



The following Communications have been judged by at least two referees to be “very important papers” and will be published online at www.angewandte.org soon:

D. Maiti, D.-H. Lee, K. Gaoutchenova, C. Würtele, M. C. Holthausen, A. A. N. Sarjeant, J. Sundermeyer, S. Schindler, K. D. Karlin*

Copper(II)-Superoxo Complex Reactions Lead to C–H and O–H Substrate Oxygenations; Modeling Copper-Monooxygenase C–H Hydroxylation

K. Tanaka, T. Masuyama, K. Hasegawa, T. Tahara, H. Mizuma, Y. Wada, Y. Watanabe, K. Fukase*

A Submicrogram-Scale Protocol for Biomolecule-Based PET Imaging via Rapid 6 π Azaelectrocyclization: Visualization of Sialic Acid Dependent Circulatory Residence of Glycoproteins

K. Takahashi, M. Watanabe, T. Honda*

Highly Efficient Stereocontrolled Total Synthesis of (+)-Upial

Y. Tanaka, S. Saito, S. Mori, N. Aratani, H. Shinokubo, N. Shibata, Y. Higuchi, Z. S. Yoon, K. S. Kim, Su B. Noh, J. K. Park, D. Kim,* A. Osuka*

Metallation of Expanded Porphyrins: A Chemical Trigger Used To Produce Molecular Twisting and Möbius Aromaticity

I. Yoshikawa, J. Sawayama, K. Araki*

Highly Stable Giant Supramolecular Vesicles Composed of 2D Hydrogen-Bonded Sheet Assemblies of Guanosine Derivatives

R. Cai, M. Sun, Z. Chen, R. Munoz, C. O'Neill, D. Beving, Y. Yan*
Ionothermal Synthesis of Oriented Zeolite AEL Films and Their Application as Corrosion-Resistant Coatings

News

P. Sautet and S. Z. Zard receive CNRS Silver Medals _____ **8542**

Bristol–Myers Squibb Award to J. W. Bode _____ **8542**

H. J. Reich honored with Arfvedson Schlenk Prize _____ **8542**

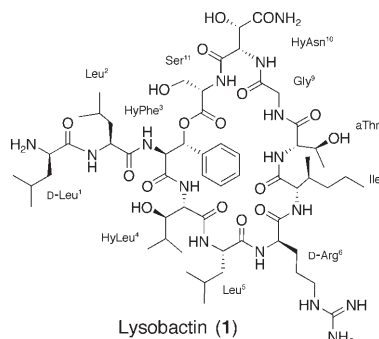
Books

Materials in Eighteenth-Century Science

Ursula Klein, Wolfgang Lefèvre

reviewed by B. Kahr _____ **8544**

Catching up with the bugs: Lysobactin (**1**) is a natural cyclodepsipeptide with potent antibiotic activity against vancomycin-resistant enterococci and methicillin-resistant *Staphylococcus aureus*. Two total syntheses of **1** have been published recently which should enable further chemical modifications of the lysobactin structure and a better understanding of its mode of action.



Depsipeptides

J.-M. Campagne* _____ **8548–8552**

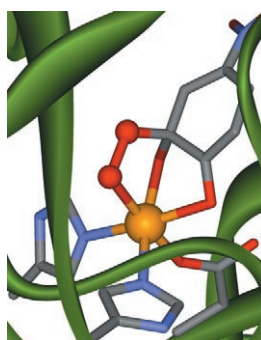
Total Syntheses of Lysobactin (Katanosin B)

Structural Biochemistry

J. P. Emerson, E. R. Farquhar, L. Que, Jr.* _____ **8553–8556**

Structural “Snapshots” along Reaction Pathways of Non-Heme Iron Enzymes

Recent X-ray crystallography studies on two non-heme iron enzymes (see picture, orange Fe, red O, blue N) involved in oxygen activation and superoxide detoxification have provided unique structural insights into intermediates in their individual reaction pathways. The results of these studies and their mechanistic significance are discussed.

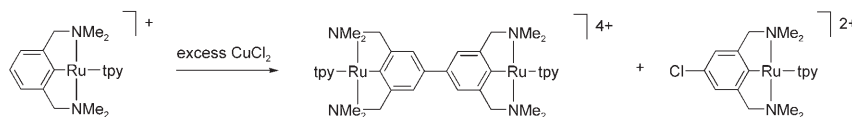


Reviews

Synthetic Methods

M. Gagliardo, D. J. M. Snelders,
P. A. Chase, R. J. M. Klein Gebbink,
G. P. M. van Klink,
G. van Koten* — 8558–8573

Organic Transformations on σ -Aryl
Organometallic Complexes



In a pinch: A literature survey is presented which describes organic transformations performed on σ -aryl organometallic complexes. Emphasis has been put on the developments of the synthetic protocols that allow easy modification of accessible

organometallic compounds. These protocols can be divided into two main categories: electrophilic aromatic substitution and metal-mediated C–C coupling reactions (see examples in scheme).

Communications

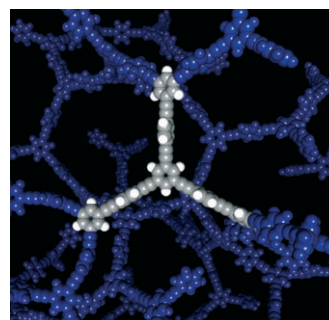
Microporous Polymers

J.-X. Jiang, F. Su, A. Trewin, C. D. Wood,
N. L. Campbell, H. Niu, C. Dickinson,
A. Y. Ganin, M. J. Rosseinsky,
Y. Z. Khimyak, A. I. Cooper* — 8574–8578



Conjugated Microporous
Poly(aryleneethynylene) Networks

Rigid wiry nets: Conjugated microporous polymer networks are formed by Sonogashira–Hagihara coupling. Although these materials are amorphous, the micropore size and surface area can be controlled by varying the length of the phenyleneethynylene struts (see picture; the network is shown in blue, and one 1,3,5-substituted benzene node and three connected struts are highlighted with C gray and H white).

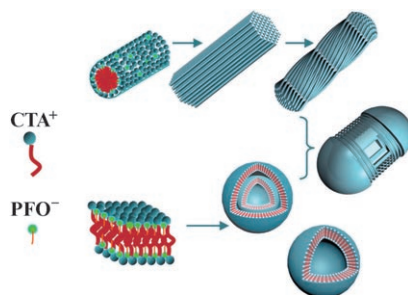


Self-Assembly

S. Yang, X. F. Zhou, P. Yuan, M. Yu, S. Xie,
J. Zou, G. Q. Lu, C. Z. Yu* — 8579–8582



Siliceous Nanopods from a Compromised
Dual-Templating Approach



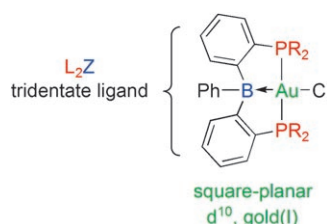
Like a silkworm cocoon: Siliceous nanostructures that resemble silkworm cocoons with inner multishells and outer well-oriented nanochannels have been synthesized by simultaneous compromised vesicle templating and liquid-crystal templating methods (see picture). CTA⁺ = cetyltrimethylammonium; PFO[−] = perfluorooctanoate.

Gold Complexes

M. Sircoglou, S. Bontemps, M. Mercy,
N. Saffon, M. Takahashi, G. Bouhadir,
L. Maron,* D. Bourissou* — 8583–8586



Transition-Metal Complexes Featuring Z-
Type Ligands: Agreement or Discrepancy
between Geometry and dⁿ Configuration?



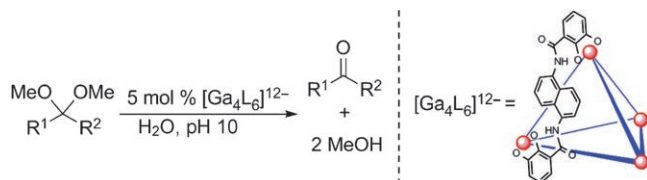
The value of gold: The coordination of ambiphilic diphosphanylborane ligands to AuCl provides unusual square-planar gold(I) complexes. Insight is gained on the nature of the gold→borane interactions in these complexes through natural bond orbital (NBO) analysis and ¹⁹⁷Au Mössbauer spectroscopy.

For the USA and Canada:

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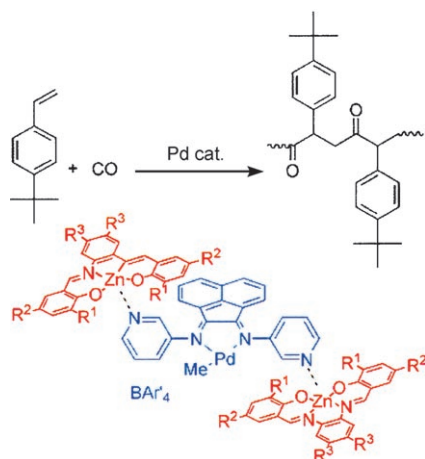
Changing on the inside: Acetals are a commonly used protecting groups for aldehydes and ketones in organic synthesis because of their ease of installation and resistance to cleavage in neutral or

basic solution. A self-assembled supramolecular assembly has been shown to catalyze the hydrolysis of acetals and ketals in basic solution (see scheme).

Supramolecular Catalysis

M. D. Pluth, R. G. Bergman,*
K. N. Raymond* — 8587–8589

Catalytic Deprotection of Acetals in Basic Solution with a Self-Assembled Supramolecular “Nanozyme”

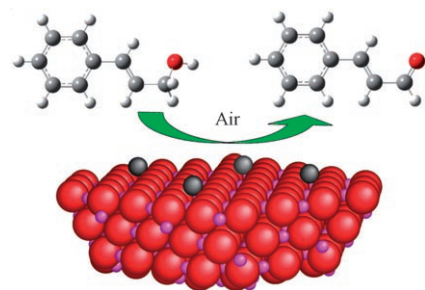


Tuning with zinc: Palladium complexes of 3-pyridyl-bian (see scheme, blue) provide active catalysts for the copolymerization of CO and 4-*tert*-butylstyrene, but only after encapsulation by two zinc salen building blocks (red). The catalyst properties depend on the salen units, giving rise to novel tools for catalyst tuning.

Supramolecular Catalysts

J. Flapper, J. N. H. Reek* — 8590–8592

Templated Encapsulation of Pyridyl-Bian Palladium Complexes: Tunable Catalysts for CO/4-*tert*-Butylstyrene Copolymerization

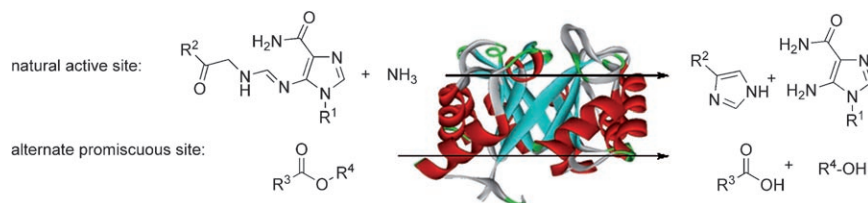


Pd does it alone: Tailored heterogeneous catalysts offer exciting, alternative, clean technologies for regioselective molecular transformations. A mesoporous alumina support stabilizes atomically dispersed Pd^{II} surface sites (see picture, C light gray, O red, Pd dark gray, Al purple, H white), thereby dramatically enhancing catalytic performance in the aerobic selective oxidation of alcohols.

Heterogeneous Catalysis

S. F. J. Hackett, R. M. Brydson,
M. H. Gass, I. Harvey, A. D. Newman,
K. Wilson, A. F. Lee* — 8593–8596

High-Activity, Single-Site Mesoporous Pd/Al₂O₃ Catalysts for Selective Aerobic Oxidation of Allylic Alcohols



Promiscuous reactions get around: It is shown that promiscuous enzyme-catalyzed reactions (i.e., the catalysis of dis-

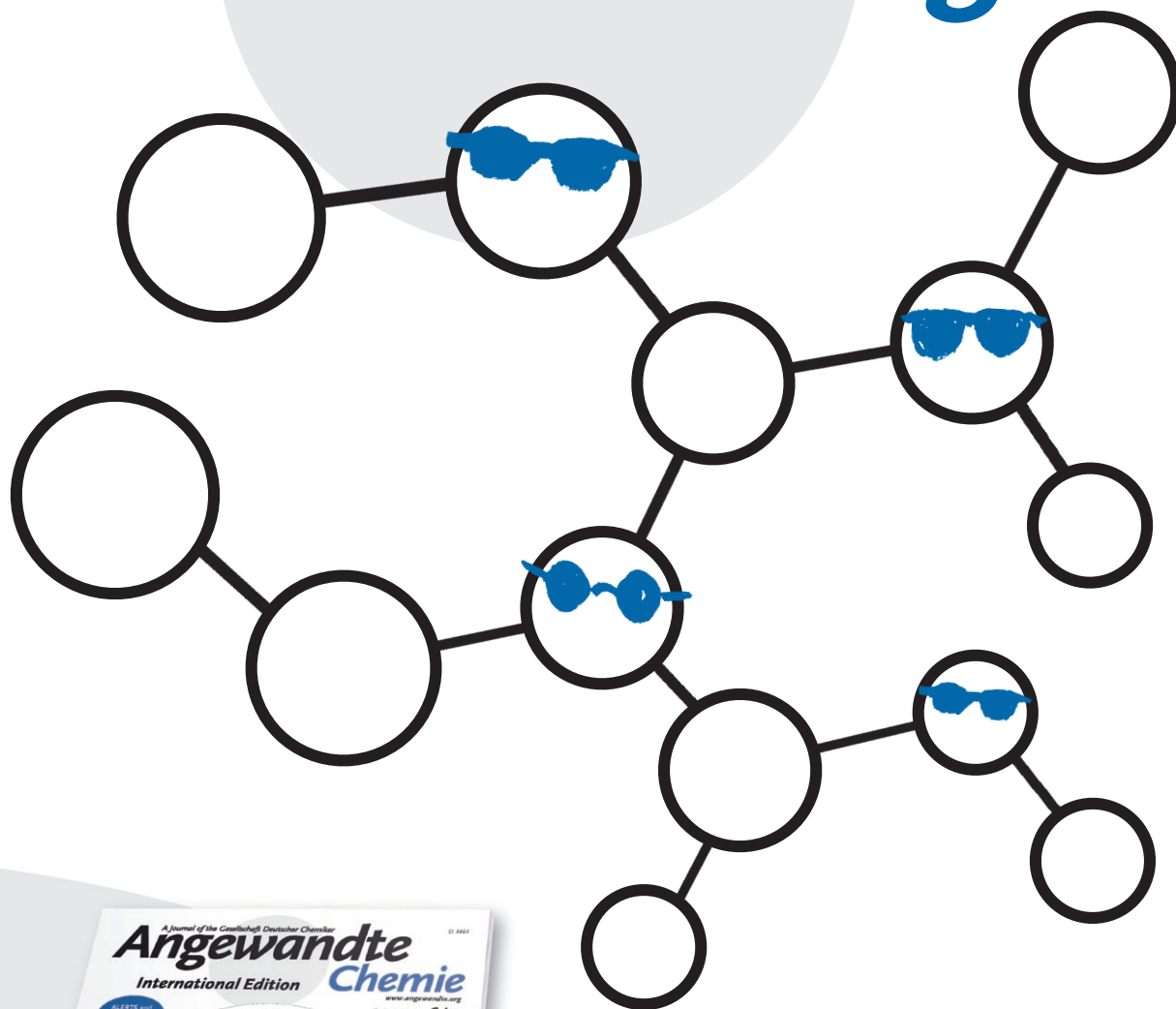
tinctly different chemical transformations) can also take place at sites other than where the natural reaction occurs.

Enzyme Promiscuity

A. Taglieber, H. Höbenreich,
J. D. Carballeira, R. J. G. Mondière,
M. T. Reetz* — 8597–8600

Alternate-Site Enzyme Promiscuity

Incredibly *incognito!*



Did you know that *Angewandte Chemie* is owned by the German Chemical Society (Gesellschaft Deutscher Chemiker, GDCh)? With nearly 30000 members, the GDCh is the largest chemical society in continental Europe and holds complete responsibility over the contents of *Angewandte*. The GDCh appoints the members of *Angewandte's* editorial board and international advisory board; the editor-in-chief is appointed jointly by the GDCh and the publishers. Wiley-VCH has collaborations with over 50 scientific societies and institutions; the parent company John Wiley & Sons collaborates with many more still.

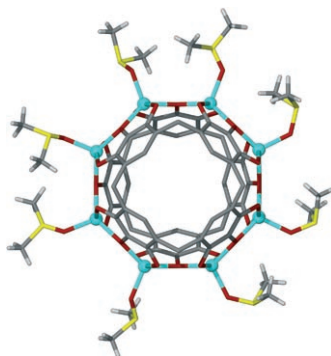


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Not just an inside job: Encapsulated and confined in an octanuclear zinc-seamed pyrogallol[4]arene molecular capsule, a guest of choice can act as a reporter for electronic communication between the exterior and the interior of the capsule through ligand exchange (see structure of capsule, Zn light blue, O red, S yellow).



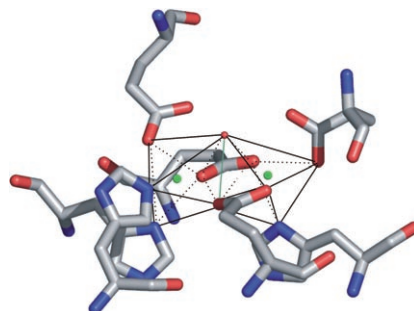
Host–Guest Chemistry

N. P. Power, S. J. Dalgarno,
J. L. Atwood* — 8601–8604

Guest and Ligand Behavior in Zinc-Seamed Pyrogallol[4]arene Molecular Capsules



Site-directed mutagenesis was used to explore the ligand sphere and geometry of a novel binuclear manganese biocatalyst (see picture; Mn green, C gray, O red, N blue) that oxidizes amino to nitro groups with high specificity. The involvement of Mn in catalysis and radical formation was unequivocally proven by ESR spectroscopy.



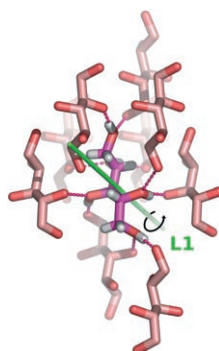
Biocatalysis

R. Winkler, G. Zocher, I. Richter,
T. Friedrich, G. E. Schulz,
C. Hertweck* — 8605–8608

A Binuclear Manganese Cluster That Catalyzes Radical-Mediated N-Oxygenation



Molecules in motion: The two diastereomeric pentoses ribitol and xylitol differ in that the higher melting isomer, ribitol (see picture, red O, white H) is less dense. Accurate high-resolution diffraction data is used to show that this is an entropy effect caused by a difference between them in the librational motion L1. Their solid-state entropies, calculated from the rigid-body vibrations, are in agreement with calorimetric results.



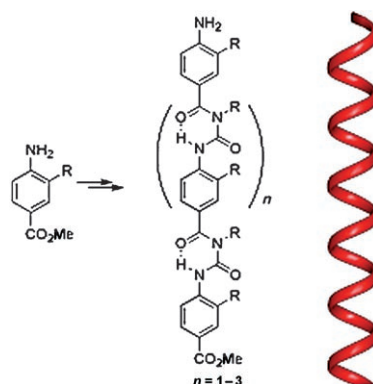
Crystal-Structure Prediction

A. Ø. Madsen, S. Larsen* — 8609–8613

Insight into Solid-State Entropy from Diffraction Data



Not-so-short and curlies: A new benzoylurea-based foldamer scaffold favors a linear conformation governed by intramolecular hydrogen bonding (see picture, left). The functional groups R are in a staggered arrangement analogous to an α helix. Iterative synthesis and diversification of the functional groups leads to structures with lengths similar to those of naturally occurring α helices (right).



H-Bonded Foldamers

J. M. Rodriguez,
A. D. Hamilton* — 8614–8617

Benzoylurea Oligomers: Synthetic Foldamers That Mimic Extended α Helices



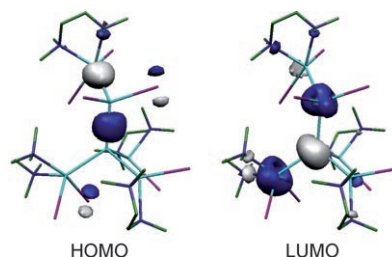
Cluster Compounds

S. P. Green, C. Jones,*
A. Stasch _____ **8618–8621**



“Dissolution” of Indium(I) Iodide:
Synthesis and Structural Characterization
of the Neutral Indium Sub-Halide Cluster
Complex $[\text{In}_6\text{I}_8(\text{tmeda})_4]$

The “In” crowd: “Dissolution” of the widely used synthetic reagent indium(I) iodide in tmeda/toluene mixtures (tmeda = *N,N,N',N'*-tetramethylethylenediamine) gives $[\text{In}_6\text{I}_8(\text{tmeda})_4]$. Its stability and significant solubility in toluene makes it an alternative reagent for synthetic methodologies employing InI . DFT studies (see picture) suggest that its deep red-orange color arises from metal-based $\sigma \rightarrow \sigma^*$ electronic transitions.

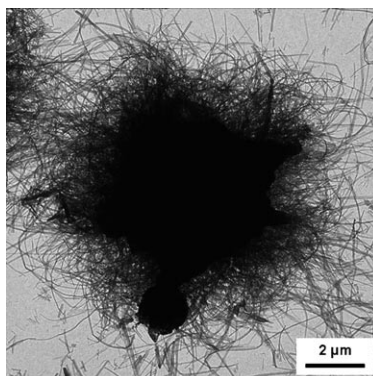


Crystalline Nanostructures

A. L. Demirel,* M. Meyer,
H. Schlaad* _____ **8622–8624**



Formation of Polyamide Nanofibers by
Directional Crystallization in Aqueous
Solution



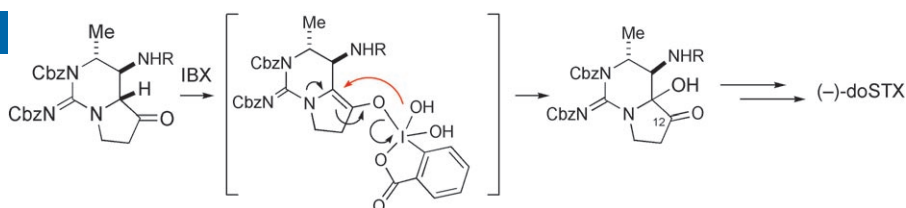
Great balls of fiber! Annealing of a dilute aqueous solution of poly(2-isopropyl-2-oxazoline) above its cloud point leads to the formation of a coagulate in the form of crystalline nanofibers (see microscopy image). Directional crystallization, which occurs below the glass transition temperature of the polymer at 65 °C, is driven by hydrophobic and dipolar interactions in combination with a solvation effect.

Alkaloid Synthesis

O. Iwamoto, H. Koshino, D. Hashizume,
K. Nagasawa* _____ **8625–8628**



Total Synthesis of (–)-Decarbamoyl-
oxysaxitoxin



A facile and general synthetic strategy for saxitoxin derivatives has been developed, as exemplified by the efficient synthesis of (–)-decarbamoyloxysaxitoxin ((–)-doSTX), the putative enantiomer of the natural product, in 17 steps and in 10% overall

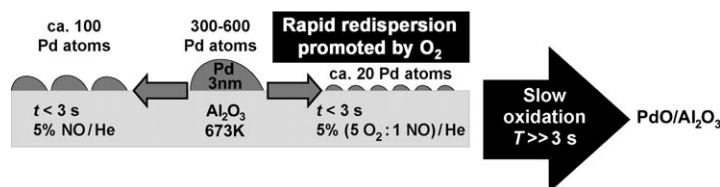
yield. The synthesis features a diastereoselective 1,3-dipolar cycloaddition and a direct oxidation with *o*-iodoxybenzoic acid (IBX; see scheme, Cbz = benzyloxycarbonyl).

Nanoparticles

M. A. Newton,* C. Belver-Coldeira,
A. Martínez-Arias,
M. Fernández-García* _____ **8629–8631**

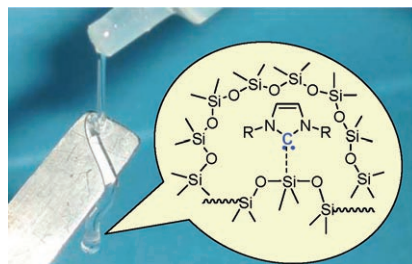


“Oxidationless” Promotion of Rapid
Palladium Redispersion by Oxygen during
Redox $\text{CO}/(\text{NO}+\text{O}_2)$ Cycling



The rapid and reversible dispersion of palladium nanoparticles is considerably enhanced if oxygen gas is present in the oxidizing step of the redox cycle. At 673 K oxidation of the Pd nanoparticles is too slow to compete with this dispersion and

only occurs after the Pd particles undergo significant size/morphological alteration. Thus, catalyst dispersion and sintering could be controlled by dynamic feedstock management.



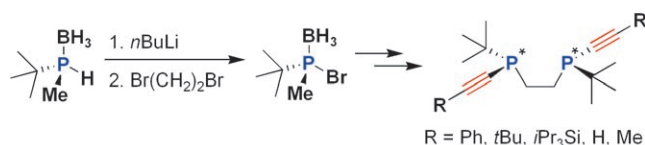
Let them off the leash! Silicone protecting media allow the manipulation and storage of air- and moisture-sensitive N-heterocyclic carbenes (NHCs). Calculations

show that a weak carbene–Lewis acid interaction minimizes decomposition of NHCs but does not inhibit NHC reactivity.

Encapsulated Reactive Groups

F. Bonnet, T. Kato, M. Destarac, G. Mignani, F. P. Cossío, A. Baceiredo* **8632–8635**

Encapsulated N-Heterocyclic Carbenes in Silicones without Reactivity Modification



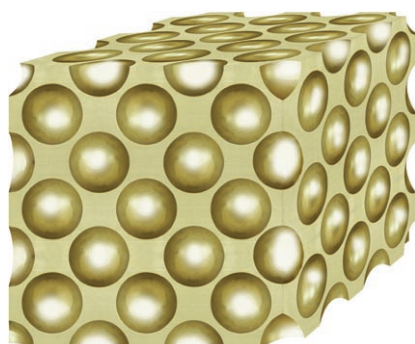
A range of asymmetric transformations are catalyzed by transition-metal complexes of the title ligands with excellent enantioselectivities. The ligands, which were applied successively in Rh-catalyzed

hydrogenation and Rh- or Pd-catalyzed C–C bond-forming reactions, were synthesized by nucleophilic substitution of (*R*)-(bromo(*tert*-butyl)methylphosphanyl)borane (see scheme).

Asymmetric Catalysis

T. Imamoto,* Y. Saitoh, A. Koide, T. Ogura, K. Yoshida **8636–8639**

Synthesis and Enantioselectivity of P-Chiral Phosphine Ligands with Alkynyl Groups

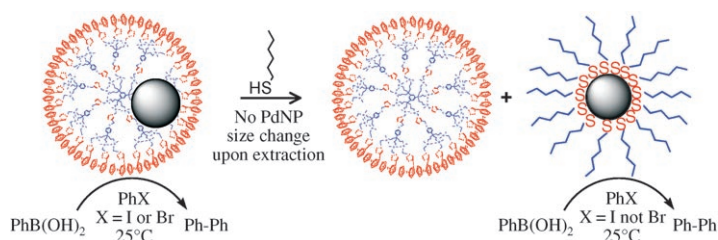


Swiss cheese, Gromit! A new class of solids of widely variable composition has essentially the same crystal structure reminiscent of Emmental cheese (see picture). The presence of the roughly spherical holes in the structure, which are large enough to enclose around 200 water molecules, is a consequence of the edge-to-face agglomeration of 12 fluorene units into pseudospherical clusters.

Metallosupramolecular Complexes

B. F. Abrahams,* N. J. FitzGerald, R. Robson* **8640–8643**

An Extensive Class of Solids Full of Holes Large Enough To Enclose over 200 Molecules of H₂O



What generation gap? Three generations (*G*₀, *G*₁, *G*₂) of dendrimer-stabilized Pd nanoparticles (PdNPs) synthesized by click chemistry catalyze Suzuki reactions of PhX (X = I or Br) at 25°C with increasing catalytic activity as their concentration

is decreased: A turnover number of 540 000 was observed for the *G*₀ catalyst at 1 ppm in Pd atoms. Extraction of the PdNPs with alkanethiols yields robust Suzuki catalysts for PhI only (see scheme).

Nanoparticle Catalysis

A. K. Diallo, C. Ornelas, L. Salmon, J. Ruiz Aranzas, D. Astruc* **8644–8648**

“Homeopathic” Catalytic Activity and Atom-Leaching Mechanism in Miyaura–Suzuki Reactions under Ambient Conditions with Precise Dendrimer-Stabilized Pd Nanoparticles

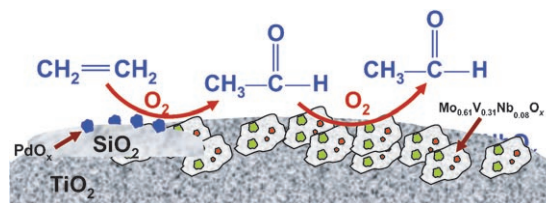


Catalytic Chemistry

X. Li, E. Iglesia* — 8649–8652



Synergistic Effects of TiO₂ and Palladium-Based Cocatalysts on the Selective Oxidation of Ethene to Acetic Acid on Mo–V–Nb Oxide Domains



A great show at the Palladium: Precipitation of Mo–V–Nb oxides in the presence of colloidal TiO₂ leads to more dispersed active structures and much higher rates of ethene oxidation to acetic acid. The presence of trace amounts of palladium as

supported clusters in physical mixtures (< 0.05 % w/w) catalyzes the formation of acetaldehyde intermediates and leads to unprecedented rates and selectivities in the synthesis of acetic acid from ethene and O₂.

Nanoparticles

J. G. Moore, E. J. Lochner,
A. E. Stiegman* — 8653–8655



Unusual Nanoparticle Structures from the Silica Sol–Gel-Mediated Self-Assembly of a Prussian-Blue Analogue and the Formation of Templated Graphite Regions



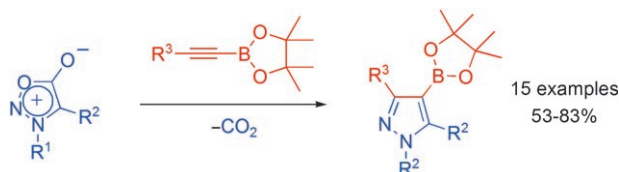
A carbon copy that's in a glass of its own: Nanoparticle structures are formed from the gelation of a silica sol–gel solution and the precipitation of a K^I_xNi^{II}_y[Fe^{III}(CN)₆] Prussian-blue analogue in the sol–gel solution. Calcination of the resulting nanoparticle glass destroys the complex, leaves imprints in the silica, and deposits graphite crystals oriented along the long dimension of the void.

Cycloaddition Reactions

D. L. Browne, M. D. Helm, A. Plant,
J. P. A. Harrity* — 8656–8658



A Sydnone Cycloaddition Route to Pyrazole Boronic Esters



From dipole to diazole! A direct and regioselective route to functionalized pyrazole boronic esters is developed that employs the cycloaddition of alkynylbor-

onates with sydnones. Functionalization of these products by Suzuki coupling and N-deprotection processes highlight the potential synthetic utility of these species.

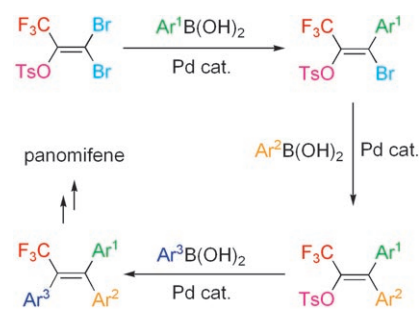
Cross-Coupling Reactions

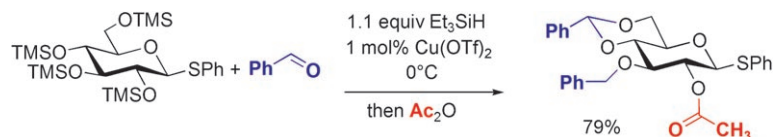
Y. Takeda, M. Shimizu,*
T. Hiyama — 8659–8661



Straightforward Synthesis of CF₃-Substituted Triarylethenes by Stereoselective Threefold Cross-Coupling Reactions

Any way round: The palladium-catalyzed threefold cross-coupling reaction of 1,1-dibromo-3,3,3-trifluoro-2-tosyloxypropene with aryl boronic acids provides a versatile route to CF₃-substituted triarylethenes (see scheme). The CF₃ group is essential for the high Z selectivity in the first coupling reaction, which is the key step in the process. Any of the ethene stereoisomers can be prepared simply by changing the order of the aryl boronic acids.





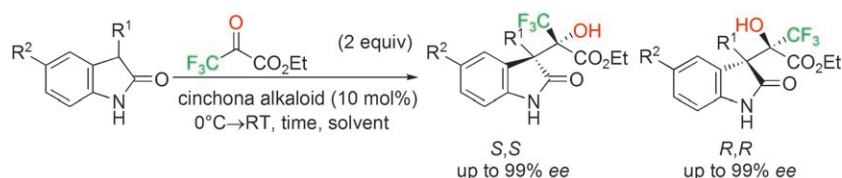
Fine-tuning the conditions for a tandem reaction using a single catalyst in a single reaction vessel leads to carbohydrate building blocks displaying different pat-

terns of protecting groups (see picture). This process greatly simplifies the access to oligomers, as illustrated by the rapid assembly of a trisaccharide.

Carbohydrates

A. Français, D. Urban,
J.-M. Beau* 8662–8665

Tandem Catalysis for a One-Pot
Regioselective Protection of
Carbohydrates: The Example of
Glucose



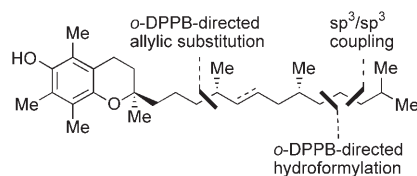
One or t'other: Pseudoenantiomeric cinchona alkaloids can be used as organocatalysts to access both enantiomeric products of the title reaction selectively in high yields with high diastereo- and enantioselectivities (up to 99% ee; see

scheme). One of the two contiguous quaternary stereogenic carbon centers that are constructed simultaneously is a pharmaceutically significant tertiary α -trifluoromethyl alcohol center. R^1 = alkyl; R^2 = H, Me.

Asymmetric Catalysis

S. Ogawa, N. Shibata,* J. Inagaki,
S. Nakamura, T. Toru,*
M. Shiro 8666–8669

Cinchona-Alkaloid-Catalyzed
Enantioselective Direct Aldol-Type
Reaction of Oxindoles with Ethyl
Trifluoroacetate



The direct approach: The efficient use of substrate control has served as the basis for the enantioselective total synthesis of (*R,R,R*)- α -tocopherol. A single reagent directing group (*ortho*-diphenylphosphanyl benzoate, *o*-DPPB) served to control the stereoselectivity of a rhodium-catalyzed hydroformylation reaction and the directed allylic substitution as the fragment-coupling step (see picture).

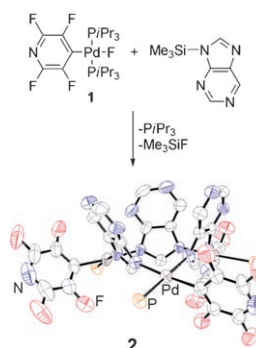
Total Synthesis

C. Rein, P. Demel, R. A. Outten,
T. Netscher, B. Breit* 8670–8673

Reagent Directing Group Controlled
Organic Synthesis: Total Synthesis of
(*R,R,R*)- α -Tocopherol



Fluorine's the key: Fluoropalladium complexes open up a new route to metallamacrocycles. Treatment of **1** with 1-trimethylsilylated derivatives of imidazole, 2-phenylimidazole, or purine (see scheme) gives neutral molecules such as the bowl-shaped compound **2** (see structure, *i*Pr groups have been omitted for clarity). All compounds represent rare examples of neutral organometallic macrocycles and do not undergo reductive elimination of a C–N bond.



Fluorinated Macrocycles

A. Steffen, T. Braun,* B. Neumann,
H.-G. Stammer 8674–8678

Palladium Fluoro Complexes: Useful
Tools To Access Organometallic
Metallamacrocycles



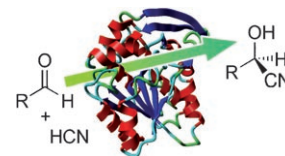
Enzyme Catalysis

J. Andexer, J. von Langermann, A. Mell,
M. Bocola, U. Kragl,* T. Eggert,*
M. Pohl* — **8679–8681**



An *R*-Selective Hydroxynitrile Lyase
from *Arabidopsis thaliana* with an
 α/β -Hydrolase Fold

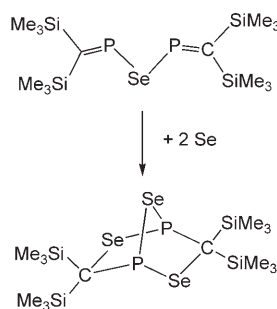
Folding and selectivity: The noncyano-
genic plant *Arabidopsis thaliana* contains a
new hydroxynitrile lyase, which was cloned
and characterized. This enzyme is readily
available from a recombinant source, has
a broad range of substrates, and enan-
tioselectively transforms aliphatic and
aromatic aldehydes as well as ketones into
the corresponding *R*-cyanohydrins.



$P_2C_2S_3$ Norbornanes

W.-W. du Mont,* T. Gust, J. Mahnke,
R. M. Birzoi, L. Barra, D. Bugnariu,
F. Ruthe, C. Wismach, P. G. Jones,
K. Karaghiosoff, L. Nyulászi,
Z. Benkő — **8682–8685**

From 2,4-Diphospha-3-Thia- and -3-
Selenapentadienes $[(Me_3Si)_2C=P]_2E$ to
Heteronorbornane Cage Compounds



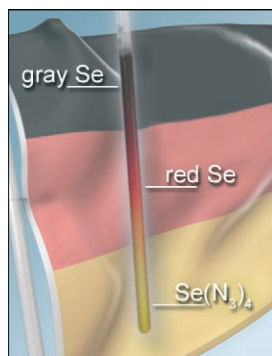
Cagey characters: Heteronorbornanes
 $(R_2CP)_2E_3$ unexpectedly form when sele-
nium or sulfur react with 2,4-diphospha-
pentadiene derivatives $(R_2C=P)_2E$
($R = Me_3Si$, $E = S, Se$; see picture). Calcu-
lations on model compounds ($R = H_3Si$,
 $E = S$), and synthesized counterparts
suggest that the $(R_2CP)_2S_3$ cage forms
after a sequence of C–S and P–S bond
cleavage and formation steps involving
 $S=P^{III}-CR_2-S-P^V(=S)=CR_2$ as an open-chain
intermediate.

Polyazides

T. M. Klapötke,* B. Krumm, M. Scherr,
R. Haiges, K. O. Christe* — **8686–8690**



The Binary Selenium(IV) Azides $Se(N_3)_4$,
 $[Se(N_3)_5]^-$, and $[Se(N_3)_6]^{2-}$



Black, red, gold: The reaction of SeF_4 with
 Me_3SiN_3 at low temperatures results in
the formation of the first binary seleni-
um(IV) azide $Se(N_3)_4$. The decomposition
in an NMR tube shows the colors of gray
selenium, red selenium, and the desired
yellow selenium tetraazide (see picture).
The reactions of $[SeF_5]^-$ and $[SeF_6]^{2-}$ with
 Me_3SiN_3 furnish the corresponding poly-
azidoselenites $[Se(N_3)_5]^-$ and $[Se(N_3)_6]^{2-}$.
All materials are extremely temperature-
sensitive.

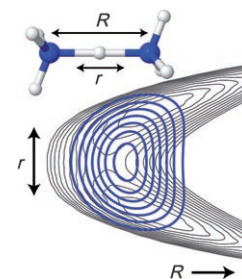
IR Spectroscopy of Strong H-Bonds

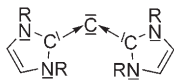
K. R. Asmis,* Y. Yang, G. Santambrogio,
M. Brümmer, J. R. Roscioli, L. R. McCunn,
M. A. Johnson,* O. Kühn* — **8691–8694**



Gas-Phase Infrared Spectroscopy and
Multidimensional Quantum Calculations
of the Protonated Ammonia Dimer $N_2H_7^+$

Zero-point energy matters: In strong, low-
barrier hydrogen bonds, quantum effects
cause a structural symmetrization (see
picture). Together with the pronounced
anharmonicity of vibrational motion, this
situation gives rise to peculiar infrared
(IR) spectral signatures in the region
below 2000 cm^{-1} . For the shared proton in
 $N_2H_7^+$, the IR spectrum is elucidated by
combining two experimental techniques
with anharmonic quantum calculations.





Future targets: Quantum-chemical calculations predict that the experimentally still unknown carbodicyclics $C(NHC)_2$ ($NHC = N$ -heterocyclic carbene; see picture for example) are a synthetically accessible class of divalent carbon(0) compounds which are very strong nucleophiles and bases that may be useful ligands for transition-metal complexes.

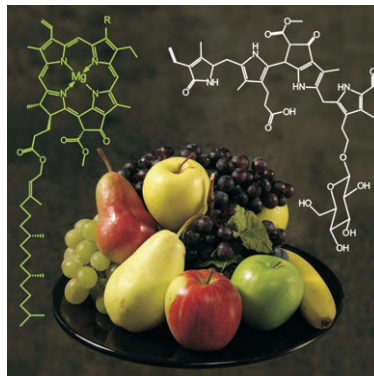
Carbodicarbene

R. Tonner, G. Frenking* — 8695–8698

$C(NHC)_2$: Divalent Carbon(0) Compounds with N-Heterocyclic Carbene Ligands—Theoretical Evidence for a Class of Molecules with Promising Chemical Properties

An apple a day keeps the doctor away:

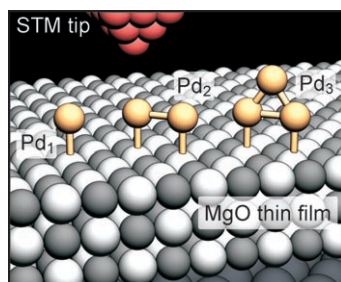
This old saying may obtain a new meaning. The degradation of chlorophyll in ripe apples and pears gives rise to so-called nonfluorescent catabolites of chlorophyll (NCCs), which are identical to NCCs from leaves. The NCCs from fruit prove to be effective natural antioxidants.



Chlorophyll Breakdown

T. Müller, M. Ulrich, K.-H. Ongania, B. Kräutler* — 8699–8702

Colorless Tetrapyrrolic Chlorophyll Catabolites Found in Ripening Fruit Are Effective Antioxidants

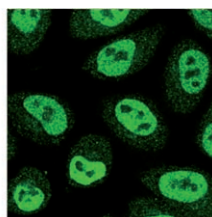
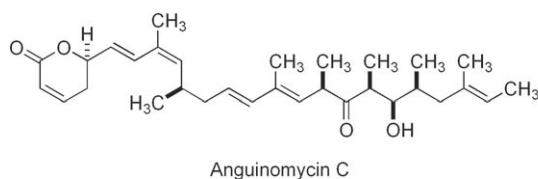


Atom by atom: The formation of palladium dimers and trimers from single palladium atoms adsorbed on the surface of a thin MgO(100) film has been observed with a low-temperature scanning tunneling microscope. Combining experimental results and DFT calculations allows the adsorption sites, the geometry, and the electronic properties of the palladium particles to be determined. These are found to have the structures predicted to be most stable on the MgO surface.

Surface Chemistry

M. Sterrer,* T. Risse, L. Giordano, M. Heyde, N. Nilius, H.-P. Rust, G. Pacchioni, H.-J. Freund — 8703–8706

Palladium Monomers, Dimers, and Trimers on the MgO(001) Surface Viewed Individually



Against nuclear export! Immunofluorescence assays indicate that anguinomycin C is a potent inhibitor of protein export from the nucleus. Key features in the total synthesis of this antitumor natural pro-

duct include a Cr-catalyzed enantioselective hetero-Diels–Alder reaction, a Negishi reaction with stereoinversion, and application of the DIOZ auxiliary.

Antitumor Agents

S. Bonazzi, S. Güttinger, I. Zemp, U. Kutay,* K. Gademann* — 8707–8710

Total Synthesis, Configuration, and Biological Evaluation of Anguinomycin C



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



A video clip is available as Supporting Information on the WWW (see article for access details).

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Corrigendum

Fluorescence-Lifetime Imaging of DNA–Dye Interactions within Continuous-Flow Microfluidic Systems

R. K. P. Benninger, O. Hofmann,
B. Önfelt, I. Munro, C. Dunsby,
D. M. Davis, M. A. A. Neil,
P. M. W. French,*

A. J. de Mello* _____ 2228–2231

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