



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:

J. Steill, J. Zhao, C.-K. Siu, Y. Ke, U. H. Verkerk, J. Oomens, R. C. Dunbar, A. C. Hopkinson, K. M. Siu*
Structure of the Observable Histidine Radical Cation in the Gas Phase: a Captodative α Radical Ion

Z. Deng, I. Bald, E. Illenberger, M. A. Huel*
Bond- and Energy-Selective Carbon Abstraction from D-Ribose by Hyperthermal Nitrogen Ions

J. Spielmann, F. Buch, S. Harder*
Early Main-Group Metal Catalysts for the Hydrogenation of Alkenes with Hydrogen

C. Schäffer, A. Merca, H. Bögge, A. M. Todea, M. L. Kistler, T. Liu, R. Thouvenot, P. Gouzerh*, A. Müller*
Unprecedented and Differently Applicable Pentagonal Units in a Dynamic Library: A Keplerate of the Type $\{(W)W_5\}_{12}\{Mo_2\}_{30}$

T. Seiser, N. Cramer*
Enantioselective C–C Bond Activation of Allenylcyclobutanes: Access to Cyclohexenones with Quaternary Stereogenic Centers

S. W. Hong, M. Byun, Z. Lin*
Robust Self-Assembly of Highly Ordered Complex Structures by Controlled Evaporation of Confined Microfluids

L. Catala*, D. Brinzei, Y. Prado, A. Gloter, O. Stéphan, G. Rogez, T. Mallah*
Core–Multishell Magnetic Coordination Nanoparticles: Towards Multifunctionality at the Nanoscale

D. Morton, S. Leach, C. Cordier, S. Warriner, A. Nelson*
Synthesis of Natural-Product-Like Molecules with over Eighty Distinct Scaffolds

Jeremy R. Knowles (1935–2008)

Molecular Clusters

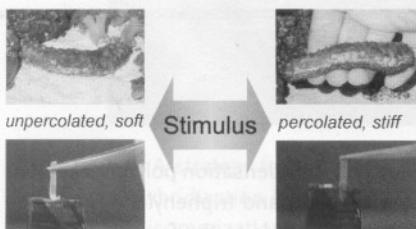
Thomas P. Fehlner, Jean-François Halet, Jean-Yves Saillard

Obituary

E. J. Corey, N. L. Rudenstine — 8772

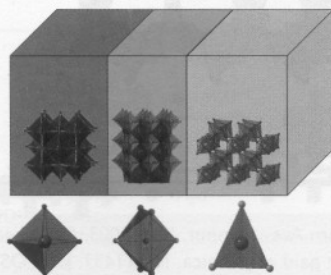
Books

reviewed by B. Albert — 8774



An inspired design: A new class of nanocomposites can reversibly switch its mechanical stiffness by up to three orders of magnitude in response to its environment. The architecture of the material is inspired by the dermis of the sea cucumber (see pictures), and the mechanically adaptable composites are potentially suitable for use in biomedical applications.

When the energy landscape offers numerous low-energy structures, the synthetic method can determine which structure is formed. In solid-state reactions yielding new crystalline extended structures from solid precursor phases, mass transport coupled with pronounced reorganization of atomic coordination environments is required. The picture shows the reaction of BaO (left) with TiO_2 (right) to form $BaTiO_3$ (middle).



Highlights

Nanocomposites

S. L. Craig* — 8776–8777

Cool as a Cucumber

Metastable Compounds

M. J. Rosseinsky* — 8778–8780

Opening the "Stable" Door

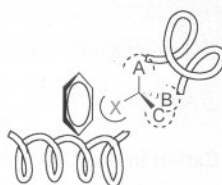
Minireviews

Enzyme Catalysis

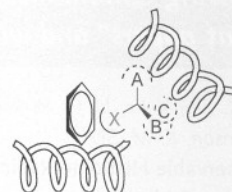
P. F. Mugford, U. G. Wagner, Y. Jiang,
K. Faber,* R. J. Kazlauskas* **8782–8793**



Enantiocomplementary Enzymes:
Classification, Molecular Basis for Their
Enantioselectivity, and Prospects for
Mirror-Image Biotransformations



Enzyme pairs that catalyze the same reaction but favor opposite enantiomers are known as enantiocomplementary enzymes (see scheme). To create mirror-image active sites, nature can switch the



locations of binding sites and/or the locations of key catalytic groups. In this Minireview, X-ray crystal structures of enantiocomplementary enzymes are surveyed and classified into four groups.

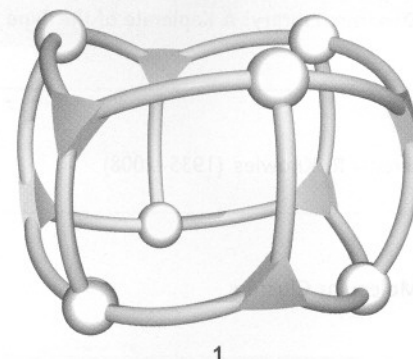
Reviews

Coordination Chemistry

R. W. Saalfrank,* H. Maid,
A. Scheurer **8794–8824**

Supramolecular Coordination Chemistry:
The Synergistic Effect of Serendipity and
Rational Design

Luck or ability? In the field of supramolecular coordination chemistry, impressive advances have been achieved by the augmentation of initial serendipitous discoveries with rational design. Detailed consideration of symmetry and of the basic principles of coordination chemistry have led to rational strategies for the construction of diverse nanostructures with specific form and size (for example, **1**; Fe: white, tripodal benzene ligand: yellow).



Communications

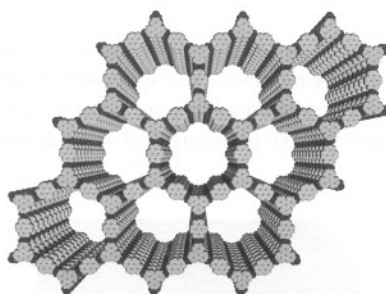


Organic Frameworks

S. Wan, J. Guo, J. Kim, H. Ihee,
D. Jiang* **8826–8830**



**A Belt-Shaped, Blue Luminescent, and
Semiconducting Covalent Organic
Framework**



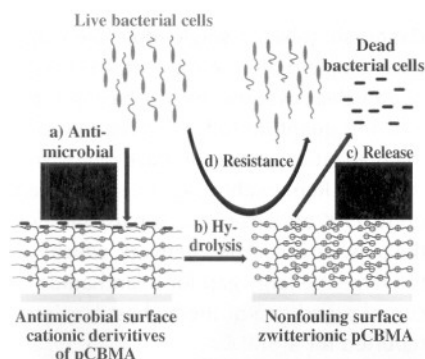
Blue belt: Condensation polymerization of pyrene (blue) and triphenylene (green) monomers leads to the formation of a hexagonal mesoporous covalent organic framework (see picture). This material exists in a belt shape, absorbs photons over a wide wavelength range to emit them as blue luminescence, and is semiconducting, as well as being capable of repetitive on–off switching.

For the USA and Canada:

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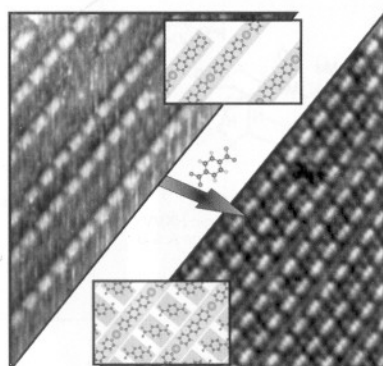


Trap, kill, and release: An antimicrobial cationic surface can effectively kill bacterial cells and switch to a nonfouling zwitterionic surface which releases dead microorganisms upon hydrolysis (see picture). This biocompatible nonfouling surface can prevent further attachment of proteins and microorganisms and the formation of a biofilm on the surface.

Switchable Polymer Surfaces

G. Cheng, H. Xue, Z. Zhang, S. Chen, S. Jiang* — 8831–8834

A Switchable Biocompatible Polymer Surface with Self-Sterilizing and Nonfouling Capabilities

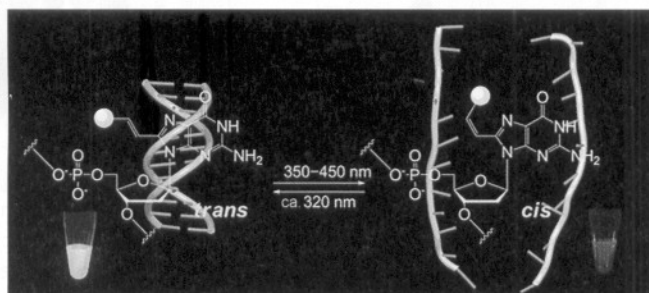


Supramolecular glue: One-dimensional copper-pyridyl coordination chains on a Cu(100) surface are stabilized and ordered by dicarboxylic ligands through hydrogen-bonding interactions. This hierarchical bonding motif demonstrates a strategy for developing complex, yet well-ordered, supramolecular surface structures by self-assembly, such as these stable islands (see picture) with a one-dimensional coordination character.

Supramolecular Networks

A. Langner, S. L. Tait,* N. Lin, R. Chandrasekar, M. Ruben, K. Kern — 8835–8838

Ordering and Stabilization of Metal–Organic Coordination Chains by Hierarchical Assembly through Hydrogen Bonding at a Surface



A light switch: A strategy for the photo-regulation of hybridization by using the *cis*–*trans* photoisomerization of a photochromic nucleoside (PCN) is reported. This process enables the switch between duplexes and single strands in an ex-

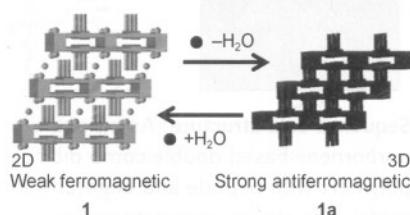
tremely straightforward and reversible manner with light stimulation (see scheme), even at room temperature. Additionally, installation of PCNs into DNA had little influence on the B-form structure when the duplex was formed.

DNA Manipulation

S. Ogasawara,* M. Maeda — 8839–8842

Straightforward and Reversible Photoregulation of Hybridization by Using a Photochromic Nucleoside

Ring the changes: A 2D crystalline coordination polymer **1** is transformed reversibly into a 3D crystal **1a** by dehydration. This reversible structural transformation is accompanied by a change in optical and magnetic properties. The 3D coordination framework absorbs H₂O molecules but rejects common organic solvents, such as MeOH, EtOH, THF, and Me₂CO.



Coordination Polymers

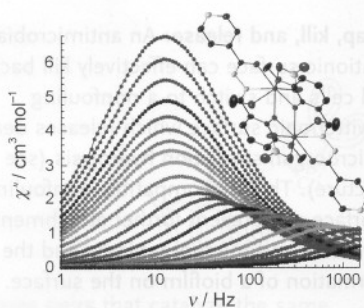
S. K. Ghosh, W. Kaneko, D. Kiriya, M. Ohba, S. Kitagawa* — 8843–8847

A Bistable Porous Coordination Polymer with a Bond-Switching Mechanism Showing Reversible Structural and Functional Transformations

Single-Molecule Magnets

P.-H. Lin, T. J. Burchell, R. Clérac,*
M. Murugesu* — 8848–8851

 Dinuclear Dysprosium(III) Single-Molecule Magnets with a Large Anisotropic Barrier



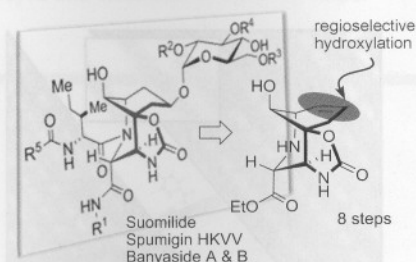
Dysprosium-based single-molecule magnets: Single-molecule magnets (SMMs) of dinuclear dysprosium(III) having thermal and quantum tunneling regimes of magnetization relaxation have been synthesized. Remarkably large energy barriers up to 71 K are observed, in particular for the polymeric complex network, which has the largest energy gap for a lanthanide complex and one of the highest barriers reported for a SMM.

Natural Products

C. S. Schindler, C. R. J. Stephenson,
E. M. Carreira* — 8852–8855

 Enantioselective Synthesis of the Core of Banyaside, Suomilide, and Spumigin HKVV

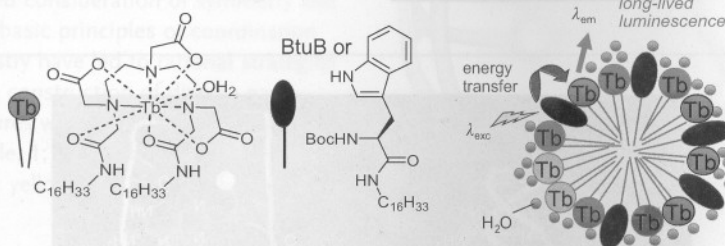
Concise: The first synthesis of the unique azabicyclononane core found in the aeruginosin class of serine protease inhibitors is described. The route is characterized by its efficiency (eight steps) and sets the stage for subsequent introduction of the glycosyl and peptidyl side chains that differentiate the members of the aeruginosin family of natural products.



Luminescent Probes

C. L. Davies, N. G. Housden,
A.-K. Duhme-Klair* — 8856–8858

 Intermolecular Sensitization of a Terbium-Containing Amphiphile by an Integral Membrane Protein



A luminescent probe for integral membrane proteins (IMPs): Intermolecular sensitization of Tb luminescence is observed in micelles in which the polar head group of a Tb-containing lipid analogue is located close to an antenna

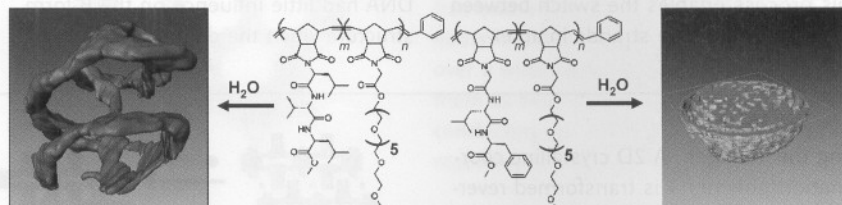
chromophore, such as tryptophan, in a surfactant analogue that mimics interfacially bound tryptophan residues of an IMP or tryptophan in the aromatic collar of the vitamin B₁₂ transporter protein BtuB (see picture).

Communications

Copolymer Morphologies

A. L. Parry, P. H. H. Bomans, S. J. Holder,*
N. A. J. M. Sommerdijk,*
S. C. G. Biagini* — 8859–8862

 Cryo Electron Tomography Reveals Confined Complex Morphologies of Tripeptide-Containing Amphiphilic Double-Comb Diblock Copolymers



Sequence sets structure: Amphiphilic norbornene-based double-comb diblock polymers with peptide and oligo(ethylene oxide) side chains aggregate in water to form unprecedented complex morphologies depending on the amino acid

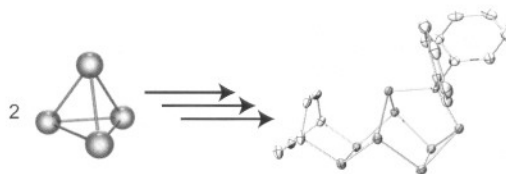
sequence of the peptide. The internal structures of the aggregates observed by cryo electron tomography show densely folded and highly branched wormlike micelles (left) and spherical aggregates with a bicontinuous architecture (right).

Phosphorus-Rich Organic Molecules

B. M. Cossairt,
C. C. Cummins* 8863–8866



A Niobium-Mediated Cycle Producing Phosphorus-Rich Organic Molecules from White Phosphorus (P_4) through Activation, Functionalization, and Transfer Reactions



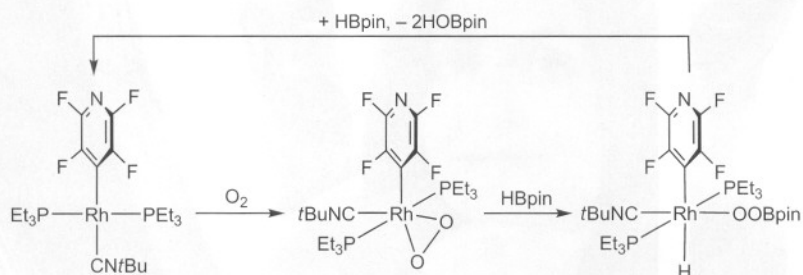
PROMs: Niobium-mediated aggregation of two molecules of white phosphorus and subsequent exploitation of niobium–phosphorus multiple bonding leads to the

synthesis of phosphorus-rich organic molecules as Diels–Alder adducts (see scheme; orange P, white C).

Peroxo Complexes

M. Ahijado Salomon, T. Braun,*
A. Penner 8867–8871

Stepwise Oxygenation of Pinacolborane by a Rhodiumperoxo Complex: Detection of an Intermediate Metal Borate and Perborate



Acting as go-between: A rhodium borate and perborate have been identified as intermediates in the rhodium-mediated oxygenation of pinacolborane (HBpin; see scheme). The rhodium(III)–peroxo complex reacts with the Lewis acidic boron

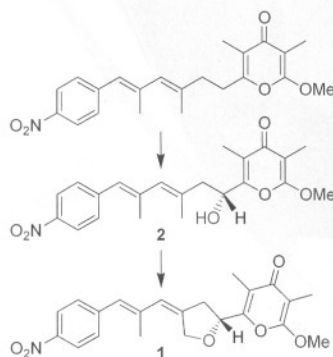
compound HBpin by oxygen transfer from the rhodium center to HBpin to give a rhodium(I) species. The reaction sequence might play a crucial role in the homocoupling of boronic acid.

Biosynthesis

M. E. A. Richter, N. Traitcheva, U. Knüpfer,
C. Hertweck* 8872–8875



Sequential Asymmetric Polyketide Heterocyclization Catalyzed by a Single Cytochrome P450 Monooxygenase (AurH)



Two in one: In vitro biotransformations with the cytochrome P450 monooxygenase AurH from the aureothin (1) biosynthetic pathway provided direct experimental evidence that a single monooxygenase can install two C–O bonds sequentially to form a tetrahydrofuran ring. Structural elucidation of the intermediate 2 revealed the order of bond formation and the stereochemical course of this unprecedented oxygenation–heterocyclization reaction.

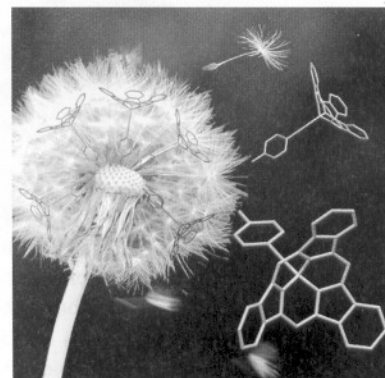
Subphthalocyanines

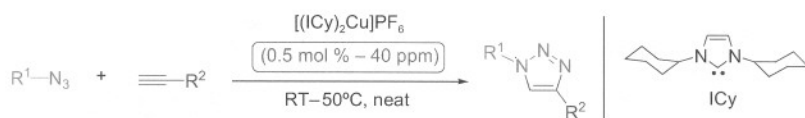
F. Camerel, G. Ulrich, P. Retailleau,
R. Ziessel* 8876–8880



Ethynyl–Boron Subphthalocyanines Displaying Efficient Cascade Energy Transfer and Large Stokes Shifts

A new class of luminescent dyes incorporates aromatic residues attached by an ethynyl link to the boron center of a subphthalocyanine (SubPc; see picture). Efficient energy transfer from energy-donor subunits to the SubPc produces very large Stokes shifts, while luminescence quantum yields are maintained. An acid-triggered “switching on” of SubPc emission occurs when a dibutylamino fragment is axially coordinated to the SubPc.





La click, c'est chic! A catalytic system based on an $[(\text{NHC})_2\text{Cu}]\text{X}$ complex (NHC = N-heterocyclic carbene) was developed for the [3+2] cycloaddition of azides with alkynes under click conditions (see scheme). This system is broad in

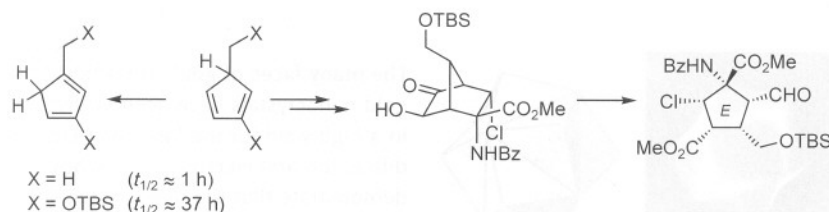
scope and highly efficient (turnover frequencies up to 5000 h^{-1}) even at very low catalyst loadings (down to 40 ppm). Preliminary mechanistic studies suggest a specific precatalyst-activation pathway.

1,3-Dipolar Cycloaddition

S. Díez-González,*

S. P. Nolan* 8881–8884

$[(\text{NHC})_2\text{Cu}]\text{X}$ Complexes as Efficient Catalysts for Azide–Alkyne Click Chemistry at Low Catalyst Loadings



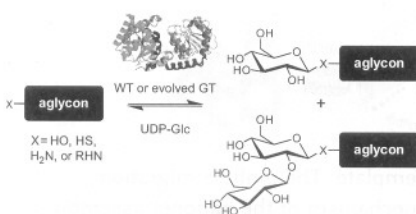
Putting the brakes on a hydride shift: The incorporation of a 2-silyloxy group increases both the stability and reactivity of 5-substituted cyclopentadienes, thus facilitating their preparation and use (see

scheme; Bz = benzyl, TBS = *tert*-butyldimethylsilyl). This approach has been applied to the synthesis of the E ring in the marine alkaloid palau'amine.

Diels–Alder Reactions

J. Hudon, T. A. Cernak, J. A. Ashenurst,
J. L. Gleason* 8885–8888

Stable 5-Substituted Cyclopentadienes for the Diels–Alder Cycloaddition and their Application to the Synthesis of Palau'amine

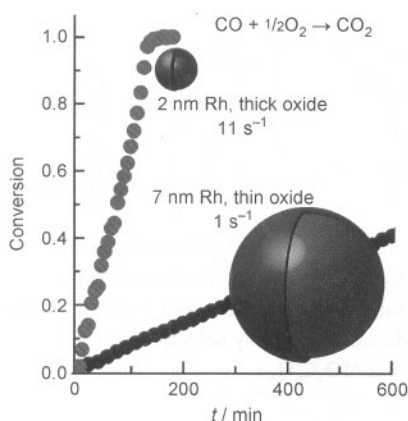


A sweet library: Two variants (wild-type (WT) and a triple mutant) of glycosyltransferase (GT) OleD have been shown to catalyze glycosylation of over 70 substrates, formation of O-, S- and N-glycosidic bonds, and iterative glycosylation (see scheme). Identified substrates include nucleophiles not previously known to act in GT reactions and span numerous natural product and therapeutic drug classes.

Enzyme-Catalyzed Glycosylation

R. W. Gantt, R. D. Goff, G. J. Williams,
J. S. Thorson* 8889–8892

Probing the Aglycon Promiscuity of an Engineered Glycosyltransferase



The smaller, the better: In situ synchrotron ambient pressure X-ray photoelectron spectroscopy allows examination of the oxidation state of the surface of the rhodium nanoparticles (NPs) during CO oxidation in an O_2 atmosphere. 2 nm NPs oxidize to a larger extent than 7 nm NPs during reaction at $150\text{--}200^\circ\text{C}$, which correlates with a fivefold increase in turnover frequency for the smaller nanoparticles.

Heterogeneous Catalysis

M. E. Grass, Y. Zhang, D. R. Butcher,
J. Y. Park, Y. Li, H. Bluhm, K. M. Bratlie,
T. Zhang, G. A. Somorjai* 8893–8896

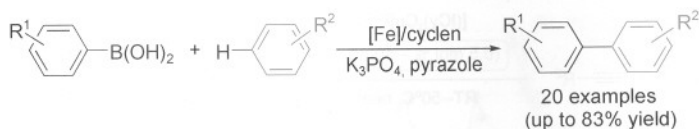
A Reactive Oxide Overlayer on Rhodium Nanoparticles during CO Oxidation and Its Size Dependence Studied by In Situ Ambient-Pressure X-ray Photoelectron Spectroscopy

Synthetic Methods

J. Wen, J. Zhang, S.-Y. Chen, J. Li,
X.-Q. Yu* ————— 8897–8900



Iron-Mediated Direct Arylation of
Unactivated Arenes



Inexpensive and straightforward: An iron-mediated cross-coupling reaction generates biaryl compounds through C–H bond activation, using easily handled reagents

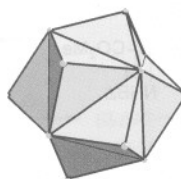
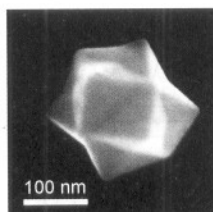
with low toxicity. Under the optimized reaction conditions a series of substituted phenylboronic acids were coupled with several simple unactivated arenes.

Nanostructures

Y. Ma, Q. Kuang,* Z. Jiang, Z. Xie,*
R. Huang, L. Zheng ————— 8901–8904



Synthesis of Trisoctahedral Gold
Nanocrystals with Exposed High-Index
Facets by a Facile Chemical Method



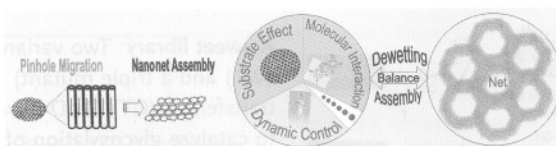
The many faces of gold: Trisoctahedral gold nanocrystals have been synthesized in a high yield for the first time. Electron diffraction and electron microscopy demonstrate that the nanocrystals are enclosed by 24 high-index facets, such as {221} planes (see SEM image (left) and model (right)).

Nanonets

Z. Luo, Y. Liu, L. Kang, Y. Wang, H. Fu,*
Y. Ma, J. Yao,* B. H. Loo — 8905–8908



Controllable Nanonet Assembly Utilizing
a Pressure-Difference Method Based on
Anodic Aluminum Oxide Templates



A large network with a nanonet architecture has been fabricated from tetrakis-(*p*-chlorophenyl)porphyrin by a pressure differential across films deposited on a

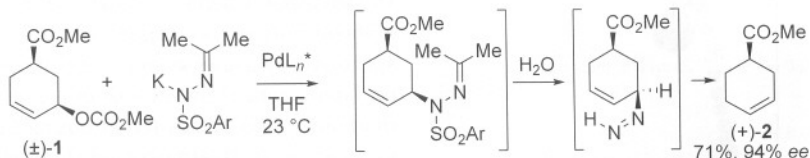
template. The pinhole migration mechanism of the nanonet assembly is based on controllable dynamic balance.

Synthetic Methods

M. Movassaghi,*
O. K. Ahmad ————— 8909–8912

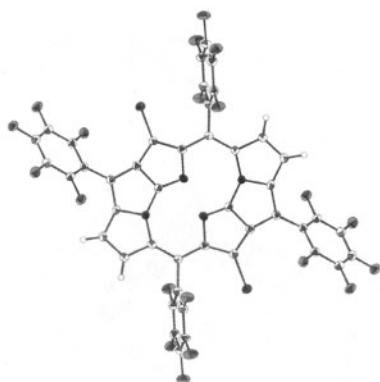


A Stereospecific Palladium-Catalyzed
Route to Monoalkyl Diazenes for Mild
Allylic Reduction



One step beyond: The first single-step stereospecific transition-metal-catalyzed conversion of allylic electrophiles into monoalkyl diazenes is described. This synthesis of allylic monoalkyl diazenes offers a new strategy for asymmetric

synthesis by the reduction of optically active substrates or the use of chiral catalyst systems. Sensitive substrates are reduced in a highly selective manner. Ar = 2-NO₂C₆H₄.

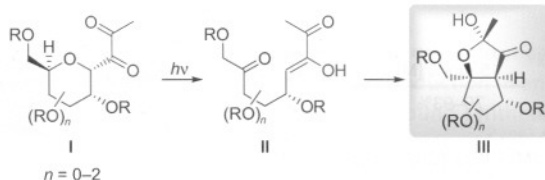


Are you N-fused? Doubly N-fused porphyrin (see picture; Br red, F green, N blue) exhibits exceptionally long-wavelength absorption for an 18π aromatic system (in excess of 1600 nm). The HOMO–LUMO energy gap of doubly N-fused porphyrin is extremely small for an [18]annulenic compound and results from endocyclic extension of the porphyrin π system.

Porphyrinoids

M. Toganoh, T. Kimura, H. Uno,
H. Furuta* 8913–8916

Doubly N-Fused Porphyrin



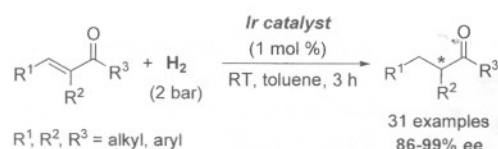
Opened and closed: Visible-light photo-stimulation of 2,3-diuloses **I** triggers an unprecedented sequential rearrangement: A Norrish type II photoelimination to give an isolable acyclic photoenol intermediate

II is followed by an intramolecular enolexo aldolization. The contraction of the pyranose ring in this process leads to a new type of cyclopentitol derivative **III**.
R = acyl, alkyl, silyl group.

Carbohydrates

D. Álvarez-Dorta, E. I. León,*
A. R. Kennedy, C. Riesco-Fagundo,
E. Suárez* 8917–8919

Sequential Norrish Type II
Photoelimination and Intramolecular
Aldol Cyclization of 1,2-Diketones in
Carbohydrate Systems: Stereoselective
Synthesis of Cyclopentitols



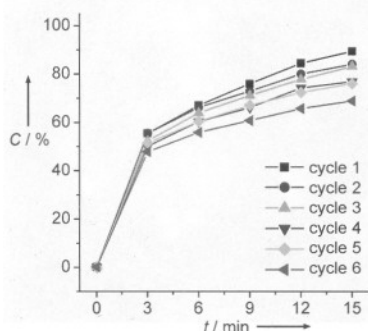
Close to perfect enantioselectivity (up to 99% *ee*, see scheme) is found for the formation of α -substituted ketones by the asymmetric hydrogenation of enones with an iridium–phosphinooxazoline catalyst. In an operationally simple process, both

linear and cyclic substrates react well and afford the desired products in high yields. A wide variety of substituents are tolerated, thus making the method synthetically appealing.

Asymmetric Synthesis

S.-M. Lu, C. Bolm* 8920–8923

Highly Enantioselective Synthesis of
Optically Active Ketones by Iridium-
Catalyzed Asymmetric Hydrogenation



Limited holeiness: Core–satellite nanocomposite catalysts protected by a layer of mesoporous silica have been fabricated through the combination of simple sol-gel and etching processes. As superparamagnetic components are also incorporated, these composite structures are ideal recyclable catalysts. (see plot for performance in repeated cycles of 4-nitrophenol reduction).

Nanocomposite Catalysts

J. Ge, Q. Zhang, T. Zhang,
Y. Yin* 8924–8928

Core–Satellite Nanocomposite Catalysts
Protected by a Porous Silica Shell:
Controllable Reactivity, High Stability, and
Magnetic Recyclability

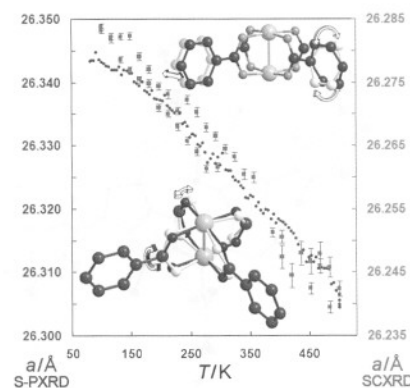
Metal–Organic Frameworks

Y. Wu, A. Kobayashi, G. J. Halder,
V. K. Peterson, K. W. Chapman, N. Lock,
P. D. Southon, C. J. Kepert* **8929–8932**



Negative Thermal Expansion in the
Metal–Organic Framework Material
 $\text{Cu}_3(1,3,5\text{-benzenetricarboxylate})_2$

The action behind contraction: The metal–organic framework $[\text{Cu}_3(\text{btc})_2]$ displays negative thermal expansion (NTE) over a broad temperature range. This property arises from two coincident mechanisms, each of which are unique for NTE systems: the concerted transverse vibration of triangular organic linkers, and the local dynamic distortion of dinuclear metal centers within the framework lattice.

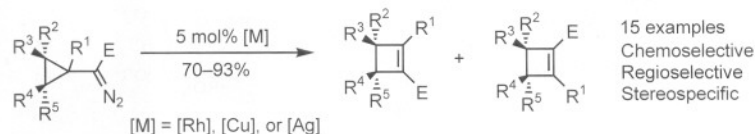


Ring Expansion

H. Xu, W. Zhang, D. Shu, J. B. Werness,
W. Tang* **8933–8936**



Synthesis of Cyclobutenes by Highly
Selective Transition-Metal-Catalyzed Ring
Expansion of Cyclopropanes



A highly chemoselective, regioselective, and stereospecific synthesis of polysubstituted cyclobutenes, by catalyst-controlled ring expansion of cyclopropanes via metal carbene intermediates, is reported.

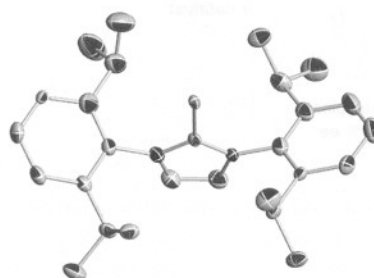
Transition-metal catalysts showed profound effects on the reactivity and selectivity of metal carbene intermediates in this ring-expansion reaction.

Gold Hydride Complexes

E. Y. Tsui,* P. Müller,
J. P. Sadighi **8937–8940**



Reactions of a Stable Monomeric Gold(I)
Hydride Complex



Golden opportunity: A terminal mononuclear gold(I) hydride complex has been stabilized by an N-heterocyclic carbene ligand (see picture: Au orange, N blue, C gray). The complex is stable to a wider range of conditions than other transition metal hydride compounds and reacts to form a number of different gold(I) species.

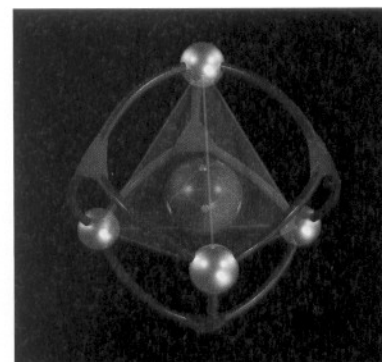
Host–Guest Systems

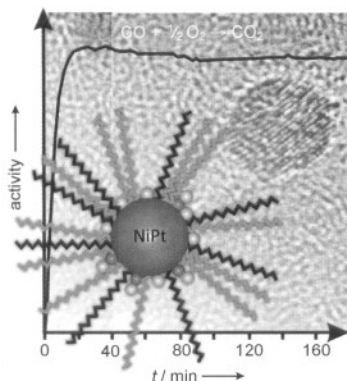
R. W. Saalfrank,* H. Maid, A. Scheurer,
F. W. Heinemann, R. Puchta, W. Bauer,
D. Stern, D. Stalke **8941–8945**



Template and pH-Mediated Synthesis of
Tetrahedral Indium Complexes
 $[\text{Cs}\{\text{In}_4(\text{L})_4\}]^+$ and $[\text{In}_4(\text{H}^{\text{NL}}\text{L})_4]^{4+}$:
Breaking the Symmetry of N-Centered C_3
(L^{3-}) To Give Neutral $[\text{In}_4(\text{L})_4]$

Molecular Kinder eggs are generated from N-centered tripodal heptadentate tris(1,3-diketone) ions (L^{3-}) in the presence of indium ions. The tetrahedral complexes host a cesium ion $[\text{Cs}\{\text{In}_4(\text{L})_4\}]^+$, see picture) or four protons. Deprotonation of the species $[\text{In}_4(\text{H}^{\text{NL}}\text{L})_4]^{4+}$ generates the empty cage compound $[\text{In}_4(\text{L})_4]$, which comes with a break of the symmetry in the initial C_3 -symmetric tripodal ligand.



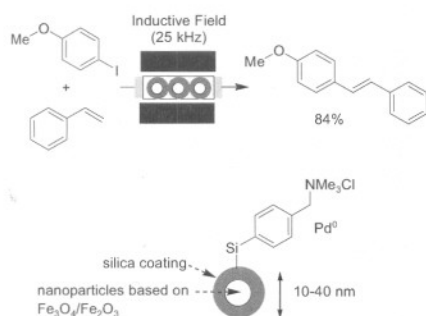


Structural control by application of ligand-stabilized nanoparticles in heterogeneous catalysis: Highly active and structurally well-defined NiPt nanocrystals can be obtained by colloidal synthesis. When deposited on suitable supports they show immediate activity without any oxidative or thermal pretreatment. The picture shows the development of the catalytic activity of supported colloidal NiPt nanoparticles for the oxidation of CO at 170 °C.

Heterogeneous Catalysis

B. Jürgens, H. Borchert, K. Ahrenstorf, P. Sonström, A. Pretorius, M. Schowalter, K. Gries, V. Zielasek, A. Rosenauer, H. Weller, M. Bäumer* — 8946–8949

Colloidally Prepared Nanoparticles for the Synthesis of Structurally Well-Defined and Highly Active Heterogeneous Catalysts



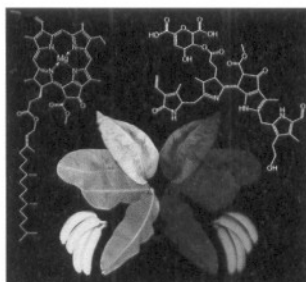
The heat is on! Ferromagnetic materials heated by induction in an electromagnetic field have found synthetic application. Best results were obtained when superparamagnetic nanoparticles coated with SiO₂ were incorporated in a microfluidic reactor and transformations were performed under flow conditions. These magnetic particles can be doped with Pd and used as heated heterogeneous catalysts.

Magnetic Nanoparticles

S. Ceylan, C. Fries, C. Lammel, K. Mazac, A. Kirschning* — 8950–8953

Inductive Heating for Organic Synthesis by Using Functionalized Magnetic Nanoparticles Inside Microreactors

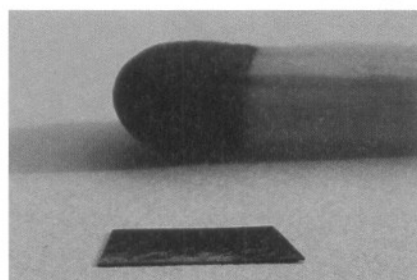
Yes, we have blue bananas! Ripening bananas exhibit intense blue luminescence under UV light. Their luminescence arises from fluorescent chlorophyll catabolites which accumulate in the banana peels during ripening; their natural further conversion into nonfluorescent catabolites is specifically inhibited by a previously unrecognized chemical modification.



Tetrapyrrole Pigments

S. Moser, T. Müller, M.-O. Ebert, S. Jockusch, N. J. Turro, B. Kräutler* — 8954–8957

Blue Luminescence of Ripening Bananas



Processes on nanometer-scale dimensions are possible in a mechanically stable, flexible, and monolithic porous 3D carbon nanotube structure (see picture). The nanoscale chemical reactor exhibits an extremely high surface-to-volume ratio of up to $2 \times 10^7 \text{ m}^2 \text{ m}^{-3}$, which depends on the tube diameter and tube separation. This exceeds values for current microreactors by at least two orders of magnitude.

Nanoreactors

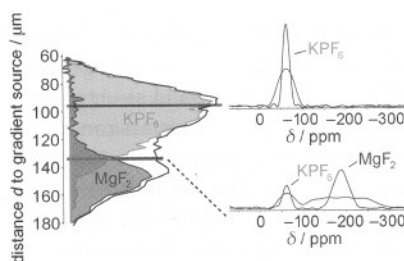
A. Popp, J. J. Schneider* — 8958–8960

A Chip-Sized Nanoscale Monolithic Chemical Reactor

VIP Microimaging

K. W. Eberhardt, C. L. Degen, A. Hunkeler,
B. H. Meier* 8961–8963

One- and Two-Dimensional NMR
Spectroscopy with a Magnetic-Resonance
Force Microscope



At the micrometer scale: Chemical interactions at the atomic level have been characterized with localized spectroscopy by using magnetic-resonance force microscopy to locate slices of 2.0 μm thickness in a heterogeneous sample (see picture). To recover the chemical-shift information, the field gradient was temporarily switched off by removing its source mechanically. This technique allows high-resolution one- and two-dimensional NMR spectra to be recorded.

Supporting information is available on www.angewandte.org (see article for access details).

A video clip is available as Supporting Information on www.angewandte.org (see article for access details).

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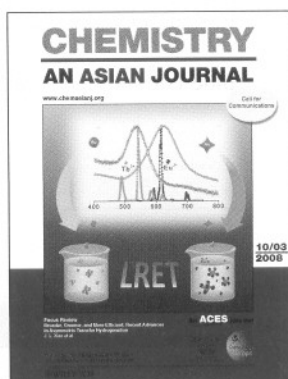
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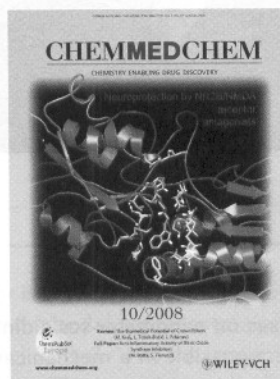
Authors 8965

Preview 8967

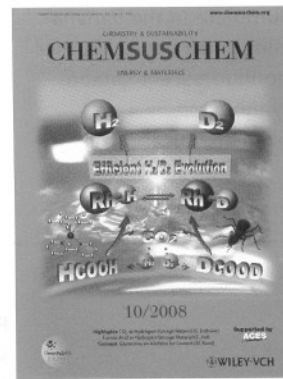
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