids, 12947
- Reformatsky reagent addition to 1,1-dicyanoalkenes catalysed by Cp₂TiCl₂, 2899
- Reformatsky reagent derived from t-butyl α -bromoacetate, addition to carbonyl compds induced by chiral β -amino alcohols, 3787

Regiochemistry

- of aza-annulation of enaminones with α,β -unsaturated acid chlorides bearing hydrogen atoms on the γ -carbon, reversal of regiochemistry when triethylamine is used as mediator, 11827
- of enone-alkene 2+2 photocycloadditions, experimental results and FMO analysis of substituent effects, 3545
- regiochemical control of ring-opening of aziridines by chelating processes, 1417
- of the thioesterification of (1S,2S)-2-amino-1-phenyl-1,3-propanediol under Mitsunobu conditions, 10615 of Wacker-type oxidation of (\pm) -17 α -vinyl-1,3,5(10)-gonatriene derivs bearing a lactonic bridge on the β -face, 7577

Regioselection

- bromination of alkylbenzenes in presence of montmorillonite, 2581
- chemo-, regio- and stereoselectivities of ring-opening metathesis, 16511
- cycloadditions of 2,2-dimethyl-3,4-dihydro-2Hpyrrole N-oxide and N-(benzylidene)methylamine N-oxide with α , β -unsaturated lactones and esters, 7057
- [4+2] and [8+2] cycloadditions of electron-deficient heptafulvenes with electron-rich pentafulvenes, effects of substituents on stereo-, peri-, and regio-selectivity, 17275
- of Diels-Alder cycloaddition of dienes covalently connected to a Lewis acid such as 1-dimethylaluminium dienolates, 9637
- 3,4-epoxy- and 3,4-epimino-alcohols, regioselective nucleophilic ring-opening, formation of 1,3- vs 1,4-diols and amino-alcohols, 16131
- high pressure and selectivity on organic reactions, report, 2669

polar 1,2-eliminations, unified rule based on H⁺ loss from ion pairs, 7947

regioselective lithiation of the benzene moiety of 4-substituted quinazolines at position C-8 *peri* to the N-1 ring nitrogen, 2871

Resins

novolac resins, prep by ion assisted *ortho*-specific phenol-formaldehyde condensation incorporating selective protecting-deprotecting methodology, 13915

Resolution

2-amino-2-phenyl-4-pentenoic acid (α-allyl α-phenyl glycine), via amide using Ochrobactrum anthropi, 9233

asymmetric desymmetrization of 2,2',6,6'-tetrahydroxybiphenyl using *l*-menthone, synth of resolved 2,2'-biaryldiols, 16663

of (1,1'-bi(dibenzofuranyl)-2,2'-diol (BIFOL), sulfonation reactions of, 5899

chloro-bridged dipalladium resolving agents, interconversion of diastereomers, 4083

4-cyano-4-(4-nitrophenyl)hexanoic acid, use of chiral 1-phenylethylamine, 7917

2,5-dihydrothiophene-2-methanol, — using *Pseudo-monas fluorescens* lipase, 6019

enzymatic kinetic — of (±)-4-acetoxy[2.2]paracyclophane by *Candida cylindracea* lipase, prep of (+)-*R*-4-hydroxy- and (+)-*S*-4-acetoxy[2.2]paracyclophane, 11853

(+) and (—)-etodolac enantiomers by resolution *via* crystallisation of diastereoisomeric salts with (+) and (—)-α-methylbenzylamine, 17769

of 2-hydroxymethyl-1-phenylthioferrocene and 2hydroxymethyl-1-t-butylthioferrocene, subsequent oxygenation of the enantiopure thioethers to yield ferrocenyl sulfoxides, 1361

lipase-catalysed kinetic — of α -acyloxyphosphonates, 4627

lipase-mediated — for synth of (R)-(+)- α -(4-fluorophenyl)-4-(2-pyrimidinyl)-1-piperazinebutanol and (R)-(+)- α -(4-fluorophenyl)-4-methyl-1-piperidinebutanol as potential antipsychotic agents, 15115

of cis-monoprotected-2-cyclopenten-1,4-diols, 1983 optical resolution of dithiirane 1-oxides, 12203

per-O-benzoyl-\(\beta\)-galactofuranosyl isothiocyanate, chiral resolving agent, reactions, 16009

of racemic carboxylic acid derivs by Ti-TADDOLate mediated esterification reactions, 7539

tetracyclo[7.3.1.0^{2,8}.0^{4,12}]trideca-5,10-diene, – via Rh(bisox) complex, 9903

3-ureido-1,5-benzodiazepine-2,4-diones, — of 3-amino precursor, 7347

Resonance

resonance energies of azines and azoles, calculation from their molecular dimensions, 13111

Resorc(in)arenes

see Calixarenes

Rhodium and compds

isomunchnones (4-oxidooxazolium betaines) and 1,4-oxazines with carbonyl ylid structure, from α -diazo-carboximides with Rh(II) catalysis, 7777

Ring transformations

O-alkylated pyranoses, novel ring contraction of anomeric C using TMS-azide, 3123

Ritter reactions

DMAD reactions of Ritter product from 2,6-dimethylenebicyclo[3.3.1]nonane and acetonitrile, 10899

Rotaxanes

polyrotaxanes by *in situ* self-threading during polymerisation of functional macrocycles: poly(ester crown ether)s, 15197

solid state polycondensation within cyclodextrin channels, water soluble polyamide —, 15575

Ruthenium and compds

oxidation of cyclic secondary amines by tetrapropylammonium perruthenate, 3223

ruthenium tetroxide for oxidation of Messel shale kerogen, synth of a series of hopanoid triterpenes, 5767

Samarium and compds

samarium(II) iodide for opening of cyclopropyl ketones followed by intramolecular trapping of an electrophile, synth of spirocyclic and bicyclic ketones, 8067

samarium(II) iodide, reducing agent for 2-acylaziridines, synth of β -amino carbonyl compds, 8887 Sm/SmI $_2$ mixed system for deoxygenation of amides, 12865

Sandmeyer reactions

transformation of an amino group into an iodo group in synth of *ortho, meta* and *para* ring-substituted phenylacetylene derivs from iodoaniline isomers, 7595

Sapogenins

Allium porrum, 12-ketoporrigenin and 2,3-secoporrigenin, spirostane steroidal —, isol, structure, 3401

Schiff bases

see Imines

Seaweeds

see Algae

Selenium and compds

application of trapping of diatomic sulfur to diatomic

- selenium, 12225
- carbonyl conjugated vinylic selenides, 1,3 and 1,5-carbonyl transposition sequence through organometallic reagent addition reactions followed by acid hydrolysis, 7445
- chemical transformations of selenium in living organisms, biosynthesis of anti-cancer compds, 12299
- 2'-deoxy-2'-phenylselenofuranosyl nucleosides from glycals, formation of 2'-deoxynucleosides, 10921
- 2,2'-dichalcogenobis(N-alkyl/aryl benzenesulfon-amides), synth from N-substituted benzenesulfon-amides, emergence of 2-alkyl-1,3,2-benzothia-selenazole-1,1-dioxides by subsequent cyclisation, 17751
- diselenides for asymmetric methoxyselenylation and intramolecular oxyselenylation of olefins, 2029
- enolates derived from β-phenylselanyl silyl enol ethers, allylation and benzylation of, synth of α-phenylselanyl γ-unsaturated ketones, 6365
- isoselenoureas by imidoylation of amines with selenium and isocyanides, 12159
- 2-mercapto-1-methylpyrrole and the analogous selenol, formation by hydrolysis of 1-methyl-2-trimethylsilylthiopyrrole and corresponding seleno deriv, subsequent transformations of, 13079
- 1-methylpyrrole-2-thiol and -2-selenol, synth, tautomerism, thione and selone formation, 16783 organoselenocyanate reduction to diselenides and selenolates by reaction with metal hydrides, 12147
- 4-penteneselenothioic acid S-alkyl esters, synth via seleno-Claisen rearrangement, 12237
- phenylselenenyl chloride, reaction with D-glucal derivs and glycosidation of 2-selenophenyl-α-D-gluco-pyranosyl donors, 8825, 8837
- phenylselenenyl sulfate induced cyclisation of allylhydrazines, synth of pyrazole derivs, 4441
- α-phenylselenenyl-α-phosphoryl sulfoxides by selenenylation of α-phosphorlsulfoxides with phenylselenenyl bromide, 2959
- phenylselenenylchloride, reaction with 2,5-dihydro-2,5-dimethoxy-furan, generation of small polyfunctional molecules, 15843
- β-phenylseleno-α-oxo-esters, synth by selenenylation using N-phenylselenomorpholine, olefination, synthetic uses, 16767
- PhSeBr-promoted cyclization of alkenyl phenylhydrazones, synth of 1-anilino-piperidines, -pyrrolidines, tetrahydropyridazines, 7311
- recent aspects of S, Se and Te chemistry; Symposia-in-print, 12067
- [1,2,5]selenadiazolo[4,5-f]-2,1,3-benzothiadiazoles-

- 2S^{IV}, synth, theoretical study, 10169
- 1,3-selenazoles and 2-imidazolin-5-selones, synth from isoselenocyanates and isocyanides, 13667
- selenosubtilisin, artificial selenoenzyme derived from subtilisin, contribution of the oxyanion hole to the peroxidase activity, 12311
- selenuranes, synth by use of 2-exo-hydroxy-10-bornyl group as a chiral ligand, subsequent alkaline hydrolysis yields selenoxides which could lead to allylic alcohols on rearrangement, 12115
- sodium phenylselenyl triethyl borate, reduction of epoxy-ketones and -esters by, 12469
- 2,4,6-tris[bis(trimethylsilyl)methyl]selenobenzaldehydes, synth, structures and reactivity of, 12167

Selenium heterocycles

4-aryl-5-(styrylsulfonyl)-1,2,3-selenadiazoles, synth and pyrolysis, styrylsulfonyl alkyne synth, 17351

Selones

see Seleno-aldehydes/-ketones

Siderophores

- pyoverdin G4R, peptidic from N₂-fixing strain of Pseudomonas putida, 12539
- rhizoferrin, siderophore isolated from the fungus *Rhizopus microsporus* var. *rhizopodiformis*, synth and absolute configuration, 427, corrig. 2667

Silicon and compds

- 5-exo-trig— of homoallylsilanes leading to 2,4- and 2,4,5-substituted tetrahydrofurans, application to synth of (±)-kumausyne, 2835
- alkenyl silanes and germanes, synth from cyclobutyl ketones and R₃MLi/ZnX₂, 8349
- β-alkoxycarbonylallylsilanes, intramolecular bicyclization with enones, formation of 1-methylenehydrindan-2-ones, 839
- alkyl chlorosilanes, reaction with 1,3-oxazolidines and 1,3-dimethylimidazolidine to provide Mannich bases, 14381
- chiral (E)-crotylsilanes, synth and use for C-glycosidation of activated glycals, stereodifferentiation in, 10971
- cyclic and open-chain α-silylvinyl sulfides, synth via thioacyl silanes, acylation, 7897
- dichlorodimethylsilane and trichloromethylsilane, reactions with aminals and aminol ethers derived from secondary alkylamines, generation of iminium ions, 2941
- enolates derived from β -phenylselanyl silyl enole ethers, allylation and benzylation of, synth of α -phenylselanyl γ -unsaturated ketones, 6365
- β,β'-functionalised N,N-divinyl-N-trimethylsilyloxyamines, synth by silylation of β-substituted aliphatic nitro compds with N,O-bis(trimethylsilyl)-

acetamide, mechanism, 13085

methyl(trimethylsilyl)germylene, generation and gas-phase rearrangement to MeGeCH₂SiHMe₂ and HGeCH,SiMe₃, 10179

mono-, di- and spirocyclic silaalkanes, prep from the di- and tetraallylsilanes by Cp₂Zr induced ring forming reactions, 12979

organo-fluorosilanes, Pd-catalysed cross-coupling with diaryl and aryl styryl iodonium salts, and extension to carbonylative cross-coupling, 3027

oxasilacyclopentane acetals, synth by insertion of formamides into a C-Si bond of *trans*-silirane, synthetic utility of, 16597

phenylcarbenes with 2-(dimethylphenyl)silylmethyl and 2-(benzyldimethylsilyl) side chains, generation, addition and insertion reactions, 9935

polychalcogenadisilabicyclo[k.l.m]alkanes, synth by reaction of tris(trimethylsilyl)methylsilane with sulfur or selenium, 12215

polyfluorinated silyl group as fluorous label, use in isoxazoline synth, 6681

polymethylhydrosilane-TBAF reduction of carbonyl compds in THF, stereo- and chemo-selectivity, 1627

sialyllactones, ring opening with glycine esters, synth of glycinyl-NeuAc saccharopeptides, 11039

silyl enol ethers incorporated into vinyl polymers, reactivity with electrophiles, 15429

silyl ethers, oxidative deprotection using oxodiperoxo-Cr(VI) pyrazine complex, 7889

2-silyl-3-alkenols, electrophilic 5-endo-trig cyclisation as stereoselective route to polysubstituted tetrahydrofurans, 4339

silylamines and silyl ethers, nitrodesilylation using dinitrogen pentoxide, synth of nitramines and nitrate esters, 4371

 α -silylcarbonyl compds by asymmetric alkylation of α -silylacetic esters and asymmetric metal-carbene insertion into the Si-H bond, 2855

silylketenes, reaction with acyl isocyanates followed by hetero Diels-Alder reaction with acetylene: AM1 semi-empirical calculations, 225

silyloxydienes, addition to 2-substituted 1,4-benzoquinones and 1,4-naphthoquinones, 7715

the β-heteroatom effect, silylmethyl and thiophosphinoylmethyl carbenes, 9989

trifluoromethyl trimethylsilane, use in synth of α-amido trifluoromethyl alcohols and ketones, 7275 α-trimethylsilyl effect in tandem 5-exo-trig, 6-endo-dig radical cyclizations, 8401

trimethylsilyl triflate in lithium perchlorate-ethyl acetate as promotor of intramolecular cationic [5+2] cycloaddition, application to synth of (±)-iso-

comene, 8975

trimethylsilyl-, t-butyldimethylsilyl- and stannylketenes, formation from ethoxyacetylene and ethoxy(silyl)acetylene, *ab initio* and semiempirical calculations, 8165

tris(trimethylsilyl)silyl radicals, reactivity, DSP analysis of Br abstractions, kinetics, 8479

Silicon heterocycles

2,6-bis(dimethylaminomethyl)phenyl dimethyl and methyl vinyl siliconium chloride, 2-aza-1-silaindene derivs, and isotopomers, DNMR, asymmetric structures in solution, kinetics of exchange, 10133 dibenzo-7-silabicyclo[2.2.1]hepta-2,5-dienes, charge-transfer complex formation and photo-induced electron-transfer reaction of, 1265 oxasilacyclopentane acetals, synth by insertion of formamides into a C-Si bond of trans-silirane, synthetic utility of, 16597

Solid-phase reactions

angiotensin II mimetic with cyclohexane-based ε-aminoacid replacing Val-Tyr-Ile section, 12497

N-arylazoindole prep by reaction of diazonium ions, immobilised on an ion-exchange resin, with sodioindole, 9749

automated synth of oligonucleotides using O-β-cyanoethyl-O-octyl-N,N-diisopropyl phosphoramidite (Lipocap) as a capping reagent, 9629

borohydride reduction of ketosteroids adsorbed on solid supports, 3943

branched RNA and DNA/RNA chimaeras, 11317 design of 10 modified human atrial natriuretic factor analogues using solid-phase synth, 6977

Fmoc solid-phase synth of glycopeptide fragments from HIV gp120 using Tn and sialylTn building blocks, 369

L-α-glycerophosphate oxidase/catalase co-immobilised system, application to dihydroxyacetone phosphate synth, 14645

guanidine prep by use of N,N'-bis-Boc-thiourea and N,N'-bis-Boc-pyrazole-1-carbamidine, 6697

hydrocarbons milled on alumina, H-transfer and carbonisation, 4051

intermolecular Pauson-Khand reaction of norbornene-derived substrates with polymer bound α,ω-alkynols, 6791

leuprolide synth on Nbb resin, peptide alkyl esters and alkylamides, 3179

lysobactins, katanosins, cyclic depsipeptides, monitoring solid-phase synth using *in situ* MALDI-TOF MS, 14021

organic reactions on alumina, 7999

polyamine conjugates, - in study of trypanothione

- reductase, 17317
- 5'-polyarene-tethered oligo-DNAs by solid-phase synth, thermal stability and spectroscopic properties of their duplexes and triplexes, 10409
- prep of di- and tri-antennary lysine-based galactoseand N-acetylgalactosamine-containing ligands for the hepatic asialoglycoprotein receptor (ASGP-R), 759
- solid-phase organic reactions, Nov 95-Nov 96, 5643 solution and solid phase synth of phosphotyrosine mimetic L-4-[diethylphosphono(difluoromethyl)]-phenylalanine derivs from L-4-iodophenylalanine, 11171
- sulfoxides by oxidation of alkyl, aryl and diaryl sulfides with clay-supported iodosylbenzene, 7635 tellurium in the "no-solvent" organic synth of allylic alcohols. 12131

Solvents and solvent effects

- alcohols as solvents for electrosynthesis of biaryls from aryl halides, 11569
- CH₃CN/H₂O solvent mixture for hydrolysis of cyclic and acyclic acetals to the corresponding carbonyl compds by catalytic CBr₄ under different energy sources, 14255
- chiral bidentate Li amides for enantioselective deprotonation, NMR structure study, solvent dependence of enantioselection, 7191
- α-chloroacetophenones, photo-Favorskii rearrangement, effects on synth of phenylacetic acids, 16789
- chromogenic pyridinium derivs of calix[4]arenes, solvato- and halo-chromism of betaines, 16867
- oxygenation of organo-Zn compds in perfluorohydrocarbons, formation of alcohols and hydroperoxides, 9135
- photooxidation of sulfur compds with molecular oxygen in alcohols or acetonitrile, 2087
- pinacol rearrangements and other reactions of 1,1,2-triphenyl-1,2-ethanediol, brought about by aminium salts and protic acids, solvent effects and mechanisms, 10817
- quantum chemical and MM-approach to *endo/exo* selectivity of Diels-Alder reactions in polar media, 119
- solvent effects in reaction of chloroalkylbenzothiazoles with alkoxides, substitution versus ring-expansion, 5839
- solvent and leaving group effects on the mono- vs. dialkylation of alkali salts of diethyl malonate with 1,2-bis-, 1,2,4,5-tetrakis- and 1,2,3,4,5,6-hexakis(halomethyl)benzenes, 8195
- two-armed receptor consisting of arms of oligomers

of isophthalic acids and *trans*-1,2-diaminocyclohexane which binds certain peptides sequenceselectively in water, design and synth, 8739 Solvolysis

of 4-methylene-3-homoadamantyl mesylate, effect of a γ-cyano substituent, 8155

Sonochemistry

- acylals, formation of esters by alkylative de-acylation using Grignard reagents and organo-Li compds, use of Barbier conditions and ultrasound, 12679
- acylation of unprotected amino acids using ultrasound, 1123
- amination of chiral α -aralkyl acetates, synth of C_2 -symmetric ferrocenylalkylamines, diferrocenyl pyrrolidines and piperidines, 7219
- organostannane synth by sonochemical Barbier reactions, 859
- sonochemical hydrolysis of 1,3-dioxolanes, 14255 **Spiro compds**
- bicyclic and angularly fused tricyclic compds from l-menthone, tin-mediated vinyl radical cyclization,
- cephalotaxine, 1,3-dipolar cycloaddition approach to indolic aza-analogues. 3269
- chiral spiro 3-oxazolin-5-one 3-oxides by cycloaddition of chiral cyclic ketones to nitrosoketene, use in EPC synth of modified amino acids, 5725
- chiral spiro-1,3-dioxanes (1,5-dioxaspiro[5.5]-undecanes), synth and stereochemistry, 6215
- (2S,6R,8S)-2,8-dimethyl-1,7-dioxaspiro[5.5]undecane (bee pheromone), synth by ring closure of (S)-6-p henylthio-2-hexanol, 9487
- 1,7-dioxaspiro[6.6]undecanes, synth of C11-C25 fragment of avermectin A_{2b}, 9377
- 6-formyl-spirobicyclo[5.2]octane, regioselective cyclopropyl ring opening mediated by TMSCl and TBAI, synth of 3-(1-chlorocyclohexyl)propanal and 2-(1-iodomethylcyclohexyl)ethanal, 16341
- hexaspiro[2.0.4.0.2.0.4.0.2.0.4.0]tetracosane (alternately cyclopropa-cyclopenta-fused cyclohexane), synth, conformation and dynamics, 6011
- (+)-hydantocidin, synth of analogues which are modified in both the carbohydrate and the hydantoin rings, synth from acetylated 1-bromoglycopyranosyl cyanides, 5813
- mixed spiro di-ozonides by co-ozonolysis of oxime O-methyl ethers with cyclic diketones, 5463
- mono-, di- and spirocyclic silaalkanes, prep from the di- and tetraallylsilanes by Cp₂Zr induced ring forming reactions, 12979
- photochromic spirooxazines, synth through condensation of methylene-substituted azahetero-

- cycles on 1-amino-2-naphthols in the presence of an oxidising agent, 9669
- Prins-pinacol spiroannulations of methylenecyclohexane siloxy acetals, 8927
- secretagogue MK-677, spiroindoline-based growth hormone, synth from isonipecotic acid by Fischer indole/reduction strategy, 10983
- spiro [5.4] compds, synth from a mono-propargyl compd by tin-mediated radical cyclisation, 11685 3-spiro-fused indolines by distereoselective photocyclizations, 16083
- spiro-fused isoxazolidines by cycloaddition of 3,4-dihydro-2*H*-pyrrole 1-oxide to methylene-γ-butyrolactones, 14763
- spirocyclic and bicyclic ketones, synth by opening of cyclopropyl ketones with samarium(II) iodide followed by intramolecular trapping of an electrophile, 8067
- spirocyclic systems by tandem radical nitrile transfer-cyclisation of 1,3-dioxane-nitriles, 16489
- spirofurochromanone derivs, synth by condensation of different cyclic ketones with visnaginone and khellinone, 15799
- spiroketal fragment of calyculin A, synth of D-xylone-1,4-lactone as intermediate to, 9769, 9777 spirolactams from thermal rearrangement of N,N-unsaturated dialkyl- and N-unsaturated alkyl-N-alkyl-β-ketoamides, 5775
- [4.4]spirononene dimethyl gloiosiphone A, microbial agent from *Gloiosiphonia verticillaris*, synth by ring expansion of a 2'-(dimethoxymethyl)-1'- (cyclopenten-1'-yl)-4-hydroxy-2-cyclobuten-1-one, 8913
- spiropentane and spiro[3.3]heptane, reactions with methylene forming C-H but no C-C insertion products, 9913
- spirosesquiterpenes, (+)-spirojatamol and (+)-dihydroepispirojatamol from Nardostachys jatamansi and (+)-dihydroerythrodiene from Erythropodium caribaeorum, synth from R-carvone, 1439
- Δ³-1,3,4-telluradiazolines, synth by reaction of hydrazones with tellurium dichloride or tellurium tetrahalide in the presence of triethylamine, 8137
- 8,8,13,13-tetramethyltetraspiro[2.0.3.1.3.1.3.0]hepta decane, synth from tetraspirane, conformation and dynamics of, 7529

Sponges

- Amphimedon sp., amphimic acids, long-chain alkylidenecyclopropane fatty acids, isol, structure, synth, enzyme inhibition, 16699
- Hymeniacidon sp., Okinawan -, isol of tauroacidins

- A and B, bromopyrrole alkaloids with taurine residue, 16679
- Theonella sp., isolation of oriamide, a cyclic cytotoxic peptide containing a novel amino acid, 2-[1-amino-2-(p-hydroxyphenyl)ethyl]thiazole-4-a crylic acid, 16147

see also Marine metabolites

Staudinger reactions

of (1R)2,3,4,6-tetra-O-acetyl-1-azido-D-galactopyranosyl cyanide and the derived carboxamide, 15041

Stereochemistry

- control of C-4 chemistry in synth of kainoids from trans-4-hydroxy-L-proline, 5233, 5255, 5273
- double stereodifferentiation in the Lewis acid promoted C-glycosidation of activated glycals with chiral (E)-crotylsilanes, 10971
- of the reactions of D-glucal derivs with phenylsulfenyl chloride and phenylselenenyl chloride, and also glycosidation reactions of 2-thiophenyl- and 2-selenophenyl-α-D-gluco-pyranosyl donors, 8825, 8837
- steric control of oxidation selectivity in macrocyclic phosphine oxide-dithioethers, 12249
- of the thioesterification of (1S,2S)-2-amino-1-phenyl-1,3-propanediol under Mitsunobu conditions, 10615

Stereocontrol

protein kinase C, minimal structural requirements for diglyceride-site directed activators, 10041

Stereoelectronic effects

halogenation of tri-O-benzyl-D-glucal, — control, 3417

Stereoselection

- chemo-, regio- and stereoselectivities of ring-opening metathesis, 16511
- dependency of stereoselection of base-catalysed addition of (R)-pantolactone to the ketene derived from racemic N-phthalyl valine, 13719
- of Diels-Alder cycloaddition of dienes covalently connected to a Lewis acid such as 1-dimethylaluminium dienolates, 9637
- high pressure and selectivity on organic reactions, report, 2669
- high-pressure promoted stereoselective tandem [4+2]/[3+2] cycloadditions of nitroalkenes and enol ethers, 11929
- stereoselective hydrogen transfer reactions of vinyl radicals; cyclisation of alkynyl iodides by Unimolecular Chain Transfer (UMCT) from silicon hydrides, 5679
- stereoselectivity of Gif-type reactions, evaluation using trans-1,4-dimethylcyclohexane as a probe,

2997

see also Diastereoselection

Stereospecificity

faciality of intramolecular palladium(0)-catalysed metallo-ene-type cyclisations, synth of trisubstituted exocyclic alkenyl pyrrolidine, 3577

Steric and strain effects

- amino di- α , α' -isovaleric acid, a sterically congested iminodiacid, synth of its *N*-substituted derivs, 14591
- bulky aluminium phenoxides, effect on stereospecificity of methacrylate polymerisation, 15263 on [4+3] cycloaddition of 2-functionalised furans
- with oxyallyl cations, 11669
- decarbonylative α,α-diarylation reaction of 2-methoxyalkanoic acids in phosphorus pentoxide-methanesulfonic acid mixture, synth of 1,1-diarylalkane homologs, 14287
- hexaspiro[2.0.4.0.2.0.4.0.2.0.4.0]tetracosane (alternately cyclopropa-cyclopenta-fused cyclohexane), synth, conformation and dynamics, 6011
- hybrid HF-DFT calculations on pairs of neutral molecules and their conjugated bases to determine gas-phase acidities, 9741
- steric control of oxidation selectivity in macrocyclic phosphine oxide-dithioethers, 12249
- steric control on selectivity in Fries rearrangements of phenyl and naphthyl esters in montomorillonite clays, 17171
- sterically crowded 8,8,13,13-tetramethyltetraspiro-[2.0.3.1.3.1.3.0]heptadecane: synth, conformation and dynamics, 7529
- 1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by Suzuki coupling, barriers to rotation, conformation, AM1 and PM3 calculations, 5379

Steroids and sterols

- 24-epicathasterone, 22-deoxy-24-epiteasterone and 24-hydroxy-6-oxo-24-epicampestanol, brassinosteroids, synth *via* 22,23-epoxy- and 22,23-bromohydrin intermediates from ergosterol, 17039
- aragusterols E-H, 26,27-cyclosterols from *Xestospongia*, absolute configurations of xestokerols A and B, 5403
- asterasterols A-C, sulfated starfish —, A with ring B 7-membered αβ-unsaturated lactone, B and C with ring-B enones, 8625
- borohydride reduction of ketosteroids adsorbed on solid supports, 3943
- brassinosteroids, configurational assignment of side chain by exciton coupled CD spectroscopy in per-2-naphthoyl derivs, 11961

- brassinosteroids with epoxy functions, synth, effect on regioselectivity of Baeyer-Villiger reaction, 11347
- 16α-carboxyprednisolones, synth based on addition of bromonitrile oxide to pregnatrienone to provide bromoisoxazoline which can be converted to the 16α deriv *via* the hydroxynitrile, 14317
- 1α-(3'-carboxypropyl)-4-androsten-17β-ol-3-one, deriv of testosterone, synth and application to the prep of immunogens and fluorescent tracers, 12855 cholesterol absorption inhibitor CP-148,623, ¹⁴·C radiolabelled synth, 11007
- 3-epi-2-deoxy-20-hydroxyecdysone and analogues, synth from 20-hydroxyecdysone and activity in flies, 3145
- di(3β-hydroxyfurost-5-en-26-yl) and two other dimeric steroids, synth as components of lipid membranes from diosgenin and pregnanoic ester respectively, 10565, 10579
- 1α,25-dihydroxyvitamin D₃ (calcitriol), hormonally active steroid hormone, synth of calcitriol A-ring fragments, 91
- hexanor(C23-C28)castasterone-20,22-diethyl diether, synth from 16-dehydeopregnenolone acetate, plant growth promoting activity, 4909
- 20R-hydroxyecdysone, regioselective acylation catalysed by *Candida antarctica* lipase B (Novozym 435), 5855
- 12-ketoporrigenin and 2,3-secoporrigenin, spirostane steroidal sapogenins from *Allium porrum*, isol, structure, 3401
- 4-methyl-A-homo-4-azacholest-4a-en-3-one: nitration, bromination and oxidation reactions of, 10565
- 24-methyl-and 24-ethyl-Δ²⁴-cholesterols, biosynthetic precursors of 24-alkylsterols in higher plants, ¹³C labelling study, 877
- pavoninin-1 and 2, steroid N-acetylglucosaminides from the defense secretion of the sole *Pardachirus* pavoninus, synth of aglycones of, 8129
- prednisolone biotransformation by the green alga T76 Scenedesmus quadricauda, 8273
- ring-A substituted quinones, synth, biological evaluation, structure by NMR, 14073
- steroid-anthraquinone hybrids, synth from 1,4-naphthoquinones and reduced indenyl dienes, 10871
- steroidal acetoxyimines, formation of N-acetyl enamines on chromatography, nitration of these by AcONO₂, nitro-enamide and fused 1,2,5-oxadiazole products, 16161
- synth of RNAase active site model system on a steroid template, 8421

Strain effects

see Steric and strain effects

Structure-activity relationships

charge distribution and DNA interaction in 6-methylene-3,7-dihydro-6*H*-purine cyanine dyes containing other heterocyclic rings, 12595, 12605

structure-antimalarial activity relationship in chloroquine-sensitive *P. falciparum* (NF54)³⁵ parasites *in vitro*, 37

synth of conagenin analogues modified at 3'-carbon centre from D-xylose for structure-activity investigation, 13883

2,2,6- and 2,3,5-trimethylpiperazines as monocyclic analogues of the μ-opioid agonist 3,8-diazabicyclo-[3.2.1] octanes, 1481

see also Linear free energy relations

Substituent effects

acid dissociation constants of substituted phenols by kinetic method together with rate constants for reactions of aryl benzoates with Z-substituted phenoxide and EtO, 5073

 γ -cyano substituent effect in allylic bridgehead solvolyses: evidence for cyano π conjugation in carbocations, 8155

decarbonylative α,α-diarylation reaction of 2-methoxyalkanoic acids in phosphorus pentoxide-methanesulfonic acid mixture, synth of 1,1-diarylalkane homologs, 14287

effect of a 7-acetyloxy substituent on tertiary hydroxylation of a series of methyl ester peracetate (5β)-bile acid derivs using dimethyldioxirane, 435

on the gas-phase basicities of 4-X-acetophenones and 4-X-2,6-dimethylacetophenones, a comparison with solution basicities, 731

reactions of thioamides with metal carboxylates in organic solvents, selective prep of nitriles, imides or amides depending on the substitution pattern, 14463

on the regiochemistry of enone-alkene 2+2 photocycloadditions, experimental results and FMO analysis, 3545

on the selectivity of [3.3]orthoanthracenophanes in the Diels-Alder reaction with N-(p-substituted phenyl)maleimides, 6817

on selenium-induced cyclisation of alkenyl hydrazines to pyridazine or pyrrolidinamine derivs, 10591

substituent-dependent asymmetric induction in the ring transformation of 2,3-dihydroimidazo[2,1-a]-phthalazin-4-ium-6-olates by acetic and propionic anhydrides, 7021

in 4-mono- and 4,4-bissubstituted dimethyldiphenylsilanes, 2,2-diphenylpropanes and diphenylmethanes, mediation of effects by monoatomic spacers, 5825

Substitution

competition between — and ring expansion in reaction of chloroalkylbenzothiazoles with alkoxides, 5839

electrophilic — of imidazo[2,1-b]oxazoles; Mannich, bromination, nitration and Vilmeier-Haack formylation, 6959

fluoro-dechlorination of α , α -dichlorosulfides using Et₃N·3HF, synth of α -fluoro-thioethers, 12565

fluoro-dehydroxylation at adamantane bridgehead using Yarovenko reagent (2-chloro-1,1,2-trifluoro-ethyl diethylamine), 5995

hydrazino-defluorination reactions in fluorinated 1-azafagomine analogues, 9357

intramolecular electrophilic aromatic substitution for synth of (+)-pancratistatin from conduritol A, 11153

intramolecular S_N2 reaction in converion of N-(2-ethyl-6-methylphenyl)-N-(methoxyprop-2-yl) horoacetamide (Metolachlor) to the morpholinon deriv, 10513

methylene blue analogues, synth from 3,7-dibromophenothiazinium bromide by — reactions, 10083

nucleophilic — between adenine and a mesylate, synth of trisubstituted cyclobutane nucleoside analogue; unexpected C4-C3 ring contractions in related reactions, 5797

nucleophilic — of Br in bromomethyl-o-carborane, 7911

nucleophilic — on 2,4,6-trichloropyrimidine with 4-dimethylaminopyridine, 1-methylimidazole and 4-(pyrrolidin-1-yl)pyridine, synth of (pyrimidin-2,4,6-triyl)-tris-hetarenium salts, 1295

nucleophilic substitution-1,3 dipolar cycloaddition reactions of oximes with epoxides and dipolarophiles, 13165

palladium catalysed allylic — and addition of diethylzinc to benzaldehyde using 2-(1-p-tolyl-sulfinyl)alkylpyridines as ligands, 3843

Pd-mediated C-O and C-S bond forming reactions with vinylic halides or triflates and acetylenic halides, 1025

reductive alkylation of 2-nitropropane anion by 4-chloromethyl-2-methyl-5-nitrothiazole by S_{RN}1 mechanism, 5471

S_N2 reaction of secondary mesylates and tosylates using CsF, 13633

S_N2 type products from regiospecific replacement of acetoxy groups in 2-(acetoxymethyl)-2-cyclohexenone by stabilised carbanions, 15711

vicarious nucleophilic — of H in nitrophenyl tosylates, 4739

Vicarious Nucleophilic Substitution of hydrogen in synth of 1,3,4,5-tetrahydrobenz[cd]indole, 193

Sulfamic acid and derivs

- cyclic sulfamidates derived from D-allosamine, treatment with S-, N-, O- and C-nucleophiles leading to nucleophilic displacement, 5863
- (1S,2R,4R)-10-(dicyclohexylsulfamoyl)isobornyl 2-cyanopropanoate, diastereoselective alkylation with α -halocarbonyl compds, synth of α -methylaspartic acid, 5891

Sulfenic acids and derivs

- α-methylsulfenyl and α-phenylselenenyl-α-phosphoryl sulfoxides by sulfenylation and selenenylation of α-phosphorlsulfoxides with S-methylmethanethiosulfonate and phenylselenenyl bromide, 2959
- α-phenylsulfenyl and α-alkylsulfenyl radicals, generation and intramolecular cyclisation, 4291 trifluoroethyl sulfenylation with 2,2,2-trifluoroethyl t-butyl sulfoxide, 15717

Sulfides

- aliphatic disulfides, sulfides and n-butanethiol, photooxidation in alcohols or acetonitrile, 2087
- alkyl, aryl and diaryl sulfides, oxidation with clay-supported iodosylbenzene, mechanism, 7635 benzyl phenyl sulfides, photoinduced electron
- transfer reactions of promoted by 9,10-dicyanoanthracene, 4469
- cumyl phenylsulfide, reduction with aromatic radical anions to form bicumyl rather than cumyllithium, mechanism, 12089
- 2-(2-cyanoethyl)sulfanyl-1*H*-isoindole-1,3-(2*H*)-dione and 4-[(2-cyanoethyl)sulfanyl]morpholine-3,5-dione, synth from 2-cyanoethyl disulfide derived from *S*-(2-cyanoethyl)isothiouronium chloride, 14411
- dimethyl (trifluoromethanesulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), reaction with alkenes, synth of sulfur derivs of nortricyclane. 8173
- 2-hydroxymethyl-1-phenylthioferrocene and 2-hydroxymethyl-1-t-butylthioferrocene, kinetic resolution by lipase catalysed acetylation, subsequent oxygenation of the enantiopure thioethers to yield ferrocenyl sulfoxides, 1361
- 1-menthylphosphetane sulfide, synth from menthylphosphine and 1-bromo-3-chloropropane, subsequent alkylation of the phosphetane provides a diastereoselective route to chiral phosphetane sulfides, 4363
- 4-methoxyphenethyl phenyl sulfide and

- 3,4-dimethoxyphenethyl phenyl sulfide, oxidation with potassium 12-tungstocobalt(III)ate, implication for the mechanism of microsomal and biomimetic oxidation of sulfides, 12287
- oxidation of to sulfoxide using Cr(V) reagent catalyzed by heterocyclic bases, 1131
- reductive (Li/DTBB/THF, -78°) ring-opening of α -phenyl- and α,α -dialkyl-substituted 4-, 5- and 6-membered cyclic —, trapping of organolithium with electrophiles, 5563
- α-stannyl phenyl vinyl sulfides, synth by hydrostannylation of thioacetylenes, neighbouring tin effect in oxidations of, 12273
- β -thioketones, solid-phase combinatorial synth, 6595 vinyl sulfides, fluorination of, synth of α -fluoro- β -thio- α , β -unsaturated carbonyl compds, 647 see also Thioethers, Thiols

Sulfilimines

see Sulfimides

Sulfines

see Thiocarbonyl oxides

Sulfinyl compds

- 4-aryl and 4-methyl substituted Hantzsch-type 1,4-dihydropyridines having a chiral sulfinyl group as an electron-withdrawing group, synth from β-ketosulfoxides, 4279
- [(\alpha-chloro)sulfinylmethyl]diphenylphosphine oxides, Horner-Wittig reactions of, synth of (Z)-1-chlorovinyl sulfoxides, 10527
- 3-(p-tolylsulfinyl)-1,4-dihydropyridines, NADH model compds for asymmetric reduction of ketones, 593
- 2-(1-p-tolylsulfinyl)alkylpyridines as ligands for palladium catalysed allylic substitution and addition of diethylzine to benzaldehyde, 3843
- trifluoroethyl sulfinylation with 2,2,2-trifluoroethyl t-butyl sulfoxide, 15717

Sulfonamides

- (+)-N-alkyl-10-camphorsulfonamides as chiral auxiliaries in synth of optically active α-amino acids from glycine t-butyl ester through Schiff base, 11141
- chiral β-trifluoromethyl ethenesulfonamides, synth, conformation study, Michael additions, 823
- 2,2'-dichalcogenobis(N-alkyl/aryl benzenesulfonamides), synth from N-substituted benzenesulfonamides, emergence of 2-alkyl-1,3,2-benzothiaselenazole-1,1-dioxides by subsequent cyclisation, 17751 intramolecular 1,3-dipolar cycloaddition of substituted α- and β-sulfonamides, synth of isoxazole and pyrazole annulated sultams, 13855
- 2- and 4-nitrophenylsulfonamide intermediates in monoalkylation of the α-amino group of α-amino

acid derivs, 15787

role of Al³⁺ cation in electrochemical detosylation of N,N'-bis-(o-tosylaminophenyl)malondiamide, 16721

Sulfonation

sulfonation reactions of (1,1'-bi(dibenzofuranyl)-2,2'-diol (BIFOL), 5899

Sulfones

- alkenyl α -sulfinyl and α -sulfonyl radicals, generation and cyclizations, 7805
- allylic 2-hydroxypropyl, 2-trimethylsilylethyl, and benzothiazol-2-yl sulfones, conversion to alkenes *via* α-alkylation, 1,3-rearrangement and desulfonylation, 307
- α -amino/amido lithiomethyl sulfones, synth, uses, 4835
- arylazosulfones, reaction with potassium salts of (t-butoxycarbonyl)methyl and tosylmethyl isocyanide, synth of 4,5-bis(t-butoxycarbonyl)- and 4-tosyl-1-arylimidazoles respectively, 2125
- arylethynyl styryl -, synth and catalytic SO₂ extrusion, 17351
- cyclic β-benzenesulfonyl ketones, ring cleavage by base, 7341
- 1,2-difluorovinylphenylsulfone, synth from chlorotrifluoroethylene, dienophilic reactivity of, 17127
- equilibrium acidities of and sulfoxides in THF, ion pairing, 10103
- β-C-glycoside sulfoxides and sulfones, prep by radical addition of thiol acetic acid to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, use as glycosyl transferase inhibitors, 16355
- 2,6,7,8,9,9a-hexahydro-1-thiabenz[cd]azulene 1,1-dioxide, 6,7,8,8a-tetrahydro-2H-naphtho-[1,8-bc]thiophene 1,1-dioxide, synth, SO₂ extrusion and trapping, 15957
- lithiated β-aminoalkyl in synth of N-heterocycles, application to Capsazepine, 4791
- sulfone of 2-phenylthio-3,3,3-trifluoropropene, Diels-Alder reactions with various dienes, 6861
- sulfonyl and allyl fragments of an allylic sulfone, radical addition across the double bond of an alkene, 6493
- thiosugar S-dioxides, investigation of glycosidase inhibition, 16731
- vinyl with remote oxy-functionalisation, lithiation, synthetic applications, 11449

Sulfonic acids and derivs

ammonium tropolone-5-sulfonate, water-soluble tetrameric formaldehyde condensate, calixarene-type

- structure, mass spectrum, NMR, 8635
- tauroacidins A and B, bromopyrrole alkaloids with taurine residue from *Hymeniacidon* sp., Okinawan sponge, 16679
- p-toluenesulfonic acid for treatment of N,O-diacylated 2-aminophenols or N,N'-diacylated 1,2-phenylenediamines, synth of benzoxazoles and benzimidazoles, 457
- vicarious nucleophilic substitution of H in nitrophenyl tosylates, 4739

Sulfonium salts

- 1,12b-dihydro-4*H*-4a-thioniatriphenylenes, synth by cycloaddition of dienes to dibenzo[*b,d*]thiopyrylium tetrafluoroborate, reactions with bases, 4611
- dimethyl (trifluoromethanesulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), reaction with alkenes, synth of sulfur derivs of nortricyclane, 8173
- gonyauline, *cis*-2-(dimethylsulfonio)cyclopropanecarboxylate, gonyol, and 3-(dimethylsulfonio)propionate; synth of [2,3-¹³C₂]methionine and biogenetic incorporation, 9067

Sulfonyl compds

- N-arenesulfonylaziridines bearing α,β-unsaturated ester groups, ring-opening with formic acid, 12933 dimethyl (trifluoromethanesulfonyloxy)sulfonium trifluoromethane sulfonate (dimethyl sulfide ditriflate), reaction with alkenes, synth of sulfur derivs of nortricyclane, 8173
- 2,2-dimethyl-N-(phenylsulfonyl)-propanamides, directed lithiation of, synth of benzo[d]-1,2-thiazole-1,1-dioxide derivs, 3615
- 3-hydroxy-1-(methylthio)-1-(p-tolylsulfonyl)-1alkenes and their acetates, addition of 1-hydroxyalkyl radical to, application to synth of optically active compds, 12101
- (E)-[β-(trifluoromethylsulfonyloxy)-alkenyl](aryl) iodonium triflates, synth by reaction of [ArI*-F*OTf] with acetylenes, 13139

Sulfoxides

- alkenyl α -sulfinyl and α -sulfonyl radicals, generation and cyclizations, 7805
- 2-(alkylthio)thiolane 1-oxides, synth, metallation at C-2, alkylation and hydroxyalkylation, diastereoselectivity, 2459, corrig. 5641
- allylic and benzylic trichloromethyl sulfoxides, base-induced β -elimination of chloroform from, synth of thioaldehyde and thioketone S-oxides, 13933
- α-chloro α-(phenylsulfinyl) ketones (RCOCHCl SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843

- (Z)-1-chlorovinyl sulfoxides, synth by stereoselective Horner-Wittig reaction, 10527
- cycloaddition of mesitonitrile oxide to 2-(αβ-unsaturated acyl)-1,3-dithiane 1-oxides, reversal of stereoselectivity in presence of Lewis acids, 7365 β-enamino— (β-arenesulfinyl enamines; β-imino—), diastereoselective reduction by 1-benzylDABCO borohydride to the corresponding β-amino—, 16883 enantiomeric recognition of alkyl phenyl by crystalline (R)-phenylglycyl-(R)-phenylglycine, 8315
- equilibrium acidities of and sulfones in THF, ion pairing, 10103
- ferrocenyl sulfoxides by oxygenation of enantiopure 2-hydroxymethyl-1-phenylthioferrocene and 2-hydroxymethyl-1-t-butylthioferrocene, 1361
- β-C-glycoside sulfoxides and sulfones, prep by radical addition of thiol acetic acid to exocyclic glycals followed by deacetylation, S-alkylation and selective oxidation, use as glycosyl transferase inhibitors, 16355
- macrocyclic phosphine oxide-disulfoxides, synth by oxidation of the corresponding dithioethers with *m*-CPBA, steric control on selectivity, 12249
- oxidation of sulfide to using Cr(V) reagent catalyzed by heterocyclic bases, 1131
- phenyl 4,6-dihydro-2*H*-pyran-4-yl —, acid-catalysed cyclization to 3,4-dihydro-1*H*-[1]benzothieno-[3,2-*c*]pyrans, 12651
- α -phosphoryl sulfoxides, sulfenylation and selenenylation with S-methylmethanethiosulfonate and phenylselenenyl bromide respectively, synth of α -methylsulfenyl and α -phenylselenenyl- α -phosphoryl sulfoxides, 2959
- 3-pyridyl p-tolyl —, dihydro(pyridine) and 2-methyl analogues, and deuteriated derivs, enantioselective reduction of ketones using, 3073
- sulfoxide of 2-phenylthio-3,3,3-trifluoropropene, Diels-Alder reactions with various dienes, 6861
- thioacetal and thioketal sulfoxides, synth by enantioselective oxidation of some dithioacetals and dithioketals using whole-cell cultures of microorganisms, 9695
- thiosugar —, investigation of glycosidase inhibition, 16731
- (S)-2-p-toluenesulfinyl butenolide, cycloadditions with dienes, 14115
- 2-(1-p-tolylsulfinyl)alkylpyridines as ligands for palladium catalysed allylic substitution and addition of diethylzinc to benzaldehyde, 3843
- 2,2,2-trifluoroethyl t-butyl sulfoxide, reactions as a trifluoroethyl sulfenylating or sulfinylating agent,

15717

Sulfur compds

- diatomic sulfur and sulfur monoxide, generation and trapping, 12225
- recent aspects of S, Se and Te chemistry; Symposia-in-print, 12067
- 3,7,11,15-tetramethyl-hexadecan-1,19-sodium disulfate and heneicosane-1,21-sodium disulfate from the Mediterranean tunicate Ascidia mentula, structures, 5877

Sulfur heterocycles

- 2-alkyl and 2,2-dialkyl-2*H*,4*H*-3,1-benzoxathiins, lithiation and rearrangement, formation of *o*-hydroxy- and *o*-mercapto-homobenzyl alcohols, 17373
- benzo[1,2-c:4,5-c']bis[1,2,5]thiadiazoles-2S^{IV}, synth, spectra, cycloadditions, MO calculations, 10169 1*H*-2-benzothiopyrans, formation in Diels-Alder
- additions of diaryl thioketones with dienophiles, 961
- dibenzo[b,d]thiopyrylium tetrafluoroborate, cycloadditions with 1,3-dienes, action of base on adducts, 4611
- 1,5-dithiacyclooctane and 1-phenyl-1-phospha-5-thiacyclooctane, solution conformation of, 7461
- reductive (Li/DTBB/THF, -78°) ring-opening of α -phenyl- and α,α -dialkyl-substituted 4-, 5- and 6-membered cyclic thiacycloalkanes, trapping of organolithium with electrophiles, 5563
- 3,3,5,5-tetraaryl-1,2,4-trithiolanes, generation, dissociation, formation of thiosulfines, 939
- thianthrenium radical cation studied by ESR in acid zeolites, 4947
- thieno[3,2-c] anellated and dithieno[3,2-c:2,3e]-anellated 1,2-dithiins, synth from thiophene precursors, 7509

see also the individual ring systems

Sulfuric acid and derivs

- 2,3-aziridino-5-deoxy-5-(diethylphosphono)-γ-ribonolactone, synth *via* cyclic sulfate and azide, 10743
- (3Z)-4,8-dimethylnon-3-en-1-yl sulfate, isol from ascidian, 11489
- halisulfate 3, terpenoid from sponge *Ircinia* sp., absolute configuration, 5373

Sultams

isoxazole and pyrazole annulated sultams, synth by intramolecular 1,3-dipolar cycloaddition of substituted α - and β -sulfonamides, 13855

Supported reagents/reactions

see also Polymer support, Solid-phase reactions

Supramolecular chemistry

templation and encapsulation in — (report 434), 15911

Surfactants

- biosurfactants by lipase-catalysed acylation of amino sugar derivs, 7587, 7629
- cleavage of p-nitrophenylesters of phenylalanine and phenylglycine in surfactants solution using copper(II) complexes of chiral diamino alcohols as catalysts, 357
- glycamide surfactants by amidification reaction, condensation of N-methyl-glucamine with oleic acid, 5185
- phase changes in aqueous systems, mechanistic aspects, phase diagrams, 9997

Suzuki reactions

- 1-benzyl-2-iodobenzimidazoles, coupling with arylboronic acids, regioselective synth of 6-substituted 2-aryl-1-benzylbenzimidazoles, 12755
- 1,1':8',1"-ternaphthalene and its 2- and 3-aza analogues (1- and 4-binaphthyl isoquinolines), synth by —, barriers to rotation, conformation, AM1 and PM3 calculations, 5379

Sydnones

3-phenyl—, cycloadditions to fulvenes, formation of 2-phenyl-6-t-butylcyclopenta[c]pyridazine and cyclopenta[c]pyrazole derivs, 9921

Tantalum and compds

TaCl₅-silicagel and TaCl₅ as Lewis acid systems for selective tetrahydropyranylation of alcohols and thioacetalisation, trimerisation and aldolisation of aldehydes, 14997

Tautomerism

- 3(5)-amino-5(3)-(substituted phenyl) pyrazoles, annular —, NMR, X-ray and theoretical study, 10783
- enol/enol tautomerism of β-diketones and β-ketoaldehydes and annular tautomerism in N*H*pyrazoles, semi-empirical study of Mills-Nixon effect, 1403
- 1-methylpyrrole-2-thiol and -2-selenol, synth, -, thione and selone formation, 16783
- ring-chain, of Schiff bases of 4-nitrophenyl serinol, 1873, 1891
- ring-chain of 3-amino-1,2-propanediol adducts with aromatic aldehydes, 1081
- tautomeric and conformational preferences in 2-nitraminopyridine, comparison of theoretical and experimental data, 17211

Taxoids

amide-linked A-norpaclitaxel and 2-aroyl analogues, synth from 1-deacetyl baccatin III, biological

- activity, 5699
- 2-debenzoyl-9-dihydro-1,2,9,10-O-acetonide-7-deoxydocetaxel and 2-debenzoyl-1,2-O-acetonide-7-deoxy-10-acetyldocetaxel, prep from taxine B and isotaxine B, 5169
- 7-deoxy-10-acetyldocetaxel and analogues, synth from European yew, biological activity, 12575
- 9-dihydro-13-acetylbaccatin-III, acid-catalysed rearrangement and acyl migration, formation of abeo-taxanes and subsequent products, isol of wallifoliol, 15991
- intramolecular Diels-Alder reactions in diastereoselective synth of ring C precursor, 9253
- taxinine, taxinine B, crystal and solution state conformations, 4621
- taxol AB ring system, synth by olefination of A-ring C1-ketone and B-ring closure, 7139
- taxol C-ring, asymmetric synth by aldol reaction and radical cyclization, 7127

Tellurium and compds

- (1Z,3Z)-butyltelluro-1,3-butadienes and (1Z,3Z)-1,4-bis(butyltelluro)-1,3-butadienes, Te/Liexchange to yield (1Z,3Z)-buta-1,3-dienyl-1-lithium and tellurophenes, 4199
- bis(2,2'-biphenylylene)dichloro- and -difluoropertelluranes, synth by reaction of bis(2,2'biphenylylene)tellurane with sulfuryl chloride and xenon difluoride, structures, 12183
- 2,2'-dichalcogenobis(N-alkyl/aryl benzenesulfonamides), synth from N-substituted benzenesulfonamides, emergence of 2-alkyl-1,3,2-benzothiaselenazole-1,1-dioxides by subsequent cyclisation, 17751
- hexaaryltellurium (TeAr₆), synth by reaction of LiC₆H₄-4-CF₃ with TeCl₄, X-ray structure, 12195 recent aspects of S, Se and Te chemistry; Symposia-in-print, 12067
- Δ³-1,3,4-telluradiazolines, synth by reaction of hydrazones with tellurium dichloride or tellurium tetrahalide in the presence of triethylamine, 8137 tellurium in the "no-solvent" organic synth of allylic alcohols, 12131

Templates

- assembled synthetic proteins, 3-loop receptor mimetic on a solid-phase anchored cyclotetradecapeptide, 7231
- pyrrolidine from tandem Michael addition reaction as template for azanorbornane derivs with substance P receptor affinity, 11121
- templation and encapsulation in supramolecular chemistry (report 434), 15911

Terpenes and terpenoids

- briarian diterpenes, synth of C1-C3, C10 and C7-C9 fragments by regioselective methylation of functionalised 3,3-disubstituted 2,3-epoxy-1-ols, 7429
- (+)-agelasimine A and B, adenine-related bicyclic diterpenoids from the orange sponge *Agelas mauritiana*, synth and absolute configuration, 16977
- (±)-ambliol-A and dendrolasin, furosesquiterpenes, synth, 8513
- andibenin B, andilesin A, polyketide— (meroterpenoid) metabolites of *Aspergillus variecolor*, biosynthesis, 4013
- 2(3)-8(9)-bisanhydrolactarorufin A, lactarane sesquiterpenoid from *Lactarius vellereus*, synth from 5-dimethylbenzofuran by reaction with dimethyl acetylene dicarboxylate, 13703
- aromadendrane diterpenoids from soft coral, 9301 benzhomobarrelene derivs, high temperature bromination of, 14451
- (+)-bicyclohumulenone, humulane-type sesquiterpene from liverwort *Plagiochila siophila*, synth from diethyl 3,3-dimethylglutarate, 16277
- (—)-borjatriol (8\approx,13(R)-oxylabdane-7\beta,14(R),15-triol, a diterpene with antiinflammatory properties, hemisynth from larixol, 673
- braunixanthins 1 and 2, carotenoids linked to alkylphenol and echinenone residues, from alga *Botryococcus braunii*, 11307
- breynolide, sesquiterpene from Taiwanese plant Breynia officinalis, cycloaddition approach to synth, 8997
- chlorovulone II—mitomycinoids and phyllanthocin, synth involving ene-like reaction of aldehydes with vinyl ethers that display the oxygen functionality at the central carbon, 16299
- clerodane diterpenoids and an ursane triterpenoid from Salvia haenkei, computer-assisted structure elucidation, 14719
- coronalolide methyl ester, coronalolide and coronalolic acid, cytotoxic ring-A seco-cycloartane triterpenes from *Gardenia coronaria* and *Gardenia sootepensis*, structures and cytotoxic activity, 529
- (±)-α-cuparenone, synth from 4-methylacetophenone *via* Wittig reaction, Claisen rearrangement, and Wacker oxidation, 3167
- cyclolinteinol and its acetate, sponge sesterterpenes, structure and stereochemistry, 7305
- dammarane triterpenes from Maytenus macrocarpa, structures, 6465
- 1-deacetyl baccatin III, conversion to amide-linked A-norpaclitaxel and 2-aroyl analogues, biological activity, 5699

- dehydro-thyrsiferol and -venustatriols, predehydrovenustatriol acetate, 16-hydroxydehydrothyrsiferol, further polyether squalene derivs from Laurencia viridis, structures, 4649
- dehydrodendrolasins, marine furano-sesquiterpenoids, stereocontrolled synth, 2439
- 7-desmethylasteriscanolide, synth by photocycloaddition and aza-de Mayo cleavage of cyclobutane ring, 12319
- di and tricarbocyclic diterpenes possessing a bicyclic [4.3.1] ring system from soft coral *Xenia florida*, structures, 6809
- eunicelline diterpenes, construction of the bridged nine-membered ring ether moiety by annulationfragmentation strategy, 4331
- frondosins A-E, sesquiterpene hydroquinone derivs from the sponge *Dysidea frondosa*, structures and biological activity, 5047
- furosesquiterpenes from marine sponges consisting of linearly fused furo[2,3-b]- and furo[3,2-b] decalin systems with *cis/trans* ring junctions, synth of the ring system from Hageman's ester, 2989
- (E, E)-germacra-1(10),4-diene 4-epoxides, 6,8-disubstituted, reactions with oxyphilic reagents, 4681
- halisulfate 3, terpenoid from sponge *Ircinia* sp., absolute configuration, 5373
- hopanoid triterpenes by oxidation of Messel shale kerogen using ruthenium tetroxide, 5767
- hydroxymethylacylfulvene (HMAF), illudin S derivative, reactions with thiols, 14579
- isoharziandione, tetracyclic diterpenoid, from *Tricho-derma viride*, isol and structure as 4,8,14,15,15-pentamethyltetracyclo[9.3.1.0^{1,9}.0^{5,8}]tetradecane-7,12-dione, 3135
- (1S,2S,6R,8R)-1-isopropyl-5-(hydroxymethyl)-8-methyltricyclo[4.4.0.0^{2,8}]dec-4-ene, sesquiterpene from leaf lipids of *Nicotiana umbratica*, structure, 11563
- labdanes, abietane and spongian diterpenoids: synth of bicyclic intermediates by Diels-Alder reaction of 1,3,3-trimethyl-2-vinylcyclohexene with conjugated ketones, 2185
- ligulaverins A-E, eremophilanes with novel carbon skeleton from *Ligularia veitchiana*, 6195
- magdalenic acid and bismagdalenic acid, diterpenoid acids from Brazilian plant *Vellozia magdalenae*, structures, 2005
- ma'ilione and *allo*-isoobtusol, chamigrane sesquiterpenes from Hawaiian red alga *Laurencia* cartilaginea, structures and cytotoxic activity, 521 melampolide cyclizations, synth of (*Z,E*)-cyclodeca-

- 1,5-diene model systems, biosynthesis of guaianes, 11425
- *l*-menthone, conversion into bicyclic and angularly fused tricyclic compds by tin-mediated vinyl radical cyclization, 6085
- monoterpene-derived α-hydroxylamino-oximes, reductive Beckmann rearrangement, formation of cyclic amidoximes, 2527
- new dolabellane and hydroazulene diterpenoids from alga Dictyota dichotoma, 8675
- paclitaxel, synth of C-nor-paclitaxel and a study of the oxidation of 6α-hydroxy-7-epipaclitaxel with TPAP, 3441
- paralinones A, B, diterpene esters with tetracyclo-[7.6.1.0^{3.7}.0^{10.14}]hexadecane skeleton from *Euphorbia paralias*, 3215
- (-)-periplanones C and D, germacrene-related cockroach pheromones, synth and activity in *Periplaneta* spp., 7209
- plorantinone A-C, protoilludane sesquiterpenes from fruit bodies of basidiomycete *Russula delica*, structure and absolute configuration, 9735
- (—)-polygodial, (—)-warburganal, (—)-drimenin and (—)-elemol, synth using decalin type chiral building blocks bearing an oxygenated angular substituent, 6313
- (—)-polygodial and (—)-warburganal, sesquiterpene antifeedant antibiotics, reactivity towards amino acids and triacetic acid lactone, 237
- pulcherrimins A-D, diterpene dibenzoates from Caesalpinia pulcherrima, structure, 1583
- sabinene, α- and β-thujene, formation and CIDNP study of radical cations, 10051
- secologanin, monoterpene glucoside, formation of trioxadamantane type aglucones of 3-methoxy secologanin derivs by hydrolysis and transacetalation and deglucosylation, 11659
- secologanin, monoterpenoid glycoside and precursor to many alkaloids, acidic deglycosylation of *N*-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, graph analysis, 10489
- sesterterpenes from the New Caledonian marine sponge *Patrosaspongia nigra* (Bergquist), structures, 10451
- (±)-silphinene sesquiterpene from Silphium perfolatium and (±)-pentalene sesquiterpene from Streptomyces griseochromogenes, synth, 2103, 2111 sinulobatins A-D, amphilectane-type diterpenoids from coral, 4569
- (-)-solavetivone, phytoalexin from potato tubers infected with the blight fungus *Phytophthora*

- infestans, synth via conjugate addition of Me₃Al to a cyclohexa-2,5-dienone intermediate, 603
- spirosesquiterpenes, (+)-spirojatamol and (+)-dihydroepispirojatamol from Nardostachys jatamansi and (+)-dihydroerythrodiene from Erythropodium caribaeorum, synth from R-carvone, 1439 testudinariol A and B, triterpenoids with dimeric
- tetrahydropyranylcyclopentanol structure, 16891 thyrsenols A, B, polyether squalene derivs from
- Laurencia viridis, structures, 3155 tridesmosides rhoiptelesides A and B and bisdesmoside rhoipteleside E, glycosides of euphane-
- type triterpene from leaves and fruits of Rhoiptelea chilantha, structures, 16999
- two spongiane diterpene lactones from nudibranch molluses, 4655
- verrucosins, diterpenoid acid glycerides from the skin of Mediterranean dorid nudibranch *Doris verrucosa*, structures, 1491
- see also Cembranoids, Gibberellins, Iridoids, Limonoids, Quassinoids, Retinoids, Squalene, Steroids and sterols, Taxoids, Vitamins A and D

Tethers

biomembrane attachment to Au surface by molecular
-, 10939

Tetramic acids

see Pyrrolidinones

Tetrazoles

intramolecular Ugi 4CC reaction in synth of 5-(1'-aminoalkyl)tetrazoles on solid phase, 6653

Tetronic acids

see Furanones

Thallium and compds

ambient temperature, unsymmetrical, biaryl coupling reaction for hindered systems based on Suzuki methodology using thallium hydroxide as base with hindered boronic acids and aryl halides, 15123

Theoretical studies

- ab initio of sequential pericyclic reactions of 2-pyrone with cycloocta-1,5-diene, 12415
- ab initio calculations to study effect of angulargroup-induced bond alteration, 13027
- ab initio MO studies on aldol-type addition of enol borinates to imines, 7705
- ab initio molecular orbital study on the mechanism of amide hydrolysis dependent on leaving groups, 4317
- *ab initio* molecular orbital study of thermal decomposition in the ground singlet state of α-azido five-membered heterocycles, 9647
- ab initio RHF/6-31G*, ethenesulfonamides, conformation, 823

- ab initio and semiempirical calculations on formation of trimethylsilyl-, t-butyldimethylsilyl- and stannylketenes from ethoxyacetylene and ethoxy(silyl)acetylene, 8165
- ab initio study of ester group conformation and endo/exo preferences of acrylates in Diels-Alder reactions, with and without BF₃ catalysis, 6057
- acetylene, ethylene and cyclopropene cycloadditions to benzo[b]- and benzo[c]-fused heterocycles, 13285
- AM1 calculations on cycloadditions of 2,2-dimethyl-3,4-dihydro-2H-pyrrole N-oxide and N-(benzylidene)methylamine N-oxide with α , β -unsaturated lactones and esters, 7057
- AM1 Hamiltonian calculations on (2-furyl)pyridines, (2-thienyl)pyridines and furan-pyridine and thiophene-pyridine oligomers, 11529
- Amber force field calculations on binding of alkali metal ions to tetrahydrofuranyl-substituted longchain carboxylic acids, 7403
- 3(5)-amino-5(3)-(substituted phenyl) pyrazoles, annular tautomerism, 10783
- approach to the manzamine alkaloids modelled on biogenetic theory, 2271
- auxiliary accelerated reactions, towards the use of catalytic chiral auxiliaries, 13063
- barriers to rotation in 9-substituted triptycenes, AM1 MO calculations, 4661
- bond shift in cyclooctatetraenes, effect of halogen substitution, 10093
- circular dichroism of yaoundamine A, a naphthyldihydroisoquinoline alkaloid to determine absolute axial configuration, 2817
- conformations of taxinine and taxinine B, MM2* and PM3 -, 4621
- crotonaldehyde dimethyl acetal, of metallodehydrogenation and addition of MeLi and MeK, 7937
- 1,3,2-diazaphospholes, *ab initio* calculations, aromaticity, 2357
- distribution coefficients for ionoselective polymers bearing different pendant crown ethers, 1343
- effect of acidity and π - π interaction on benzylation of 1,3-diphenylpropanone, 3659
- electrocyclic ring-opening of α-fluorocyclopropyl radicals, 10071
- energetic and geometric contributions to aromaticity, effect of introduction of CH₂⁺ group, *ab initio* calculations of HOMA, EN and GEO contributions, 11383
- fluorobenzene and its radical anion, 6-31G* of electron densities and energy levels, 9835

- G2 calculations on heats of reduction of compounds with C=C, C=O and C=S groups, conformations, 10123
- graph analysis of deglycosylation of *N*-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, 10489
- hybrid HF-DFT calculations on pairs of neutral molecules and their conjugated bases to determine gas-phase acidities, 9741
- hydride reduction of cyclohexanones, origin of π -facial stereoselectivity, analysis of Exterior Frontier Orbital Extension, 9057
- 10-hydroxy-10,9-borazarophenanthrene and its anhydride, synth and hydrogen-bonding, structures and calculated bond lengths/angles, 8599
- (1'R,3'R)-trans-3'-hydroxycyclopentyladenine·HCl, a carbocyclic nucleoside, purification, calculations, thermochemistry, 7181
- ionisation constant determination of 9-deazaadenosine and formycin B, 6903
- lipase-catalysed enantioselective ester hydrolysis, interpretation of kinetic results in terms of frontier orbital localisation, 4889
- mediation of substituent effects via monoatomic SiMe₂, CMe₂ and CH₂ σ -spacers, 5825
- molecular structure of 6-methylene-3,7-dihydro-6*H*-purine cyanine dyes, charge distribution and DNA interactions, 12595, 12605
- tris-1,2,3-p-nitrophenylcyclopropene as a precursor of the corresponding cyclopropyl anion, 4129
- NMDO-PM3, benzo[1,2-c:4,5-c']bis[1,2,5]-thiadiazoles- $2S^{IV}$, and Se analogues, 10169
- nucleophilic additions to β-substituted carbonyl compds, of open-chain model of transition states, 13419
- orbital energies of perfluoro-radicals and radical anions, Hartree-Fock by INDO UHF, 1797
- PM3 molecular orbital approximation for conformational analysis of 2-aryl-1,3-dihydroxy-4,4,5,5-tetramethylimidazolidines, 16911
- PM3-RHF-CI of frontier orbitals in 3-[2-furyl-, 2-thienyl-, and (3,4,5-trimethylphenyl)]-acrylonitriles, photodimerisation, 17307
- prebiotic chemistry: a bioorganic perspective, 11493, 11595
- of reaction of silylketenes with acyl isocyanates followed by hetero Diels-Alder reaction with acetylene, 225
- reactivities of partially and fully fluorinated primary alkyl radicals, 9857
- semiempirical and *ab initio* methods for investigating the conformation of 4-aryl-dihydropyrimidine

- calcium channel modulators, 2803
- semiempirical MO of 1,2-dithienylethynes and other bis(five-membered heterocyclyl) ethynes, electronic structure, PE spectra, 13339
- (R,R)-tartaric acid ester, amide and nitrile derivs, conformations by X-ray, CD, NMR, ab initio, 6113
- tautomeric and conformational preferences in 2-nitraminopyridine, comparison of theoretical and experimental data, 17211
- theoretical and experimental studies of 1,3-dipolar cycloaddition of diazomethane to chiral azlactones, 4479
- transition states in Diels-Alder reactions of chiral 1-alkoxy-1,3-butadienes, diastereoselection in reactions with maleic anhydride and 4-phenyl-4*H*-1,2,4-triazole-3,5-dione, 13427
- use of similarity in organic synthesis planning, 3729 ZINDO I-level calculations of Pd-olefin interactions in Wacker oxidation, 10733
- see also Molecular modelling/mechanics

Thermochemistry

- ab initio calculations to study effect of angulargroup-induced bond alteration, 13027
- ab initio molecular orbital study on the mechanism of amide hydrolysis dependent on leaving groups, 4317
- ab initio and semiempirical calculations on formation of trimethylsilyl-, t-butyldimethylsilyl- and stannylketenes from ethoxyacetylene and ethoxy(silyl)acetylene, 8165
- ab initio and semiempirical methods for investigating the conformation of 4-aryl-dihydropyrimidine calcium channel modulators, 2803
- alkali induced intramolecular of 2-(3-chloropropyl)- and 2-(4-chlorobutyl)-4-substituted benzimidazoles bearing 4-nitro-, 4-amino-, and 4-methyl groups; ambident heterocyclic reactivity, 6937
- AM1 calculations on cycloadditions of 2,2-dimethyl-3,4-dihydro-2H-pyrrole N-oxide and N-(benzylidene)methylamine N-oxide with α,β -unsaturated lactones and esters, 7057
- AM1 calculations, mechanism of rearrangement of substituted bicyclic cycloheptatriene endoperoxides, 10401
- AM1 semiempirical calculations on the enol/enol tautomerism of β -diketones and β -ketoaldehydes and annular tautomerism in NH-pyrazoles, Mills-Nixon effect, 1403
- Amber force field calculations on binding of alkali metal ions to tetrahydrofuranyl-substituted long-chain carboxylic acids, 7403

- aromatic π - π interaction energy of complexes of aromatic hydrocarbons with a macrocycle containing four tropolone units in water, 11913
- charge-transfer complex formation and photo-induced electron-transfer reaction of dibenzo-7-silabicyclo-[2.2.1]hepta-2,5-dienes, 1265
- conformation and energies of stable conformations of bicyclo[5.3.1]undecane-8,11-dione, 5339
- Diels-Alder cycloaddition of dienes covalently connected to a Lewis acid such as 1-dimethylaluminium dienolates, 9637
- direct calculation of conjugation energies of annulenes and heteroannulenes from molecular dimensions, 17195
- effect of acidity and π - π interaction on benzylation of 1,3-diphenylpropanone, 3659
- electronic properties of 2,5-distyryl-heteroarylenes and 1,4-bis[2-(hetero-aryl-2-yl)ethenyl]benzenes containing the thienyl, furanyl or *N*-methylpyrryl as the heteroarylene moiety, 15069
- energy and electron transfer properties of methyl pheophorbide-a in zinc porphyrin-pheophorbide dyads, 13657
- graph analysis of deglycosylation of N-methylbakankosine (deriv of secologanin), synth of rearranged and epimerised aglycones, 10489
- heteronuclear binding of oxime- and Schiff base-containing aza- and diazacrown ethers with hard and soft metal ions, 17595
- high temperature bromination of benzhomobarrelene derivs, 14451
- hybrid HF-DFT calculations on pairs of neutral molecules and their conjugated bases to determine gas-phase acidities, 9741
- imidazoles bearing 1-fluorinated substituents with potential application as probes for intracellular pH determination; synth, acidity and ¹⁹F NMR, 8211
- kinetics and thermodynamics of ketalisation of tetrahydroxyketones, application to synth of ketal core of zaragozic acid, 11179
- magnetic susceptibilities of dicyclopentapyrenes, dicyclopentanthanthrenes and their congeners by use of the London-Hoarau method in framework of Wheland-Mann-type SCF MO approximation, 12875
- MM3 parameters for carbocations, 2767
- molecular modelling characterisation of the *N*-t-butoxycarbonylphenylalanyl enol family HIV-1 protease inhibitors, 4231
- pentacyclo[8.2.1.1^{2,5}.1^{4,7}.1^{8,11}]hexadeca-1,7-diene and its 4,5,10,11-tetramethyl deriv, hyperstable pyramidalized dienes, reactivity, 9727

phase reactions in aqueous surfactant systems, 9997 PM3, N-substituted fused pyrazoles and pyrazolinols, 17735

PM3 calculations, γ-cyano substituent effect in allylic bridgehead solvolyses, 8155

PM3 MO calculations on reaction of imidate derived from dimethyl aminomalonate with aldehydes as dipolarophiles, general route to 2-oxazoline derivatives, *ortho* and *meta* bis(2'-oxazoline-5'-yl)-benzenes, 6351

polyazacyclophane hexa-amine: design, synth and characterisation: interactions with d(CGCA₃ T₃GCG)₂, ctDNA and T4DNA, 8105

quantum chemical and MM-approach to *endo/exo* selectivity of Diels-Alder reactions in polar media, 119

of reaction of silylketenes with acyl isocyanates followed by hetero Diels-Alder reaction with acetylene, 225

resonance energies of azines and azoles, calculation from their molecular dimensions, 13111

semiempirical conformational analysis of 2-aryl-1,3-dihydroxy-4,4,5,5-tetramethylimidazoli dines, 16911

stereospecific photodecomposition of optically pure pyrazolines to cyclopropanes, 3777

structural determination of the regio and diastereoisomers obtained in the addition of 2-phenylcyclohexanone to chalcone by molecular mechanics calculations, 11693

substituent effects on the gas-phase basicities of 4-X-acetophenonesand4-X-2,6-dimethylacetophenones, a comparison with solution basicities, 731

theoretical and experimental studies of 1,3-dipolar cycloaddition of diazomethane to chiral azlactones, 4479

thermal stability of duplexes and triplexes of 5'-polyarene-tethered oligo-DNAs, 10409

thermodynamic stability of *cis, trans*-isomers from cycloaddition of ethene onto several cyclic nitrones, 11869

tunable transmission of the aromatic character of the aglycone through the anomeric effect in Cnucleosides drives its own sugar conformation, 6433

Thiadiazoles

1,3,4-thiadiazole derivs by reaction of 3-(benzothiazol-2-yl)-3-oxopropanenitrile with phenylisothiocyanate followed by addition of hydrazonyl bromides, 161

1,2,4-thiadiazoles, formation from 1,2,4-oxadiazoles by photo-irradiation in presence of S nucleophiles,

12629

Thiafulvalenes

mono-functionalised tetrathiafulvalene derivs by reactions of tetrathiafulvalenyllithium with aldehydes and ketones, 17781

Thiazepines

benzo[b][1,4]thiazepines by reaction of 2-aminothiophenols with acetylenic acetals, subsequent conversion to 2,4-substituted quinolines, 641

2- and 4-trifluoromethyl-1*H*-arylo-1,5-thiazepines, synth by reaction of 1,1,1-trifluoro-3-(isobutoxymethylene)-2-propanones with *o*-aminothiophenols, 5847

Thiazoles

4-amino-2,3-dihydroisothiazole 1,1-dioxides and 4-amino-1,2-oxathiole 2,2-dioxides, synth and anti-HIV activity of derivs of, 17795

4-azidothiazoles, neighbouring group effects on rates of thermolysis of, 9657

benzo[*d*]-1,2-thiazole-1,1-dioxide derivs *via* directed lithiation of 2,2-dimethyl-*N*-(phenylsulfonyl)-propanamides, 3615

4-chloromethyl-2-methyl-5-nitro—, reductive alkylation of 2-nitropropane anion by S_{RN}1 mechanism, 5471

organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7237

oriamide, a cyclic cytotoxic sponge peptide containing a novel amino acid, 2-[1-amino-2-(p-hydroxyphenyl)ethyl]thiazole-4-acrylic acid, 16147 C-(2-thiazolyl) nitrones, cycloaddition to chiral acrylates, synth of 2-(α-aminoalkyl)thiazoles and 5-formylpyrrolidin-2-ones, 3301

2-(1,1,1-trifluoroacetonyl)thiazoles by reaction of trifluoroacetyl ketene diethyl acetal with o-aminothiophenols, 5847

Thiazolines

(-)-mirabazole B, algal trithiazolinethiazole alkaloid, synth using chloroimidazolium coupling reagent, 8323

Thiiranes/thiirenes

dithiirane 1-oxides, optical resolution, absolute configuration, racemisation and isomerisation, 12203

thiiranes from epoxides using NH₄NCS/RuCl₃, (S)styrene episulfide formation from (R)-epoxide, 11377

thiiranium ion intermediates in synth of peptidase inhibitors, 3383

Thioacetals

acetals or thioacetals of δ - and ϵ -(phenylthio)ketones,

aromatic radical-anion induced reductive lithiation of, synth of δ - and ϵ -lithioketone equivalents, 17607

ketene dithioacetals, reduction and reactions with bis-nucleophiles, synth of substituted dithianes and heterocyclic thiols respectively, 17151, 17163

2-methyl-2-t-butyl-1,3-dithiolane and corresponding oxathiolane, deprotection by photosensitisation using catalytic aromatic nitriles, role of SET, 2219 α-oxoketene di—, use in ring annelation forming condensed and substituted indoles from 1-methyl-pyrrole-2-acetonitrile, 14737

stereocontrolled thio-Claisen rearrangement of S-allylic ketene aminothioacetals with adjacent hydroxy stereogenic centre, 17253

thioacetal and thioketal sulfoxides, synth by enantioselective oxidation of some dithioacetals and dithioketals using whole-cell cultures of microorganisms, 9695

thioacetalisation of aldehydes using TaCl₅-silicagel and TaCl₅ as Lewis acid systems, 14997

Thioacids

thioesterification of (1S,2S)-2-amino-1-phenyl-1,3propanediol with thioacids under Mitsunobu conditions, regio- and stereochemistry, 10615

Thioalkenes

2-phenylthio-3,3,3-trifluoropropene and its sulfoxide and sulfone, Diels-Alder reactions with various dienes, 6861

Thioamides

β-hydroxy—, formation of S-allylic ketene aminothioacetals with adjacent hydroxy stereogenic centre and their stereocontrolled thio-Claisen rearrangement, 17253

reactions with metal carboxylates in organic solvents, selective prep of nitriles, imides or amides depending on the substitution pattern, 14463

Thiocarbonyl compds

acetals or thioacetals of δ - and ϵ -(phenylthio)ketones, aromatic radical-anion induced reductive lithiation of, synth of δ - and ϵ -lithioketone equivalents, 17607

O-acyl derivs of N-hydroxy-2-thiopyridone, reaction of alkyl radicals of with acrylamide to form 2-(2-pyridylsulfanyl)-carboxamides, 12067

allenyl and methylallenyl anions, gas-phase generation, reactions with CS₂, COS and CO₂, mechanism of thioketene formation, 9847

chiral β-keto-α-thioxo-esters, asymmetric hetero-Diels-Alder reactions, formation of 2,3-dihydro-1,4-oxathiins (with enes) and 2-acyl-3,6-dihydro-2*H*-thiopyran-2-carboxylates (with dienes), 17383 cyclic and open-chain α-silylvinyl sulfides, synth via thioacyl silanes, acylation, 7897

Diels-Alder additions of diaryl thioketones with dienophiles, formation of 1*H*-2-benzothiopyrans, 961

G2 calculations on heats of reduction of compounds with C=C, C=O and C=S groups, conformations, 10123

3-oxo-2-phenyliodonio-dihydrobenzothiophene 1,1-dioxide ylid, reactions with —, 9365

thiolactones from ω -halo acid chlorides by use of benzyltriethylammonium tetrathiomolybdate as sulfur transfer reagent, 11835, corrig. 16607

see also other specific thiono-compds, Xanthates

Thiocarbonyl oxides

mono- and disubstituted sulfines by base-induced β-elimination of chloroform from allylic and benzylic trichloromethyl sulfoxides, 13933

trithiocarbonate oxides, synth by reaction of trithiocarbonates with *m*-chloroperoxybenzoic acid, subsequent addition reaction with oranolithiums provides trithioorthoester oxides, 1323

Thiocarbonyl sulfides

thione S-sulfide generation and cycloadditions to thiones and activated acetylenes, 939

Thioesters

alkoxythiocarbonylimidazoles, synth from thiocarbonyldiimidazole by reactions in solid phase, 2415

α-heterosubstituted thioacetates, boron aldol reactions with aldehydes and silyl imines, synth of precursors to (+)-thiamphenical and (-)-florfenical, 5909

α-hydroxythioesters by reaction of *trans*-1,3-dithiane-1,3-dioxide with aromatic aldehydes, 16213

4-penteneselenothioic acid S-alkyl esters, synth via seleno-Claisen rearrangement, 12237

Thioethers

aliphatic C-H bond formation on solid support, formation and Raney nickel desulfurisation of alkyl aryl thioethers, 6645

alkyl phenylglyoxylates containing — groups, photocyclization and photodimerisation, 7165, corrig. 12771

chiral Pauson-Khand reactions with acetylenic -, synth of alkylthio-cyclopentenones, 8651

cyclic and open-chain α -silylvinyl sulfides, synth, acylation, 7897

fluoro-dechlorination of α , α -dichloro—, synth of α -fluoro—, 12565

2-hydroxymethyl-1-phenylthioferrocene and 2hydroxymethyl-1-t-butylthioferrocene, kinetic resolution by lipase catalysed acetylation, subsequent oxygenation of the enantiopure thioethers to

yield ferrocenyl sulfoxides, 1361

phosphine oxide-dithioether macrocycles, oxidation of, synth of macrocyclic phosphine oxide-disulfoxides, steric control on selectivity, 12249

poly(arylene thioether)s containing fluorene and hexafluoro-2,2-propylidene units, monomers and polymerisation, 15237

poly(thioether) dendrimers, amplified, "genealogically-directed" divergent synth giving de Gennes dense packed state, 15495

vinyl sulfides, co-polymerisation with diethyl fumarate, spin-trapping/ESR study, 15297

see also Sulfides

Thiolanes/thiolenes

2-(alkylthio)thiolane 1-oxides, synth, metallation at C-2, alkylation and hydroxyalkylation, diastereoselectivity, 2459, corrig. 5641

Thiolesters

α-chloro α-(phenylsulfinyl) ketones (RCOCHCl SOPh), conversion into homologated acid esters, thiolesters, acids, amides (RCH₂COX), 7843

Knoevenagel condensation of *O,S*-diethyl monothiomalonate and *S,S'*-diethyl dithiomalonate with ethyl pyruvate, effect of ZnCl₂, 7097

Thiols

aromatic — as polymeric linkers for aliphatic C-H bond formation on solid support, 6645

1,3-benzenedithiol, condensation with aldehydes, formation of 1,2,10,12-tetrathia[3.3]metacyclophanes, conformational and geometrical isomerism. 3155

n-butanethiol, photooxidation in alcohols or acetonitrile, 2087

formation from phenols in Newman-Kwart rearrangements, 6073

generation of terminal — by reductive (Li/DTBB/THF, -78°) ring-opening of α -phenyland α,α -dialkyl-substituted 4-, 5- and 6-membered thiacycloalkanes, 5563

heterocyclic thiols by reactions of hydroxylamine, hydrazines, thiourea and guanidines with ketene dithioacetals, 17163

hydroxymethylacylfulvene (HMAF), illudin S derivative, reactions with -, 14579

introduction of a thiol function into moenomycin A and use to couple moenomycin to differently substituted maleimides, 17669

1-methylpyrrole-2-thiol and -2-selenol, synth tautomerism, thione and selone formation, 16783

4-, 5- and 6-phenylthio-2-hexanol, synth and transformation into ring closed compds, 9487 thiol acetic acid addition to exocyclic glycals

followed by deacetylation, S-alkylation and selective oxidation, synth of β -C-glycoside sulfoxides and sulfones, 16355

Thiones

see Thiocarbonyl compds

Thiophenes

(2-thienyl)pyridines and thiophene-pyridine oligomers, synth and characterisation, 11529

2-aminothiophenol, reaction with acetylenic acetals, synth of 2,4-substituted quinolines *via* benzo-[b][1,4]thiazepine intermediates, 641

2,5-bis(2-butyl-5-oxocyclopent-1-enyl)thiophene, synth by zirconium-mediated method, 9123

3-bromo-2,5-dimethylthiophene-1,1-dioxide, ringopening to prepare substituted benzo[b]indolizidines and benzo[b]quinolizidines, 771

1-deoxy-4-thio-D-ribose, synth from thiophene-2-carboxylic acid, 6019

3,4-diaminothiophene, starting material for synth of alkyl (4-aminothien-3-yl)carbamates *via* alkylation on the thiophene nucleus, 10331

diarylperfluorocyclopentenes having thiophene oligomers as the aryl groups, synth and photo-chromic reactivity, 12263

1,2-dithienylethynes and other thienylethynyl five-membered heterocycles, synth, electronic structure, PE spectra, 13339

bis(ethylenedithio)tetrathiafulvalene (BEDT-TTF) and dithiophenetetrathiafulvalene (DTTTF) π -donors, synth, 11627

3-nitro—, conversion into 1-(alkyl- and dialkyl-amino)-4-methylthio-2-nitro-1,3-butadienes, 8531

oligomers constructed from benzene and thiophene rings by transition metal coupling reactions, 10357 polysubstituted thiophenes by reaction of 3-(benzothiazol-2-yl)-3-oxopropanenitrile with phenylisothiocyanate followed by reaction with 2-bromoacetylbenzothiazole, 161

sexithiophene, synth of hexa(methylthio) derivs by Stille coupling of T1-SnR₃ and T2-Br, using Pd with (AsPh₃)₃ and other ligands,, 9401

thianinhydrin (5,5-dihydroxy-5,6-dihydrocyclopenta-[b]thiophen-4,6-dione), synth from 3-methylthiophene, 4239

thiophene-2-carbaldehyde, reaction with diethyl azodicarboxylate, formation of diethyl N-thenoylhydrazine-N,N'-dicarboxylate, 9313

2-thiophenyl-α-D-gluco-pyranosyl donors, glycosidation reactions of, 8837

Thiophosphoric acids and derivs

parathion (dimethyl and diethyl p-nitrophenyl phosphothioate), chemical model for enzymatic

mono-dealkylation, 17241

Thiopyrans

chiral β-keto-α-thioxo-esters, asymmetric hetero-Diels-Alder reactions, formation of 2,3-dihydro-1,4-oxathiins (with enes) and 2-acyl-3,6-dihydro-2*H*-thiopyran-2-carboxylates (with dienes), 17383 thieno[3,2-c] anellated and dithieno[3,2-c:2,3e]anellated 1,2-dithiins, synth from thiophene precursors, 7509

Thiosugars

1-deoxy-4-thio-D-ribose, synth from thiophene-2-carboxylic acid, 6019

synth of — as weak inhibitors of glycosidases, thiopyran derivs by rearrangement of thiepanes, 16731

Thioureas

hydrogen-bond mediated complexation of dihydrogen phosphate anion by bis-thiourea hosts, 1647

photo-irradiation in presence of 1,2,4-oxadiazoles, synth of 1,2,4-thiadiazoles, 12629

substituted thioureas, HgCl₂-promoted guanylation reaction of, scope and limitations, 5291

thiourea, hydrazines, hydroxylamines and guanidines, reactions with ketene dithioacetals, synth of heterocyclic thiols, 17163

Thromboxanes

2,3-dihydro-4*H*-pyran-4-ones (hex-1-en-3-uloses), reactions with C-nucleophiles, approach to — analogues, 7867

Tin and compds

- 3-trimethylstannylpyridine and 2-methyl-4-trimethylstannylpyridine, Stille coupling with 1,8-diiodonaphthalene, synth of 3,3'-(1,8-naphthylene)-bispyridine or 4,4'-(1,8-naphthylene)bis(2-methylpyridine), 3557
- α -alkoxyalkylstannanes by stereoselective opening of chiral α -stannylacetals with organometallic reagents, 7615
- *n*-butyltris(2-ethylhexanoate)tin as catalyst for reduction of imines to amines using stoichiometric polymethylhydrosiloxane, 16349
- organostannane synth by sonochemical Barbier reactions, 859
- organotin perchlorates as Lewis acid catalysts in Mukaiyama reaction of ketone silyl acetal, 14275
- polymer-supported distannane, synth by treatment of tin halide resin with lithium or sodium naphthalenide, application of the distannane to radical cyclisations of acyclic α -haloesters to yield γ -butyrolactones, 1301
- O-stannyl ketyls from ketone and aldehyde precursors, tandem radical cyclisations triggered by, 13583

 α -stannyl phenyl vinyl sulfides, synth by hydrostannylation of thioacetylenes, neighbouring tin effect in oxidations of, 12273

tin-mediated vinyl radical cyclization in synth of bicyclic and angularly fused tricyclic compds from *l*-menthone, 6085

tributylstannyl methoxide and thiophenoxide, Pdmediated substitutions forming C-O and C-S bonds from vinylic halides or triflates and acetylenic halides, 1025

tributylstannyl-diazoacetic esters as substrates for cross-coupling reactions; arylation, acylation, 2371 tributylstannylalkenyl carbohydrate derivs, synth *via* Bu₃SnCu reactions, 10765

vinyl-, aryl-, heteroaryl- and alkynylstannanes, reaction with 3-amino-4-arylisothiazole 1,1-dioxides to proviode 5-substituted isothiazole 1,1-dioxides, 15859

Titanium and compds

titanium complex of (4S,6S,8S,9R)-8-hydroxymethyl-9-methyl-1,7-dioxaspiro[5.5]undecan-4-ol as catalyst for ring opening of cyclohexene oxide with TMSN₃, 16545

carbohydrate-attached 1-methylbut-2-enyl titanocenes, asymmetric reaction with aldehydes, 16097

chiral salen-titanium complexes as catalysts for the trimethylsilylcyanation of aldehydes, 14327

chiral titanate complexes with helical ligands as catalysts for diethylzinc addition to benzaldehyde, 4145

TADDOL.TiCl₂ complexes as promoters of the enantioselective conjugate addition of silylketene acetals to 2-carboxycyclopentenones, 13009

titanium enolates derived from β-hydroxy ketones, condensation with phosgene iminium chloride or trimethylorthoformate, synth of 5,6-dihydro-4*H*-pyran-4-ones, 11211

titanium(III) tetrahydroborate, synth from titanium tetrachloride and benzyltriethylammonium tetrahydroborate, subsequent reaction with cyclic enol ethers to yield the corresponding acyclic diols, 2973

Tocopherols

see Benzopyrans

Toxins

brevetoxin, synth of the *trans*-fused seven-membered cyclic ethers corresponding to subunits of brevetoxin B and hemibrevetoxin B, 12917

ciguatoxin, absolute configuration of C2-OH group, synth of AB ring fragments, 3057

(+)-coronafacic acid and (+)-coronatine, phytotoxins from *Pseudomonas syringae* pv., synth by

- intramoleular 1,6-conjugate addition starting from (R)-(+)-4-acetoxy-2-cyclopenten-1-one, 9509
- fused cyclic polyethers related to marine toxins, biomimetic synthesis, 12425
- papyracillic acid, spiro-butenolide from ascomycete *Lachnum papyraceum*, reactivity towards nucleophiles, pyridine, *etc.*, 6209
- philanthotoxin-343 analogs, synth and pharmacological activity, 12391
- toxicarioside A, cardenolide isolated from *Antiaris* toxicaria latex, structure, 13557
- toxicarioside B and toxicarioside C, cardenolides isolated from *Antiaris toxicaria* latex-derived dart poison, structures, 16959

Trans-acetalisation/-acylation/-amination/-esterification

see Transfer reactions

Transannular reactions

melampolide cyclizations, synth of (*Z,E*)-cyclodeca-1,5-diene model systems, biosynthesis of guaianes, 11425

Transfer reactions

- design of a radical translocation step through 1,n (n=5-7) hydrogen transfers for incorporation into new radical cascades, 13797
- diazo from tosyl azide to 2-(trimethylsilyl)-1,3dithiane, carbenoid reactivity of 2-diazo-1,3dithiane, 9269
- oxygen from 1,2,4-oxadiazole 2-oxides to nitrile oxides, generation of nitrosocarbonyl compds, 1787 oxygen transfer reactions from an oxaziridinium tetrafluoroborate salt to olefins, 13727
- α-vinyl-, α-allyl- and α-allenyl-aldimines, -reactions by 1,3-proton shift leading to corresponding amines, 10803
- $\alpha\text{-vinyl-}, \quad \alpha\text{-allyl-} \quad \text{and} \quad \alpha\text{-allenyl-aldimines},$ transamination by 1,3-proton shift leading to corresponding amines, 10803

see also Electron transfer

Transition metals

- transition metal complexes as catalysts for hydroborations, 4957
- transition metal coupling reactions using arylcadmium chloride for synth of oligomers constructed from benzene and thiophene rings, 10357

Transition states

- nucleophilic additions to β-substituted carbonyl compds, theoretical study of open-chain model of —, 13419
- phase changes in aqueous surfactant systems, mechanistic aspects, phase diagrams, 9997

Trapping reactions

- bicyclic o-quinodimethanes, generation by photoenolization of bicyclic aldehydes and ketones, —, 15969
- cyclopentyne formed from different precursors, comparison of products, 9891
- generation and carbene reactivity of 2-diazo-1,3-dithiane, reactions with DMAD, dimethyl 3,3-dimethylcyclopropene-1,2-dicarboxylate, 1-tosyl-2-trimethylsilylacetylene, 9269
- 2,6,7,8,9,9a-hexahydro-1-thiabenz[cd]azulene 1,1-dioxide, 6,7,8,8a-tetrahydro-2H-naphtho-[1,8-bc]thiophene 1,1-dioxide, synth, SO₂ extrusion and -, 15957
- perfluoro-4-methylbenzyl radical, with 1-hexene, 1797
- trapping of diatomic sulfur and sulfur monoxide, 12225

Triazines

4-arylimino-1,3,5-triazin-2(1*H*)-one and pyrido-fused derivs, synth by reaction of aryl isocyanates on 2-(phosphoranylideneamino)nicotinateesters, 16061

Triazoles

- 4-alkyl-1,2,4-triazoles by transformation of bis-(1,2,4-triazol-1-yl)methane using methylene moiety as protecting group, 2253
- 1,4-dialkyl/aryl 2,3-di(hydroxyimino)butane, conversion into 1,2,5-oxadiazole 2-oxides and 2-phenyl-2*H*-1,2,3-triazole 1-oxides, 1751
- 5-, 6- and 7-halogenotriazolopyridines, synth from 2-picoline *N*-oxide, reactions with nucleophiles to yield 7,7'-bitriazolopyridines, 8257
- 3-hydroxy-3-(1,2,4-triazol-3-yl)cyclobutylphosphonic acid, inhibitor of imidazole glycerol phosphate dehydratase, synth from diethyl 3-oxocyclobutylphosphonate by addition of 5-lithio-1-trityl-1,2,4-triazole, 10289
- 4-pyrrolidino-1-(2-aryl-1,2,3-triazol-4-yl)-2-aza-1,3-butadienes, reactions with *N*-phenylmaleimide, diazonium ions, tosyl azide, diethyl azodicarboxylate, 9393
- 1,2,3-triazole isonucleosides, synth, 3831

Triazolines

triazolium salts by reaction of 1,3-diaza-2-azoniaallene salts with 1,3-butadienes and cumulenes, 5755

Tribochemistry

polycyclic aromatic hydrocarbons milled on alumina, H-transfer and carbonisation, 4051

Trienes

1-azatriene, cyclisation as a route to annelated pyrido[4,3-b], 4447

1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, dissociation in polar solvents, PMR, cyclic voltammetry, UV/vis/near IR spectra, 9935

14-membered trans-cis-cismacrocyclic triene, Diels-Alder reaction of, synth of an A.B.C[6.6.6] trans-syn-cis tricycle, 14937

octadecatrienoic acid ethyl esters, 1,5-hydrogen shift and isomerisation reactions of, 4531

substituted bicyclic cycloheptatriene endoperoxides, rearrangement of, mechanism, 10401

(±)-17α-vinyl-1,3,5(10)-gonatriene derivs bearing a lactonic bridge on the β-face, regiochemistry of Wacker-type oxidation of, 7577

Triols

1\(\alpha\),25-dihydroxyvitamin D₃ (calcitriol), hormonally active steroid hormone, synth of calcitriol A-ring fragments, 91

trans-5-hydroxycyclohex-3-ene-cis-dimethanol, formation from 4,5-epoxycyclohexane-1,2-dimethanol, 17527

3β,5β,7β-trihydroxy cycloheptenes, Pd-mediated asymmetric synth *via* endoperoxides, 5433

Triones

pyrido[2,3-b]acridine-5,11,12-triones, synth from *N*-protected quinolones, 341

Triptycenes

barriers to rotation in 9-substituted -, AM1 MO calculations, 4661

Troponoids

ammonium tropolone-5-sulfonate, water-soluble tetrameric formaldehyde condensate, calixarene-type structure, mass spectrum, NMR, 8635

Tropylium ions

1-t-butyl-4-cycloheptatrienyl-C₆₀ derivs, dissociation in polar solvents, PMR, cyclic voltammetry, UV/vis/near IR spectra, 9935

Tungsten and compds

carbohydrate functionalised 2-oxacyclopentylidene complexes of chromium and tungsten, synth by cycloisomerisation of butynols at a pentacarbonylmetal template, 5143

cyclic tungsten oxacarbene, synth by cyclisation of an acyclic alkynol, subsequent conversion into to pyranose glycals, 11061

tungsten complexes of 2,4,6-tris[bis(trimethylsilyl)-methyl]selenobenzaldehydes by reaction with W(CO), THF, 12167

vinyl W(CO), Fischer carbenes, cycloadditions with achiral and chiral dienes, synth of cyclohex-3-enyl and 4-oxocyclohexyl Fischer carbenes, 9323

Ugi-Passerini reactions

Ugi 4CC preparation of small molecule combinatorial

"libraries" via solid phase, 6653

Ultrasound effects

see Sonochemistry

Ultraviolet spectra

see Electronic spectra

Uracils

6-aryl-1,3-dibenzyl —, synth by Pd(0)-catalysed coupling, 16711

organo-Zn —, synth and reactions with Pd(0) and Cu(I) catalysis, 7231

reaction with lithium trimethylsilyldiazomethane and diazomethane, synth of annulated and fused heterocyclic systems, 7045

thymine-substituted Fmoc-protected amino acids, synth, 1167

uracil-5- and 6-acetic acids, and 5,6-dihydrouracil-1-acetic acids, anodic decarboxylative oxidation, formation of acetoxymethyl and trideuteriomethyl derivs, 2609

Ureas

isoselenoureas by imidoylation of amines with selenium and isocyanides, 12159

N-methyl-N-nitroso—, mechanism of decomposition in water and reactions with deoxyguanosine, nucleotide and oligonucleotide, 4063

3-ureido-1,5-benzodiazepine-2,4-diones, resolution of 3-amino precursor, 7347

Urethanes

5-phenyl-1,4-oxazin-2-one, generation and trapping of azomethine ylid from 4-t-butyloxycarbonylmethyl deriv, 12671

primary amine —, electrochemical oxidation and enecarbamate formation, 4579

see also Carbamates

Uridines

5'-dimethoxytrityl 2'-(dansylamino)uridine 3'phosphorobisdiethylamidite for synth of oligonucleotide derivs having a dansyl fluorescence label at the 2'-position of a ribonucleoside, 4265

reaction with lithium trimethylsilyldiazomethane and diazomethane, synth of annulated and fused heterocyclic systems, 7045

Vaccines

synth of monosaccharide components of the Ospecific polysaccharide of the lipopolysaccharide of the enteropathogenic bacterium Shigella sonnei, 4150

Vanadium and compds

low-valent vanadium complexes for direct geminal diallylation of carbonyl compds, 9525

O₂-H₂O₂-vanadium complex-pyrazine-2-carboxylic acids as an oxidation reagent, 3603

Vilsmeier reactions/reagents

3*H*-4,5-dihydropyrrol-2-yl indoles, synth *via* — reaction using pyrrolidin-2-ones, 8573

formylation of imidazo[2,1-b]oxazoles, 6959

Vitamins

- D₂ and D₃, conversion into hydrindanones and thence into vinylhexahydroindenes in synth of steroid-anthraquinone hybrids, 10871
- D₃, approach to rings CD by diastereoselective intramolecular cyclopropanation in synth of 6-methyl-2-oxobicyclo[3.1.0]hexane-1-carboxylic ester, 13307
- D₃, stereoselective synth of $1\alpha,24(R)$ -dihydroxy— by the dienyne route, 4703
- D, C-ring functionalisation at C-11 by Cu-mediated alkylation, 10851
- D, synth of calcitriol A-ring fragments of 1α , 25-dihydroxyvitamin D₃ (calcitriol) from (S)-(+)-carvone. 91
- E and K, synth by application of reaction of 1-(1,2-propadienyl)cyclopropanols into substituted hydro-quinones using octacarbonyldicobalt, 11069
- E, α-tocopherol (vitamin E), formation of 5,6-tocopheryldione (α-tocored) from α-tocopherol via a 5-alkoxytocopherol intermediate, 3571

Wacker reactions

deprotection of alcohol prop-1- and 2-enyl ethers by PdCl₂/CuCl-catalysed —, 17501

Water, reactions in

see Solvents and solvent effects

Williamson reactions

using polyethylene glycol as catalyst and without solvent, 2119

Wittig reactions

- alkylidenecyclopropane fatty acids, synth involving Wittig reaction, 16699
- aza—, 2-(phosphoranylideneamino)nicotinate esters, reaction with aryl isocyanates, synth of 4-arylimino-1,3,5-triazin-2-ones and fused derivs, 16061 chlorophyll-a homologues, synth by from methyl pyropheophorbide-d, 10677
- intramolecular in synth of furo-furanones related to goniofufurone, 4815
- Michael-Wittig reactions of methyl 3-oxo-4-(triphenylarsoranylidene)butanoate and substituted 2H-pyran-5-carboxylates, synth of highly functionalised2-cyclohexenonedicarboxylates, 2241 reactions of alkylidenephosphoranes with symmetrically substituted p-quinones, 13945
- Wittig reagent reaction with substituted 2-amino-1,4-naphthoquinones, 3649

Wittig rearrangements

see Rearrangements

X-ray crystal structures

- (22R,23R,24R)-3β-acetoxy-22-bromo-23-hydroxy-2 4-methyl-5α-cholestan-6-one and 3β-acetoxy-22-hydroxy-23-bromo-24-methyl-5α-cholestan-6one, 17039
- adduct from Diels-Alder reaction of benzo[3.3]-orthoanthracenophane with *N*-(*p*-nitro-substituted phenyl)maleimide, 6817
- adducts from cycloaddition of 4-substituted protoanemonin with non-stabilised azomethine ylids, 10633
- alkoxydisulfide, 12225
- 6-(1-allyl-1,2-dihydro-2-oxopyridin-3-yl)-3,4-dihydro-3-phenyl-4-(phenylimino)-1,3,5-triazin-2(1*H*)one; 9-methyl-2,3-dihydro-3-phenyl-2-(phenylimino)pyrido[1,2-*a*]-1,3,5-triazin-4-one, 16061
- 5-amino-2-(4-fluorophenyl)-4,5-dihydro-1-methyl-1*H*-imidazol-5-amine, three derivs, both configs at C-5. 5359
- 3(5)-amino-5(3)-(4-X-phenyl) pyrazoles, X = H, OMe, Cl, Br, NO₂, study of annular tautomerism, 10783
- (1S,2S)-1,2-bis[(1S)-azido-2-oxo-2[(4S)-benzyl-2-oxo-3-oxazolidinyl]ethyl]cyclopropane, 10459
- 3,4;10.11-bisbenzo-1-phenyl-1-phospha-5,9-dithia-cyclododecane-1,5,9-rioxide, 12249
- 2,3;8,10;14,15-trisbenzo-1-phenyl-1-phospha-6,12-dithiacyclopentadecane-1,6,12-trioxide, 12249
- 2-(4H-3,1-benzooxazin-2-yl)benzoic acid, 5305
- N-benzoyl-6-carbomethoxy-1,4,5,6-tetrahydro-4- ox opyridine, 4457
- benzyl (2S,4S,1'R)-N-t-butoxycarbonyl-4-(1'-N-para-toluenesulfonamidobenzyl)pyroglutamate and its dicylohexylamine salt, 10545
- (1*R*,2*R*,4*S*,5*S*)-2-[(4*S*)-benzyl-2-oxo-3-oxazolidinyl) carbamoyl]-2-(2,4,6-triisopropylbenzenesulfonyl-amino)bicyclo[3.1.0]hex-3-one, 10459
- 1-benzyl-2-(1-hydroxyethyl)-6-phenylpiperidin-4-one cyclic hemiacetal (6-oxa-2-azabicyclo[3.2.1]octane deriv); also 2-(1-hydroxy-2-methylpropyl) and 6,6-dimethyl analogues, neither cyclized, 5423
- AB-cis-1-benzyloxycarbonyl-4aβ,6β-dimethyl-5α, 6α-epoxyperhydroquinoline (no details), 11237 bis-[2,2'-bi(1, 3-dithiolylidene)-4-yl]methyl methyl
- (1,1')-bi(dibenzofuranyl)-2,2'-diyl-N-(α-(S)-methyl benzyl)phosphoramidate, 5899

ether, 17781

6-(biphenyl-4-yl)bicyclo[6.1.0]nonan-6-ol-2-spiro-2'-[4',5'-di(methoxymethyl)-1,3-dioxolan] (no

- details), 9043
- bis(2,2'-biphenylylene)dichloro- and -difluoroper-tellurane, 12183
- 10,10'-bis(N,N-dimethylthiocarbamoyloxy)-9,9'-biphenanthrene, 6073
- 7,7'-bis(1,1,4,4-tetrachloro-1,2,3,4-tetrahydrophenazine), CHCl₃ solvate, 6183
- bistetraphenylphosphonium decacyanooctatetraenediide, 15593
- 2,2'-bistrimethylsilyloxybiphenyl-6,6'-diol, (R) menthonide and (S)-isomenthonide, 16663
- 4-(4-bromophenyl)-5-[(E)-2-(4-bromophenyl)-3,3-di methylbut-1-enyl]-1,3-bis(2,4,6-trichlorophenyl)-1*H*-1,2,3-triazolium hexachloroantimonate, 5755
- (-)-brucine salt of (R)-1,2-dimethyl citrate, 427, corrig. 2667
- C,N,N'-[4-t-butyl-2,6-bis[methyl(ethyl-2,2,2-d₃)-aminomethyl]phenyl]dimethylgermanium-Geλ⁵ chloride, CH₂Cl₂ solvate, 10133
- 6-t-butyl-11,11-dimethyl-1,3-diphenyl-2,9-dithiatricyclo[6.2.1.0^{4,8}]undeca-3,6-dien-10-one, 9921
- N-[2-(t-butylmethylamino)-2-phenylethyl]piperidine, dimer of derived Li amide, 7191
- cis-6-t-butyl-2-tosylmethyltetrahydropyran, 6171 calix[4], -[6]- and [8]arenes with t-butyl and OH groups on outer rim, inclusion compds, 3287
- N-(2-carboxycyclopropylcarbonyl)proline t-butyl ester, 17417
- (Z)-1-[2-chloro-2-(methylsulfinyl)ethenyl]-4-methoxybenzene, 10527
- $(1S, R_{Se})$ -5-chloro-10,10-dimethyl-5-(p-methoxyphenyl)- $5\lambda^4$ -selena-4-oxatricyclo[5.2.1.0^{3,7}]decane, 12115
- $(1S, R_{se})$ -5-chloro-10,10-dimethyl-5-phenyl-5 λ^4 -selena-4-oxatricyclo[5.2.1.0^{3,7}]decane, 12115
- 6-chloro-9-[2-[(diethylphosphono)difluoromethyl]-cyclopropylmethyl]purine (few details), 11297
- (4R,S)-4-(o-chlorophenyl)-1,4-dihydro-2,6-dimethyl -5-(p-tolylsulfinyl)pyridine-3-carboxylate, 4279
- 15-crown-5 complex of the sodium salt of 2-nitroimidazole, 13177
- cycloadduct from (4S,5S)-6-acetoxy-4,5-epoxy-4-methylhexanaldoxime and N-methylmaleimide, 14339
- cycloadduct from (6R,7S)-8-acetoxy-6,7-epoxy-4-oxa-2-octanone oxime and N-methylmaleimide, 14339
- cycloadduct from epoxycampholenaldoxime and N-methylmaleimide, 14339
- cyclobis(2,6-pyridinedicarbonylethylenediamine), tetra-N-benzyl-, N,N'-(pyridine-2,6-dicarbonyloxyethyl)-N,N'-dimethylpyridine-2,6-dicarbon-

amide, and Ag+ complex, 10841

- cycloleonuripeptide D, cyclic decapeptide, 1617 1-[1-cyclopentadienyl(cyclopentadienyl)iron]-1-[2,2'-bi(1, 3-dithiolylidene)-4-yl]ethanol, 17781
- dactylallene, C₁₅ cyclic 12-membered ether with bromoallene side-chain, 17343
- 7-deoxy-1,2-5,6-di-*O*-isopropylidene-L-*glycero*-α-D -*gluco*-heptofuranose, 15135
- (1S,2R,3R,5R)-1,5-diacetoxy-2-methyl-3-phenyl-methoxycyclohexane, 91
- dibenzo-7-silabicyclo[2.2.1]hepta-2,5-diene, 1265
- 1,11-di-t-butyl-5-(3-phenylprop-2-en-1-ylidene)tri-cyclo[5.2.2.0^{2.6}]undeca-3,10-diene-8,9-dione (no details), 17361
- 4-(2,4-dichlorobenzoyl)-2,3,5-tribenzoyl-1-phenyl-cyclohexanol, 1045
- dichlorobis(1-cinnamoylamino-1-pyridinium) zinc(II), 6411
- di-μ-chlorobis[1-[1-(dimethylamino)ethyl]-2-naphthalenyl-C,N]dipalladium, two diastereomers, 4083 1,2-dihydro-4-methoxy-5-methyl-3H-pyrazol-3-one, and 2,5-dihydro-4-methoxy-3-methyl-5-oxopyrazole-1-carboxamide, 5617
- dihydroarteannulin B derivative, 14975
- 2-(1,4-dihydro-5,8-dimethoxy-4-oxoquinolin-2-yl)-2 -hydroxypentanedioic acid, diethyl ester, 12717
- [4,5-dihydro-3-(phenylsulfinyl)-2-furyl]-(pyrrolidino)methylene chromium pentacarbonyl, and the mono-decarbonyl intramolecular Cr-S chelate, 17297
- (1S,3R,4R,5S,7S)-3,4-dihydroxy-7-phenyl-1-aza-8-oxabicyclo[3.2.1]octane, 14339
- dimethyl4-ethanoyloxy-3,4-dihydroisoquinoline-3,3dicarboxylate, 6351
- 2,4-dimethyl-1-methoxy-8-oxabicyclo[3.2.1]oct-6-en-3-one, 11669
- (E)-2,5-dimethyl-2,5-dinitrohex-3-ene, 17221
- (αR,2S)-N,N-dimethyl-2-methyl-3-α-methylbenzylamino-5-oxo-5-phenyl-3-pentenamide, 6893
- 5-(3,3-dimethyl-2-phenylbut-1-en-1-ylidene)-4-[(Z)-2,2-dimethyl-1-phenylpropyl-1-idene]-4,5-dihydro-1,3-bis(2,4,6-trichlorophenyl)-1*H*-1,2,3triazolium hexachloroantimonate, 5755
- N-[(5R)-10,10-dimethyl-3,3-dioxo-3 λ ⁶-thia-4-aza-tri cyclo[5.2.1.0^{1.5}]dec-4-yl](2S)-2-deoxy-2-methyl-4,5:7,8-di-O-isopropylidene- α -D-manno-oct-3-ulo-furanosonamide, 12947
- dimethyl-5,5'-dichloro-2,2'-biindolyl-3,3'-diacetate, 16553
- N-[(dimethylamino)methylene]phenoxyacetamide, 15827
- 1R,3R,5S,6S,7S)-6,7-dimethyltricyclo[3.2.1.0^{3,6}]-

- octan-3,7-diol, 8067
- 4,8-diphenylbenzo[1,2-c:4,5-c']bis[1,2,5]thiadiazole -2S^{IV}, 10169
- 3(R)-[N-(diphenylhydroxymethyl)carbomethoxymethylpyrrolidin-2'-yl]-4(S)-t-butyldimethylsiloxymethyl)-butan-4-olide, 1457
- 1,3-di-(2-pyridyl)imidazolidine-4,5-diol, 2557
- 2-[(1,3-dithian-2-ylidene)amino]-3-(trimethylsilyl)-maleic acid, dimethyl ester, 9269
- 1-(3,5-dithiatricyclo[5.2.1.0^{2.6}]decane-4-ylidene)-indane-2-spiro-4'-(3',5'-dithiatricyclo[5.2.1.0^{2.6}]decane), 10441
- dithieno[3,2-c:2',3'-e][1,2]dithiin, 7509
- (1RS,3SR)-dithiirane 1-oxide, 12203
- 3,4-di-(p-tolylamino)-1-(2-pyridyl)-9-hydroxybenzo [g]isoquinoline-5,10-dione, 5455
- d o d e c a h e d r a n e (u n d e c a c y c l o $[9.9.0.0^{2.9}.0^{3.7}.0^{4.20}.0^{5.18}.0^{6.16}.0^{8.15}.0^{10.14}.0^{12.19}.0^{13.17}]$ icosane), results from single crystal, 10029
- 5,6,7,9,10,11,16,17,18,20,21,22-dodecahydro-6,21: 10,17-dimethano-23,24-dioxotribenzo[1,2-a:4,5-a':f:f']bis(cyclodecene) bis-ethylene acetals, and congeners (3 compds), 3015
- domohinone, 15663
- ent-(5R,9R,10S,12S)-15,16-epoxy-10-hydroxy-cleroda-3,7,13(16),14-tetraene-17,12;18,19-diolide, diterpenoid, 14719
- 5-ethyl-7-nitrotriazapentalenoindanone, 7021
- 3-o-ethyl- and -isopropyl-phenyl 10-p-t-butylphenyl pyrimido[4,5-b]quinoline-2,4(3H,10H)-diones (5-deazaflavins), atropisomeric structures, 4601
- 8,15-(ethylenedioxymethano)-7,8,9,14,15,16-hexahydrobenzo[6,7]cyclodeca[1,2-b]anthracene and corresp. naphtho[2',3':6,7] benzolog, cycloadducts with NPM, DMAD, DMADC across anthracene 9,10-positions, 885
- (R)-3-ethyl-3-(4-nitrophenyl)piperidine-2,6-dione, 7917
- 2-ferrocenyl-1-aza- and 1,4,5-triaza-tricyclo-[6.2.2.0^{2,7}]dodec-2(7)-ene-4,5-dicarboxylic acids, *N*-phenylimides, 12369
- 4-fluoro-3-(1,1-dimethylethyl)-benzo[d]-1,2-thiazole-1,1-dioxide-7-carboxylic acid methyl ester, 3615
- heboxidiene, 2785
- hexaaryltellurium (TeAr₆), 12195
- 6a,7,8,9,10,10a-hexahydro-7,10-methano-6-methylphenanthridinium hexachloroantimonate, 625
- 1,2,6b,12,12a,12b-hexahydro-2,2,12,12-tetramethyl-cyclopenta[1,2-c:5,4,3-de]di[1]benzopyran, 16177
- 1,3,4,6,7,9-hexaphenyl-2,10,11-trioxa-4,9-diazatricyclo[5.2.1.1^{3,6}]undecane-5,8-dione, 9921

- (6R)-1-[(1R)-2-hydroxy-1-phenylethyl]-6-(3-indolyl)-2-piperidone, 719
- N,N'bis(2'-hydroxy-3'-carbonyl-5'-bromobenzyl)-1,10-diaza-4,7,13,16-tetraoxacyclooctadecane, 17595
- 10-hydroxy-10,9-borazarophenanthrene and its anhydride bis(10,9-borazarophenanthren-10-yl) ether, 8599
- trans-4-hydroxycycloheptyl-N-phenylcarbamate, 4-oxocycloheptyl-N-phenylcarbamate, t-2-fluoro-t-5hydroxycycloheptyl-r-N-phenylcarbamate, 17055
- 1-(2-hydroxyethyl)amino-4-methylthio-2-nitro-1,3-butadiene, 8531
- 6-[hydroxy-(6-methoxyquinolin-4-yl)methyl]-3phenyl-1-azabicyclo[2.2.2]octan-3-ol (endo-3phenylrubanol), 9145
- (1*S*,*S*)-2-hydroxymethyl-1-t-butylsulfinylferrocene, 1361
- (exo)-6a-hydroxymethyl-8-methyl-1,2,5,6,7,8,6a,9b-tetrahydro-4*H*-pyrrolo[3,2,1-*i*,*i*]quinoline, 8941
- 9-hydroxymethyl-6-methyl-4,7-dioxa-1-azabicyclo-[6.2.0]decane-3,10-dione, 14153
- 2,6-bis-(2'-hydroxyphenyl)pyridine and 3,5-bis-(2'-hydroxyphenyl)pyrazole, 11645
- isaindigotidione, an indolizino[7,6-c]quinoline-6,12-dione, and isaindigotone, a pyrrolo[2,1-b]-quinazolin-9-one, alkaloids, 13323
- (1*S*,2*S*,6*R*,8*R*)-1-isopropyl-5-(hydroxymethyl)-8-methyltricyclo[4.4.0.0^{2,8}]dec-4-ene, 11563
- 4-isopropylamino-6-phenylpyran-2-one, 6893
- 3-(1-isoquinolinyl)-1-methylindol-2-yl diphenyl phosphine, two complexes to Pd, metal linked to diphenylallyl and a naphthylethylamine, 4035
- isoxazolidine derived heterocycle from 1,3-dipolar cycloaddition of a δ-alkenyl oxime derived nitrone, 15051
- ligulaverin A, eremophilane deriv, 6195
- meso-2,3-bis(2,2,2-trifluoroethyl)succinonitrile,4437 (4Z-,10E,12Z)-(8S,9S)-8-methoxy-1,1-bis(methoxyc arbonyl)-5,9,13-trimethyl-8-methoxycyclotetradec a-4,10,12-trien-3-one, 14937
- (11S,12S)-12-methoxy-5,5-dimethoxycarbonyl-1,7, 11-trimethyl-*trans-cisoid-cis*-tricyclo[8.4.0.0^{2,7}]-tetradec-7-en-3-one, 14937
- (2R,3R)-N-(4-methoxybenzyl)-2,3-dihydroxy-4-cyanopyrrolidine, 7501
- η⁵-[4-methoxy-1-(1-methoxycarbonylvinyl)cyclohexadienyl] dicarbonyl triphenylphosphine iron(I) hexafluorophosphate, 4095
- 1-(o-methoxyphenyl-3,4-dihydro-1*H*-[1]benzothieno [3,2-c]pyrans, 12651
- N-(2-methoxyphenyl)phthalisoimide, 5305

- methyl 4-aryl-6-methyl-4-oxo-1,2,3,4-tetrahydropyrimidine-5-carboxylates and methyl 3-formyl-6methyl-2-oxo-4-phenyl-1,2,3,4-tetrahydropyrimidine-5-carboxylate, 2803
- methyl 4-C-(2,5-dimethoxy-4-methylphenyl)-2,3,6trideoxy-α-L-erythro-hex-2-enopyranoside, 6035
- methyl 6-methoxy-7-oxobicyclo[3.2.0]hept-3-ene-6-carboxylate, 10019
- (1S,3R,4S,5S,7R,8R)-3-methyl-7,8-O-isopropylidene -3,4,7,8-tetrahydroxy-2,6-dioxabicyclo[3.3.0]octane, 15135
- 7-epi-7-C-methyl-castanospermine and 1-C-methyl-castanospermine, 245
- 3-methyl-6[1-(1-acetoxypropionyloxy)propyl]-1,2, 3,6-hexahydrophthalic acid, 1-methyl-2-ethyl ester (A-seco-mevinic acid precursor), 1003
- (2S,3S,4S)-3-methylenecarboxy-4-(2-methoxy-phenyl)pyrrolidine-2-carboxylic acid, 5255
- 4-methyl-5-phenyl-3-tosyloxazolidines, 2-acetyl- and 2-(1-methyl-1,2-dihydroxyethyl)-, 1759
- 5-methylthieno[2,3-d]-1,3-dithiole-2-thione, 11627
- 3-methyl-5,7,8-trihydroxy-2-aza-anthraquinone, 109 3,3'-(1,8-naphthylene)bispyridine, 3557
- 4-nitro-8-oxo-trans-decalin-2-carboxylic acid, ethyl ester, 16711
- 7-*O*-benzyl-6-(dichloromethyl)-1,2:3,4-di-*O*-iso-propylidene-β-L-*glycero*-D-*galacto*-heptopyranose, 5403
- octahydroxyorthocyclophane and octamethoxydiketoneorthocyclophane, 17633
- 2,3,4,5,10,11,12,13-octamethyl-1,6,7,8,9,14,15,16-octathiatetracyclopenta[*a,c,g,i*]cyclododecene,7509
- 4,4'-bis-t-octylbenzo-21-crown-7, 4,4'-bis-t-octylbenzo-24-crown-8 and 4,4'-bis-t-octylbenzo furano-21-crown-7, 13557
- oxazolidin-2-ylidene-aryl-acetic acid methyl ester, 10433
- 1,3-bis-[2-(2-oxobenzimidazol-1-yl)ethyl]-2-oxobenzimidazole, 7689
- (R)-pantholactone (S)-2,5-dihydrothiophene-2-carboxylate, 6019
- paralinone A, diterpene ester with tetracyclo-[7.6.1.0^{3.7}.0^{10,14}]hexadecane skeleton, 3215
- 31,32,33,34,35-pentahydroxy-5,11,17,23,29-penta-t-butyl-2-(4'-formylphenyl)calix[5]arene, 13037
- (2S-1'S/2R-1'R) 2-phenyl-2-(1',3'-diphenyl-3'-oxopropyl)cyclohexanone, 11693
- (4R,2'R,3'R)-4-phenyl-3-(2'-bromo-4'-methyl-3'-phenylpentanoyl)-2-oxazolidinone, 16645
- (S)-(1-phenylethyl)ammonium(R,S)-4-cyano-2-ethyl-2-(4-nitrophenyl)hexanoate double salt, 7917
- (R)-phenylglycyl-(R)-phenylglycine, inclusion

- compds with phenyl ethyl and phenyl isopropyl sulfoxides, and with bis[(o-methylsulfinyl)benzyl] ether, 8315
- 1-phenylthio-1-(tricyclohexylstannyl)ethene, 12273 phosphine oxide-dithioether macrocycles and monothioether monosulfoxide, 12249
- phosphoramides derived from (S)-proline, 3513
- products of cycloaddition of 1,2,3,4,9,9-hexachloro-1α,4α,4αα,8aβ- and 1α,4α,6,7-tetra-hydro-1,4-methanonaphthalene to MTAD, PTAD and N-methylmaleimide, 14895
- 4,5-bis(propargylthio)-1,3-dithiol-2-thione, 11627 *N*-(2-propyl)-3-(4-chlorobenzoyl)-4-ethoxycarbonyl methylpyrrolidine-2,5-dione, 17643
- 4*H*-pyrido[2,1-*a*]isoquinolin-4-one, 1,2,3,6,7,11b-hexahydro-1-hydroxy-9,10-dimethoxy-, 3045
- rearranged hydroperoxide product from reduction of artemisinin, 7493
- ring rxpansion products from oxidation of polychalcogenadisilabicyclo[k.l.m]alkanes, 12215
- 3,4-seco-cycloart-4(28),24-diene-6-hydroxy-26-ol-3,29-dioic acid-29-α,γ-lactone-3-methyl ester, 529 sinulobatin A. diterpenoid from coral with
- sinulobatin A, diterpenoid from coral with polyhydro-phenalene structure, 4569
- (R,R)-tartaric acid derivs: monomethyl ester dimethylamide; diamide; monoamide monodimethylamide; di(methylamide), 6113
- taxinine and taxinine B, 4621
- tetrabenzoxazine derivs in which pairs of adjacent oxazine rings are connected by an aliphatic chain, 17691
- 5,11,17,23-tetrakis(1,1-dimethylethyl)-25,26,27,28-biscrown-3-calix[4]arene 1,2-alternate conformer, 3767
- tetrakis(-meso-trans-1,4:5,8-dimethano-1,2,3,4,5,6,7,8-octahydroanthracen-9-yl) porphyrin-FeCl, a D₄-symmetric metalloporphyrin, 11257
- bis-1,1,3,3-tetramethylindan-2-spiro-2',5'- Δ^3 -1',3', 4'-telluradiazoline, 8137
- 2,4,6,13-tetraoxapentacyclo[5.5.1.0^{3,11}.0^{5,9}.0^{8,12}]tridecane, 2401
- 2,4,6,8-tetraphenyl-2,4,6,8-tetraazabicyclo[3.3.0]-octane, 2551
- 2,6,9,13-tetratosyl-2,6,9,13-tetraaza[14](9,10)-anthracenophane, 2629
- tetraundecyl tetrakis[dihydro-3-(4-nitrophenyl)-1,3-benzoxazine] calix[4]arene·2Me₂CO, and tetrapentyl tetrakis(dihydro-3-mesityl)-1,3-benzoxazine calix[4]arene·CH₂Cl₂, 10709
- bis(thioacetanilide)mercury(II), 14463
- 1-p-tolylsulfinyl-1-methylsulfenyl-2-phenyl-ethene, 2959

- (2S,3R)-N-tosyl-2-vinyl-3-mesyloxy-pyrrolidine, 1369 threo-1-(1-tosylaminoethyl)but-3-en-1-ol, and its N-benzyl erythro- diastereomer, 13373
- 3,4,6-tri-*O*-benzyl-2-*C*:2-*O*-methylidene-α-D-glucohexopyranosyl-hydroperoxide and 3,4,6-tri-*O*benzyl-2-deoxy-2-*C*-methylene-α-D-lyxohexopyranosyl-hydroperoxide, 185
- tricarbonyl[(3S,4R,5R)-O-(t-butyldimethylsilyl)-4-methyl-5,7-octadien-3-ol]iron, 4185
- (4S,5S,1'S)-5-[1',3',3'-trimethyl-2'-oxacyclo-hexane]-3-hydroxy-2-oxo-1-oxacyclopentane, 659 3-(6-triphenyliminophosphoranopurin-9-ylmethyl)-furan, 11577
- Tröger's base of 5-amino-1-phenylpyrazole, 2233 tungsten complexes of 2,4,6-tris[bis(trimethylsilyl)-methyl]selenobenzaldehydes, 12167

yunnanin A, cyclic heptapeptide, 1607

X-ray crystallography

X-ray powder analysis of cyclisation of 1,5-dinitrile systems with hydrogen halides, 4487

Xenon and compds

Xe(II) trifluoroacetate, oxidation of aryl iodides by, synth of bis(trifluoroacetoxyiodo)arenes and related compds, 1145

Ylids

- 1β-methyl carbapenem synth via an iodonium ylid, 1635
- alkylidenephosphoranes, reaction with symmetrically substituted *p*-quinones, 13945
- dibenzo[b,d]thiopyrylium tetrafluoroborate cycloadducts with 1,3-dienes, — formed by action of base on adducts, 4611
- 3,4-dihydropyrrolo[1,2-a]pyrazine, formation and cycloadditions, 9341
- C-disubstituted ylids by reaction of diazinium ylids with diazonoium salts, mechanism, 4411
- isomünchnones (4-oxidooxazolium betaines) and 1,4-oxazines with carbonyl ylid structure, from α-diazo-carboximides with Rh(II) catalysis, 7777
- non-stabilised azomethine ylids, intramolecular cycloaddition reactions with 4-substituted protoanemonin, 10633
- 3-oxo-2-phenyliodonio-dihydrobenzothiophene 1,1-dioxide —, synth, reactivity, trimer formation, reaction with thiocarbonyl compds and olefins, 9365
- oxonium formation when methylene is trapped by 3-methoxycyclohexene, 9823
- 1-(penta-2,4-dien-1-yl)pyridinium 1-ylids, synth and [1,7] electrocyclizations, formation of 10,10a-dihydropyrido[1,2-a]azepines, 14687
- 5-phenyl-1,4-oxazin-2-one, generation and trapping

- of from 4-t-butyloxycarbonylmethyl deriv; other potential 4-aminal-derived ylid sources, 12671
- [1,2,3]triazolo[1,5-a]quinolines, ylids derived from 2-phenacyl and 2-methoxycarbonylmethyl quaternary salts, reactivity towards dipolarophiles, 12765

Zeolites

- acid —, nature of blue species observed with adsorbed 1,1-diphenylethylene, 4715
- epoxidation of allylic alcohols by TBHP in presence of —, diastereoselection in secondary alcohol reactions, 11369
- for promotion of microwave-assisted oxidation of saturated and unsaturated alcohols with t-butyl hydroperoxide, 15867
- thianthrenium radical cation studied by ESR in acid -, 4947
- see also Clays and earths, Supported reagents/ reactions

Zinc and compds

- acyl-Zn species, reaction of acyl halides with Zn dust, formation of enol esters *via* proposed carbene intermediate, 17265
- alcohols and hydroperoxides by oxygenation of organo-Zn compds in perfluorohydrocarbons, hydroboration-B/Zn exchange, and Ni-catalysed hydrozincation reactions, 9135
- asymmetric Reformatsky reaction, NMR study of the nature of organo-Zn reaction species, 6065
- C-terminal di- and tripeptide organozinc reagents by reaction of iodoalanine containing di- and tripeptides with activated zinc, subsequent reaction with electrophiles provides amino acid containing di- and tripeptides, 13905
- catalytic electrogenerated zinc, allylation of carbonyl compounds and unusual regioselectivity of a trifluoro-prenyl bromide, 6027
- diethylzinc addition to benzaldehyde catalysed by chiral titanate complexes with helical ligands, 4145 homo- and heteroorganometallic tripodaphyrins, synth from 5-(4-iodophenyl)-10,15,20-triphenylporphine, 6835
- organo-Zn heterocycles, synth and reactions with Pd(0) and Cu(I) catalysis, application to imidazoles, thiazoles, pyridines, quinolines, uracils, purines, 7237
- organozinc/Ni(COD)₂-mediated cyclisation of alkynyl enones, synth of a series of monocyclic and bicyclic heterocycles with exocyclic alkenes, 16449
- polyaza-paracyclophanes, models of Zn-containing enzymes, role of a non-coordinated N atom in metal proximity, 4751

propargylzinc halides for propargylation of sugar aldehydes, 2653

substituted Zn naphthalocyanines, synth, 9087

zinc porphyrin-pheophorbide dyads, synth from methyl pheophorbide-a by transesterification of β-keto methyl ester with hydroxymethyl substituted porphyrins, energy and electron transfer props, 13657

2-zincated2-cyclohexen-1-one,1-benzyl-2,3-dihydropyridin-4(1*H*)-one-5-ZnI, 1,3-dibenzyluracil-6-ZnI, synth, coupling reactions, reactions with electrophiles, 16711

ZnCl₂ complexes of acyl N-aminides, 6411 see also Reformatsky reactions

Zirconium and compds

Cp₂(Cl)Zr⁺ as catalyst for epoxy ester-ortho ester rearrangement, protection of polyfunctionalised carboxylic acids, 16575

α,β-disubstituted cyclopentenones *via* zirconacyclopentenes from alkynes, EtMgBr and CO, synth of arene-bis(cyclopentenones), 9123

zirconium tetrachloride to affect the transformation of 6-methoxytetralins into 8-methoxytetralins, 15771

Zwitterions

2-aryliodonio-1,4-naphtho- and -benzo-quinone-3imides, synth, reactivity, 6097 see also Betaines, mesomeric