

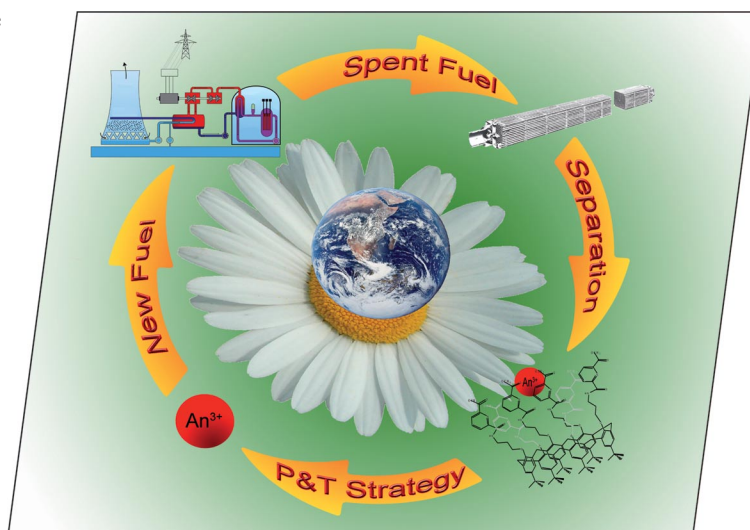


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COVER PICTURE

The cover picture shows the complexation of actinide metal ions by picolinamide-based calix[6]arenes. These ligands possess remarkable efficiency in the extraction of trivalent metal ions even at very high HNO_3 concentration and fair selectivity for actinide ions over lanthanide ions, which is useful in the recycling of the spent nuclear fuel. The Partitioning and Transmutation (P&T) strategy would allow the long-lived minor actinides (Np, Am, Cm) in fast nuclear reactors to be separated and transmuted and would also allow the radiotoxicity in the ultimate waste to be minimized, making nuclear power plants more efficient and sustainable. Details are discussed in the article by M. Mariani, A. Casnati et al. on p. 2675ff.



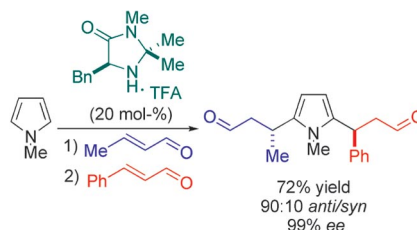
MICROREVIEW

Organocatalysis

V. Terrasson, R. M. de Figueiredo,*
J. M. Campagne 2635–2655

Organocatalyzed Asymmetric Friedel–Crafts Reactions

Keywords: Organocatalysis / Friedel–Crafts reaction / Alkylation / Aromatic substitution / Asymmetric synthesis



The Friedel–Crafts alkylation is one of the most powerful reactions for C–C and C–N bond formation. This microreview discusses recent organocatalysis-mediated Friedel–Crafts reactions within the 2001–2009 timeframe.

SHORT COMMUNICATIONS

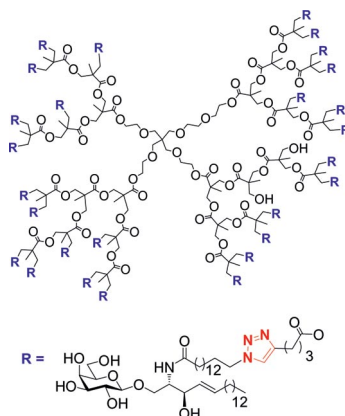
Glycodendritic Polymers

J. A. Morales-Serna, O. Bouteira,
A. Serra, M. I. Matheu, Y. Díaz,
S. Castellón* 2657–2660



Synthesis of Hyperbranched β -Galceramide-Containing Dendritic Polymers that Bind HIV-1 rgp120

Keywords: Polymers / Hyperbranched polymers / Glycolipids / Glycoconjugates / Dendrimers / Galceramide / HIV

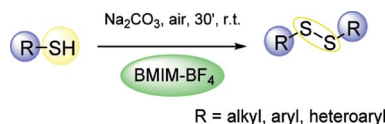


A series of water-soluble hyperbranched β -galceramide-containing dendritic polymers were prepared by CuAAC with alkyne-deactivated Boltorn[®] H30, an azide-functionalized β -galceramide. Their ability to bind to HIV-1 rgp120 was demonstrated using surface plasmon resonance.

Metal-Free Oxidation

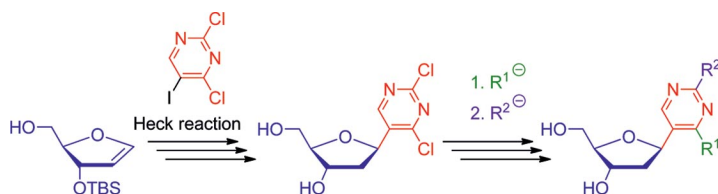
D. Singh, F. Z. Galetto,
L. C. Soares, O. E. D. Rodrigues,*
A. L. Braga* 2661–2665

Metal-Free Air Oxidation of Thiols in Recyclable Ionic Liquid: A Simple and Efficient Method for the Synthesis of Disulfides



An efficient oxidative coupling procedure for alkyl, aryl and heteroaryl thiols with atmospheric oxygen is reported. The methodology utilizes a recyclable ionic liquid as solvent and does not require any supporting materials.

Keywords: Oxidation / Ionic liquids / Thiols / Disulfides



A new modular synthesis of diverse 2,4-disubstituted pyrimidin-5-yl C-2'-deoxyribonucleosides by sequential regioselective

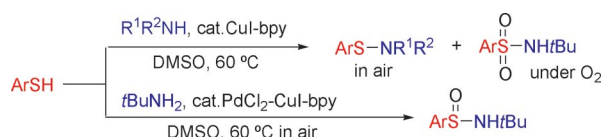
reactions of 2,6-dichloropyrimidin-5-yl C-nucleosides was developed.

T. Kubelka, L. Slavětinská, B. Klepetářová, M. Hocek* 2666–2669

Synthesis of 2,4-Disubstituted Pyrimidin-5-yl C-2'-Deoxyribonucleosides by Sequential Regioselective Reactions of 2,4-Dichloropyrimidine Nucleosides

Keywords: C-nucleosides / Nucleobases / Pyrimidines / Cross-coupling reactions / Nucleophilic substitution

S–N Bond Formation



The synthesis of sulfenamides and sulfonamides with aryl thiols and amines was catalyzed by a copper salt in air or under

oxygen. Sulfenamides could also be produced by addition of a palladium catalyst.

N. Taniguchi* 2670–2673

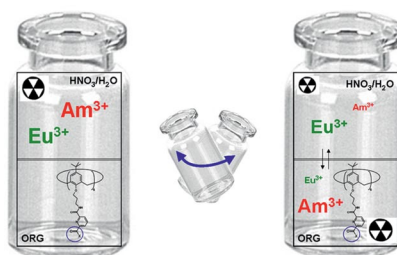
Copper-Catalyzed Formation of Sulfur–Nitrogen Bonds by Dehydrocoupling of Thiols with Amines

Keywords: Sulfur / Sulfenamides / Dehydrocoupling reactions / Copper / Palladium / Amines

FULL PAPERS

Actinide-Lanthanide Separation

The introduction of additional carboxy groups in the 6-position of picolinamide binding groups supported on a calix[6]-arene scaffold afforded a series of new ligands selective for actinide over lanthanide ions and possessing a high efficiency in extraction even at very high concentrations of HNO₃ (2–3 M). Spectrophotometric and calorimetric studies are also reported.

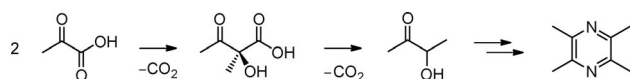


E. Macerata, F. Sansone, L. Baldini, F. Uguzzoli, F. Brisach, J. Haddaoui, V. Hubscher-Bruder, F. Arnaud-Neu, M. Mariani,* R. Ungaro, A. Casnati* 2675–2686

Calix[6]arene-Picolinamide Extractants for Radioactive Waste Treatment: Effect of Additional Carboxy Binding Sites in the Pyridine 6-Positions on Complexation, Extraction Efficiency and An/Ln Separation

Keywords: Calixarenes / Actinides / Lanthanides / Waste treatment / N ligands

Pyrazine Biosynthesis



The volatile compounds released by *Corynebacterium glutamicum* have been analysed. Headspace extracts mainly contain acyloins and alkylated pyrazines. The biosynthesis of the pyrazines was investigated

by feeding experiments with labelled precursors and by gene knockout experiments. The pathway is linked to the pathway leading to branched amino acids.

J. S. Dickschat,* S. Wickel, C. J. Bolten, T. Nawrath, S. Schulz, C. Wittmann 2687–2695

Pyrazine Biosynthesis in *Corynebacterium glutamicum*

Keywords: Natural products / Biosynthesis / Nitrogen heterocycles

Frontiers of Chemistry: From Molecules to Systems

A One-Day Symposium

On 21st May 2010 in Paris
at the Maison de la Chimie
(near the Eiffel Tower and Les Invalides)

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Gerhard Ertl
Nobel Prize 2007



Jean-Marie Lehn
Nobel Prize 1987



Roger Y. Tsien
Nobel Prize 2008



Ada Yonath
Nobel Prize 2009



Luisa De Cola



Alan R. Fersht



Marc Fontecave



Michael Grätzel



Michel Orrit



Nicolas Winssinger

Posters will be displayed also online from 1st April

www.chembiophyschem.org

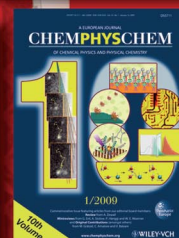
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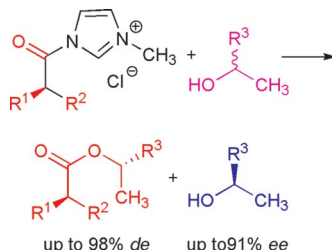
E. Amouyal, M. Che,
F. C. De Schryver,
A. R. Fersht, P. Göllitz,
J. T. Hynes, J.-M. Lehn

Topics

catalysis, biochemical imaging,
chemical biology, bionanotechnology,
proteomics, spectroscopy, solar cells

WILEY-VCH

N-Methylimidazole was used to carry out the kinetic resolution of secondary alcohols during transfer of chiral acyl residues in either a stoichiometric or a catalytic manner.

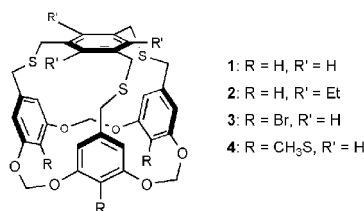


**L. Leclercq, I. Suisse,
F. Agbossou-Niedercorn*** 2696–2700

Kinetic Resolution of Racemic Secondary Alcohols Mediated by *N*-Methylimidazole in the Presence of Optically Active Acyl Chlorides

Keywords: Acylation / Nitrogen heterocycles / Alcohols / Carboxylic acids / Kinetic resolution

Macrotricycles **1–4** incorporate resorcinol- and mesitylene-derived “walls” and “cap” respectively. Whereas unsubstituted **1** has a flexible and collapsed cavity, ethyl substitution of the “cap” (in **2**) or substitution of the bottom part of the “walls” by Br (in **3**) or CH₃S (in **4**) imparts high rigidity to the molecules leading to a cylindrical cavity.



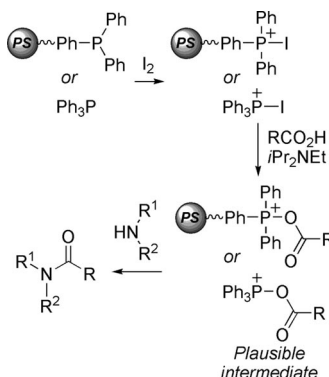
Conformations of π -Basic Receptors

**A. L  lias-Vanderperre, E. Aubert,
J.-C. Chambron,*
E. Espinosa*** 2701–2708

Effect of Substituents on the Molecular Shapes of π -Basic Macrotricyclic Receptors

Keywords: Cyclophanes / Receptors / Conformation analysis / Steric hindrance / Substituent effects

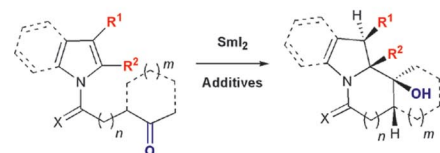
Pure and simple. Carboxylic acids can be easily converted into amides and Weinreb amides by using PPh₃ or polymer-supported PPh₃, I₂, and *i*Pr₂NEt. An acyl phosphonium species is possibly the intermediate in these reactions. Applicability of this simple method to the synthesis of some natural products has also been demonstrated.



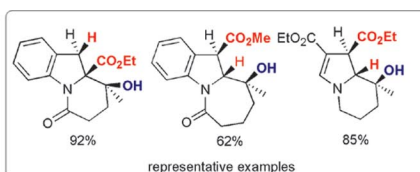
**A. Kumar, H. K. Akula,
M. K. Lakshman*** 2709–2715

Simple Synthesis of Amides and Weinreb Amides Using PPh₃ or Polymer-Supported PPh₃ and Iodine

Keywords: Amides / Phosphanes / Supported reagents / Iodine / Synthetic methods



SmI₂-induced 5-*exo-trig* to 8-*exo-trig* cyclizations of *N*-alkylated and *N*-acylated indole and pyrrole precursors furnished polycyclic compounds in high yields and as single diastereomers. Subsequent trapping of



intermediate samarium enolates provided highly functionalised indole derivatives. These methods provide a simple and stereoselective route to complex substituted nitrogen heterocycles.

**C. Beemelmans, V. Blot, S. Gross,
D. Lentz, H.-U. Reissig*** 2716–2732

Highly Diastereoselective Samarium Diiodide Induced Ketyl Cyclisations of Indole and Pyrrole Derivatives – Scope and Limitations

Keywords: Samarium diiodide / Radical reactions / Ketyl coupling / Cyclization / Indoles / Pyrroles / Nitrogen heterocycles

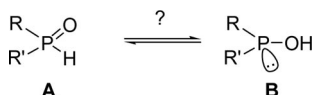
CONTENTS

Secondary Phosphane Oxides

A. Christiansen, C. Li, M. Garland,
D. Selent, R. Ludwig, A. Spannenberg,
W. Baumann, R. Franke,
A. Börner* 2733–2741

On the Tautomerism of Secondary Phosphane Oxides

Keywords: Phosphorus / Tautomerism / NMR spectroscopy / IR spectroscopy



The tautomeric behaviour of secondary phosphane oxides (SPOs) with different electronic properties has been investigated by NMR and IR spectroscopy, density functional theory calculations and X-ray structural analysis. Proof is given that only with strong electron-withdrawing groups on the phosphorus atom can the relevant trivalent phosphinous acid be observed in the equilibrium.

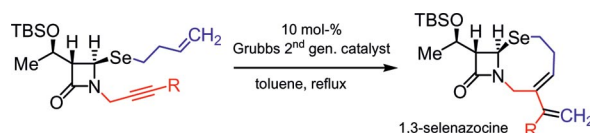
Organoselenium Compounds

D. B. Bankar, M. Koketsu* 2742–2745



Facile Synthesis of Selenium-Containing Bicyclic β -Lactams through Enyne Metathesis

Keywords: Heterocycles / Selenium / Lactams / Metathesis



Novel selenium-containing bicyclic β -lactams were obtained through stereoselective insertion of (but-3-enyl)seleno and propargyl

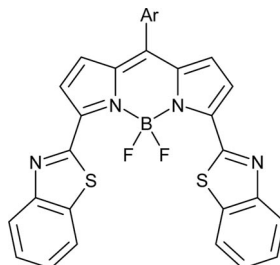
gylseleno moieties at the C(4) positions of azetidinones with subsequent ring-closing enyne metathesis.

Borondipyrromethene Dyes

Y. M. Poronik, V. P. Yakubovskiy,
M. P. Shandura, Yu. G. Vlasenko,
A. N. Chernega, Y. P. Kovtun* ... 2746–2752

3,5-Bis(benzothiazolyl)-Substituted BODIPY Dyes

Keywords: BODIPY / Density functional calculations / Dyes/pigments / Fluorescence



A number of new BODIPY dyes with benzothiazolyl substituents have been synthesized that exhibit long-wavelength absorption and act as strong fluorophores. The optical properties were studied by spectroscopic methods and quantum-chemical calculations. Structural peculiarities were studied by X-ray analysis.

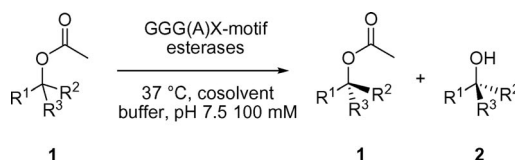
An Esterase Toolbox

G.-S. Nguyen, R. Kourist, M. Paravidino,
A. Hummel, J. Rehdorf,
R. V. A. Orru, U. Hanefeld,*
U. T. Bornscheuer* 2753–2758



An Enzymatic Toolbox for the Kinetic Resolution of 2-(Pyridin-*x*-yl)but-3-yn-2-ols and Tertiary Cyanohydrins

Keywords: Alcohols / Kinetic resolution / Cyanohydrins / Enzymes / Enantioselectivity



The kinetic resolution of a series of acetates of tertiary alcohols bearing a nitrogen substituent has been studied by using several recombinant carboxyl esterases. Excellent

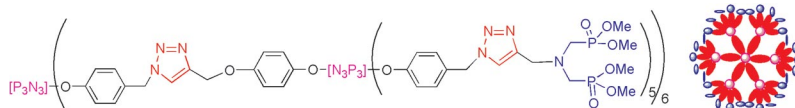
enantioselectivities were achieved for three 2-(pyridin-*x*-yl)but-3-yn-2-ols. In addition, one cyanohydrin was obtained with 99% *ee*.

Dendrimers

E. Cavero, M. Zablocka,
A.-M. Caminade,*
J. P. Majoral* 2759–2767

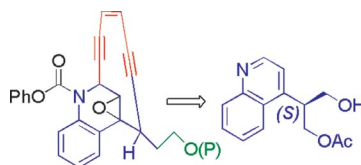
Design of Bisphosphonate-Terminated Dendrimers

Keywords: Dendrimers / Click chemistry / Multistep synthesis / Phosphazenes / Phosphorus



Multistep synthesis of phosphorus dendrimers resulting in biologically active bisphosphonate units are reported.

The first enantioselective synthesis of a simplified dynemicin analogue is described. The obtained product has a functionalised side-arm that can be exploited either for attaching DNA-complexing moieties or for exploring innovative triggering devices.

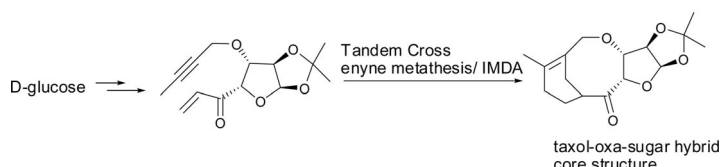


R. Riva,* L. Banfi, A. Basso, V. Gandolfo, G. Guanti 2768–2787

Enzymatically Asymmetrised Chiral Building Blocks for the Synthesis of Complex Natural Product Analogues: The Synthesis of Dynemicin Analogues from 2-(Quinolin-4-yl)propane-1,3-diol

Keywords: Antitumor agents / Diastereoselectivity / Nitrogen heterocycles / Alkynes / Eneidyne

Taxol-Sugar Hybrid



Construction of the core structure of a taxol-oxa-sugar hybrid through a tandem cross metathesis/intramolecular Diels–Alder (IMDA) reaction approach starting from D-glucose has been achieved. We also

disclose our design and efforts in synthesizing new scaffolds with taxol-eleutherobin hybrid core structures and a taxol-sugar hybrid.

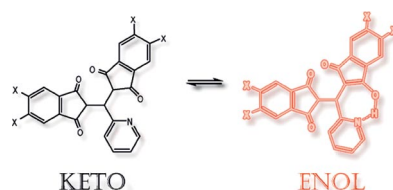
R. S. Nandurdikar, A. V. Subrahmanyam, K. P. Kaliappan* 2788–2799

Synthesis of a Novel Taxa-Oxa-Sugar Hybrid Core Structure by Tandem Cross-Enyne Metathesis/IMDA

Keywords: Antitumor agents / Taxol / Eleutherobin / Hybrid structure / Metathesis / Cycloaddition

Diketone Tautomerism

Herein we present a comprehensive study of the enol form of indanedione adducts and the factors that determine their keto–enol tautomerism, namely electronic effects, solvent, temperature, and hydrogen bonds. The structures and the relative stabilities of the possible tautomers are supported by DFT calculations.



M. Sigalov,* N. G. Lemcoff, B. Shainyan, N. Chipanina, T. Aksamentova 2800–2811

Enol Forms of 1,3-Indanedione, Their Stabilization by Strong Hydrogen Bonding, and Zwitterion-Assisted Interconversion

Keywords: Ketones / Enols / Tautomerism / Hydrogen bonds / Structure elucidation / Zwitterions

* Author to whom correspondence should be addressed.

Supporting information on the WWW (see article for access details).