



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:

B. L. Merner, L. N. Dawe, G. J. Bodwell*

1,1,8,8-Tetramethyl[8](2,11)teropyrenophane: Half of an Aromatic Belt and a Segment of an (8,8) Single-Walled Carbon Nanotube

J. H. Ahn, B. Temel, E. Iglesia*

Selective Homologation Routes to 2,2,3-Trimethylbutane on Solid Acids

B. Brugger, S. Rütten, K.-H. Phan, M. Möller, W. Richtering*
Colloidal Suprastructure of Smart Microgels at Oil/Water Interfaces

J. England, M. Martinho, E. R. Farquhar, J. R. Frisch,
E. L. Bominaar,* E. Münck,* L. Que, Jr.*

A Synthetic High-Spin Oxoiron(IV) Complex: Generation, Spectroscopic Characterization, and Reactivity

C. R. Hess, T. Weyhermüller, E. Bill, K. Wieghardt*

[{Fe(tim)}₂]: An Fe–Fe Dimer Containing an Unsupported Metal–Metal Bond and Redox-Active N₄-Macrocyclic Ligands

B. Liu, H. Wang, H. Xie, B. Zeng, J. Chen, J. Tao, T. B. Wen, Z. Cao,
H. Xia*

Osmapyridine and Osmapyridinium from a Formal [4+2] Cycloaddition Reaction

J. Tolosa, C. Kub, U. H. F. Bunz*

Hyperbranched: A Universal Conjugated Polymer Platform?

D. Xu, Z. Liu, H. Yang, Q. Liu, J. Zhang, J. Fang,* S. Zou,* K. Sun
Solution-Based Evolution of Monodisperse Pt–Cu Nanocubes and Their Enhanced Methanol Oxidation Activity

H. Moroder, J. Steger, D. Graber, K. Fauster, K. Trappl, V. Marquez,
N. Polacek, D. N. Wilson, R. Micura*

Nonhydrolyzable RNA–Peptide Conjugates: A Powerful Advance in the Synthesis of Mimics for 3'-Peptidyl tRNA Termini

J. L. Alonso-Gómez, P. Rivera-Fuentes, N. Harada, N. Berova,
F. Diederich*

An Enantiomerically Pure Allenic-Acetylenic Macrocyclic: Synthesis and Rationalization of Its Outstanding Chiroptical Response

P. García-García, M. A. Fernández-Rodríguez, E. Aguilar*

Gold-Catalyzed Cycloaromatization of 2,4-Dien-6-yne Carboxylic Acids: Synthesis of 2,3-Disubstituted Phenols and Unsymmetrical Bi- and Terphenyls

H. Jiang, P. Elsner, K. L. Jensen, A. Falcicchio, V. Marcos,
K. A. Jørgensen*

Achieving Molecular Complexity by Organocatalytic One-Pot Strategies: A Fast Entry for the De Novo Synthesis of Sphingoids, Amino Sugars and Polyhydroxylated α -Amino Acids



H. Yamamoto



T. Aida



G. Frenking

News

Organic Chemistry:
Prize to Yamamoto _____ 3388

Polymers:
Aida Awarded _____ 3388

Theoretical Chemistry:
Frenking Honored _____ 3388



„My most exciting discovery to date has been always the last one (or better still, the next one). The biggest challenge facing scientists is the responsible use of knowledge and scientific power for the betterment of humanity. ...“
This and more about P. Melchiorre can be found on page 3389.

Author Profile

P. Melchiorre _____ 3389

Books

Handbook Of Heterogeneous Catalysis

G. Ertl, H. Knözinger, F. Schüth
J. Weitkamp

reviewed by J. M. Thomas _____ 3390

The Periodic Table

Eric R. Scerri

reviewed by W. H. E. Schwarz _____ 3391

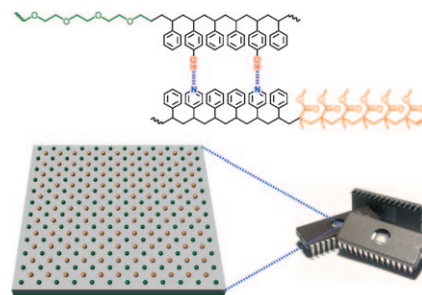
Highlights

Supramolecular Chemistry

Y.-b. Lim, M. Lee* _____ 3394–3396

Molecular Recognition in Self-Assembled Integrated Circuits: Getting Smaller while under Control

Available in small print: Block copolymer lithography has great potential for reducing the size and fabrication time of integrated circuits. Hydrogen-bonding-mediated molecular recognition in self-assembly processes can be used to produce highly ordered square arrays of block copolymers on the surface of a silicon substrate (see picture).

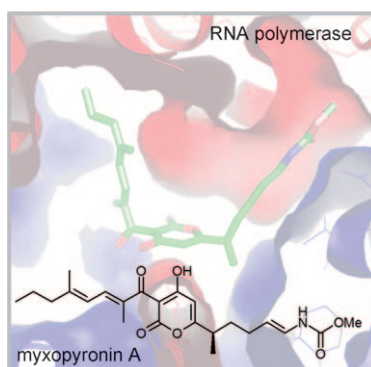


Natural Antibiotics

D. Haebich,*

F. von Nussbaum* _____ 3397–3400

Lost in Transcription—Inhibition of RNA Polymerase

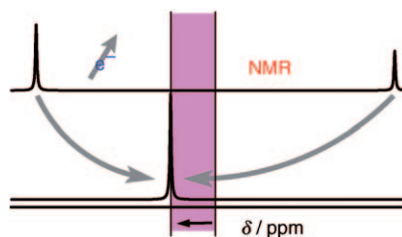


Form and function: The natural product myxopyronin A provides the key to understanding the inhibition of bacterial RNA polymerase and should spark new ideas for the design of new antibiotics against tuberculosis and other infectious diseases.

NMR Spectroscopy

J. Schmedt auf der Gönne * 3401–3403

Spin-Polarized Structures and Solid-State NMR Spectroscopy of Paramagnetic Compounds



On an atomic scale and with high sensitivity, solid-state NMR spectroscopy can provide information about the electronic spin density and coupling mechanisms in paramagnetic compounds. The picture shows how the hyperfine splitting collapses through relaxation. Insights into which compounds are suitable and which approximations have to be made are given.

For the USA and Canada:

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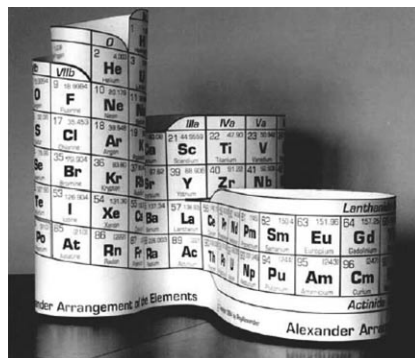
electronic / print or electronic delivery); for individuals who are personal members of a national chemical society prices are available on request. Postage and handling charges included. All prices are subject to local VAT/sales tax.

Essays

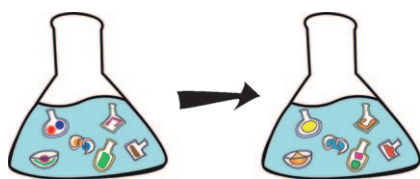
Periodic System

S.-G. Wang,
W. H. E. Schwarz* 3404–3415

Icon of Chemistry: The Periodic System of
Chemical Elements in the New Century



A closer look: A deeper theoretical understanding of the multifaceted periodic system of elements (PSE) has been achieved in recent years. The large energy gaps above the noble gas shells $1s^2$ and np^6 ($n=2-6$) impress periodicity onto the whole PSE, which is complete with Period 7. The electron configurations of unbound atoms are chemically misleading. The common $n+l$ rule is an example of the “invention of facts” even in the hard sciences.



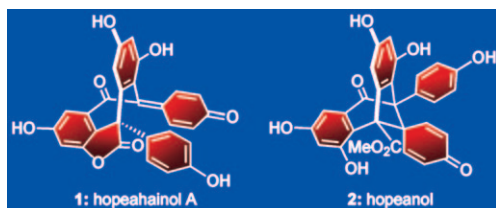
Insider dealing: Self-assembled hosts applied as “molecular flasks” can alter and control the reactivity and properties of molecules encapsulated within their well-defined, confined spaces. A variety of functional hosts of differing sizes, shapes, and utility have been prepared by using the facile and modular concepts of self-assembly.

Reviews

Molecular Flasks

M. Yoshizawa, J. K. Klosterman,
M. Fujita* 3418–3438

Functional Molecular Flasks: New
Properties and Reactions within Discrete,
Self-Assembled Hosts



Similar, but different: Possessing almost the same but not identical structures, the recently discovered natural products hopeahainol A (1) and hopeanol (2) exhibit important but differing biological

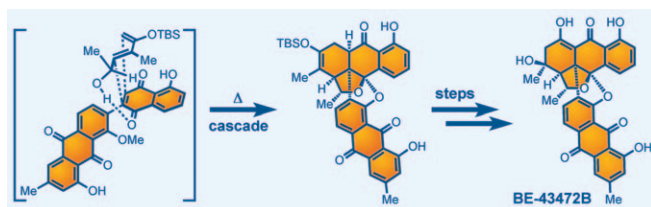
properties (see structures). Their first total synthesis has now been achieved through a series of novel cascade reactions and skeletal rearrangements.

Communications

Natural Product Synthesis

K. C. Nicolaou,* T. R. Wu, Q. Kang,
D. Y.-K. Chen* 3440–3443

Total Synthesis of Hopeahainol A and
Hopeanol



An-T-biotic: The first total synthesis of the T-shaped bisanthraquinone natural product BE-43472B was accomplished and its absolute configuration assigned. Key

transformations in the pivotal cascade sequence include a Diels–Alder reaction, a hemiketal formation, and a nucleophilic aromatic *ipso* substitution.

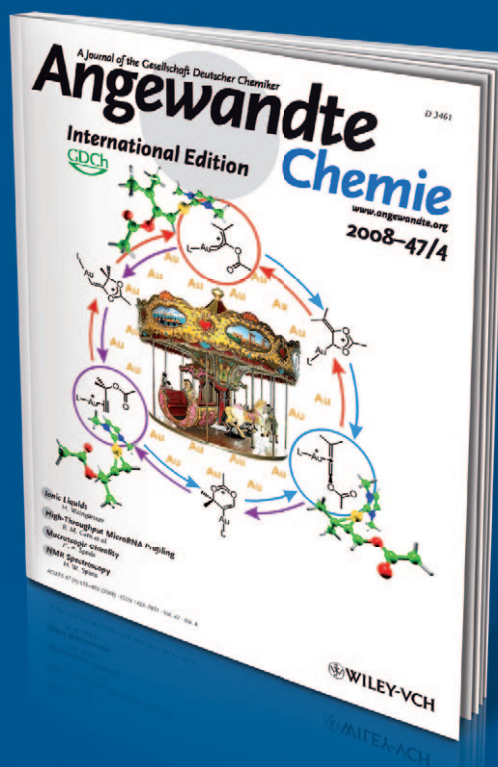
Natural Product Synthesis

K. C. Nicolaou,* Y. H. Lim,
J. Becker 3444–3448

Total Synthesis and Absolute
Configuration of the Bisanthraquinone
Antibiotic BE-43472B



Incredibly versatile



Theme variety on the one hand: Many articles in *Angewandte Chemie* cover the classical themes such as organic synthesis or coordination chemistry. Besides these, current topics like **(bio)nanotechnology, chemical biology, and sustainable chemistry** are well represented. And then there are the „must-see articles“, such as those on the detection of anthrax spores*, or the characteristic scent of iron,** or the artificial lily-of-the-valley flavor***.

Section variety on the other: Communications, Reviews, Highlights, Essays, Obituaries, Meeting Reviews, as well as Website and Book Reviews are regularly found in *Angewandte*.

* M. Tamborrini, D.B. Werz, J. Frey, G. Pluschke, P.H. Seeberger, *Angew. Chem. Int. Ed.* 2006, 45, 6581–6582.

** D. Glindemann, A. Dietrich, H.-J. Staerk, P. Kusch, *Angew. Chem. Int. Ed.* 2006, 45, 7006–7009.

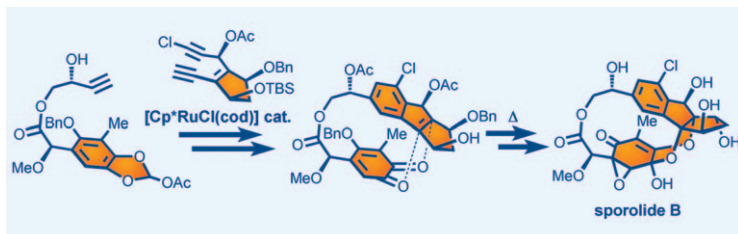
*** L. Doszczak, P. Kraft, H.-P. Weber, R. Bertermann, A. Triller, H. Hatt, R. Tacke, *Angew. Chem. Int. Ed.* 2007, 46, 3367–3371.



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An ocean of discovery: The first total synthesis of the highly oxygenated, marine-derived, natural product sporolide B has been achieved through a convergent strategy. The key steps involve a

ruthenium-catalyzed [2+2+2] cycloaddition to assemble the indene structural motif and a thermally induced Diels–Alder-type reaction to forge the macrocycle (see scheme).

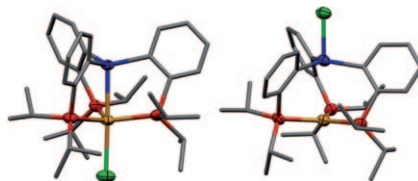
Natural Product Synthesis

K. C. Nicolaou,* Y. Tang,
J. Wang ————— 3449–3453

Total Synthesis of Sporolide B



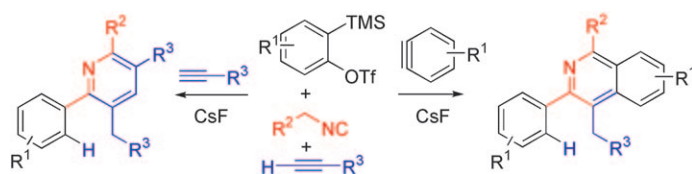
Gallant exchange: Upon coordination of phosphanyl gallane ligands to AuCl, both neutral and zwitterionic complexes coexist. NMR spectroscopy provides direct evidence for the transfer of the chloride between gold and gallium in diphosphanyl gallane. The introduction of a third phosphanyl buttress allows the separation and structural characterization of the two coordination isomers (see picture; Au yellow, P red, Cl green, Ga blue).



Ambiphilic Ligands

M. Sircoglou, M. Mercy, N. Saffon,
Y. Coppel, G. Bouhadir, L. Maron,*
D. Bourissou* ————— 3454–3457

Gold(I) Complexes of Phosphanyl Gallanes: From Interconverting to Separable Coordination Isomers



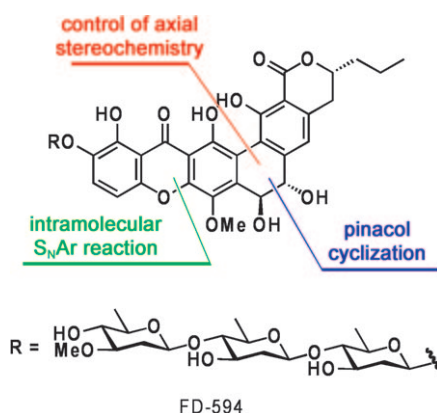
Many components make light work: A novel synthetic strategy for the preparation of pyridines and isoquinolines in high chemo- and regioselectivity has been

developed. By manipulating the reaction conditions, either product can be generated smoothly in a highly efficient and atom-economic manner (see scheme).

Synthetic Methods

F. Sha, X. Huang* ————— 3458–3461

A Multicomponent Reaction of Arynes, Isocyanides, and Terminal Alkynes: Highly Chemo- and Regioselective Synthesis of Polysubstituted Pyridines and Isoquinolines



Stereocontrolled access to the hexacyclic core of FD-594 has been achieved. The key steps include the intramolecular S_NAr reaction for construction of the densely functionalized xanthone skeleton, the stereoselective lactone cleavage using a chiral nucleophile to induce the axial stereochemistry, and the S_{MI_2} -mediated pinacol cyclization for the stereocontrolled conversion of axially chiral biaryl dialdehyde into the corresponding *trans* diol.

Natural Product Synthesis

R. Masuo, K. Ohmori, L. Hintermann,
S. Yoshida, K. Suzuki* ————— 3462–3465

First Stereoselective Total Synthesis of FD-594 Aglycon



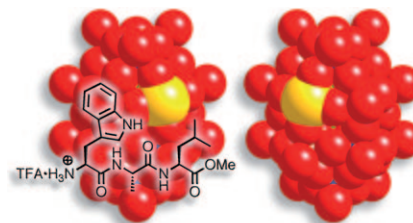
Chiral Polyoxometalates

K. Micoine, B. Hasenknopf,*
S. Thorimbert,* E. Lacôte,*
M. Malacria _____ **3466–3468**



Chiral Recognition of Hybrid Metal Oxide
by Peptides

Resolution of gram quantities of a subtly chiral polyoxometalate (POM; the chirality originates from substitution of one metal in the nanosized framework) is possible by reaction with small peptides. Functionalizable acyl polyoxotungstate (TBA)₆[α₁-P₂W₁₇O₆₁{SnCH₂CH₂C(=O)}] (see picture) can be resolved by kinetic resolution. This approach paves the way for applications of chiral POMs ranging from asymmetric catalysis to their bioactivity.



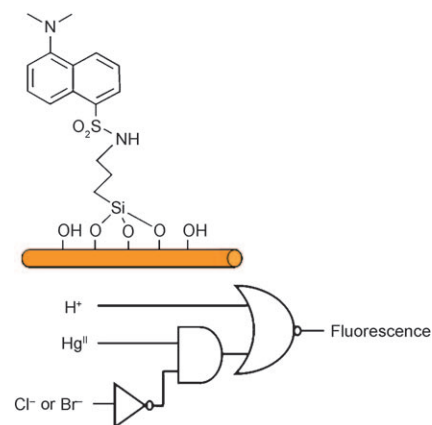
Molecular Logic

L. Mu, W. Shi,* G. She, J. C. Chang,
S.-T. Lee* _____ **3469–3472**



Fluorescent Logic Gates Chemically
Attached to Silicon Nanowires

I'm in the mood for dansyl: A chemically controlled fluorescent logic gate was formed by grafting a dansyl unit onto silicon nanowires (SiNWs; see picture). The logic gate was operated by utilizing pH changes, Hg^{II}, and Cl[−] or Br[−] ions as inputs and the fluorescence of the modified SiNWs as output. The modified SiNWs could perform as a three-input logic gate that combines the YES and INH operations.



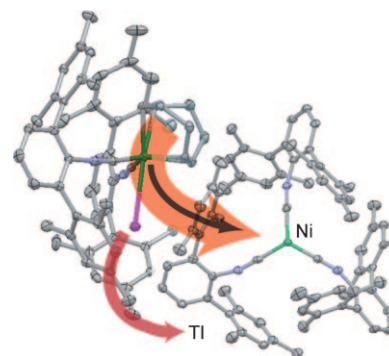
Protecting Groups

B. J. Fox, M. D. Millard,
A. G. DiPasquale, A. L. Rheingold,
J. S. Figueroa* _____ **3473–3477**



Thallium(I) as a Coordination Site
Protection Agent: Preparation of an
Isolable Zero-Valent Nickel Tris-
Isocyanide

Blocking the pass: Low-valent Ni centers readily bind Tl^I ions in a synthetically reversible fashion. The Tl units, in turn, serve as coordination site protection agents for Ni with respect to incoming Lewis basic ligands. This synthetic sequence allows for the isolation of a reactive zero-valent Ni tris-isocyanide complex.



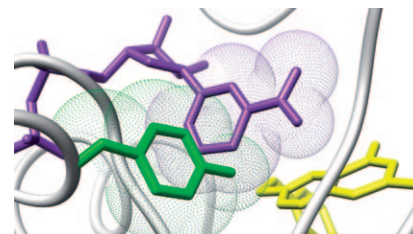
Enzyme Catalysis

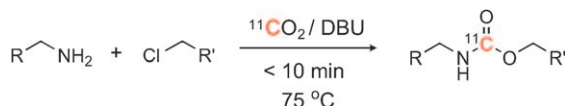
D. Groff, M. C. Thielges,
S. Cellitti, P. G. Schultz,*
F. E. Romesberg* _____ **3478–3481**



Efforts Toward the Direct Experimental
Characterization of Enzyme
Microenvironments: Tyrosine100 in
Dihydrofolate Reductase

State secrets: Site-specific deuteration and FTIR studies reveal that Tyr100 in dihydrofolate reductase plays an important role in catalysis, with a strong electrostatic coupling occurring between Tyr100 and the charge that develops in the hydride-transfer transition state (see picture, NADP⁺ purple, Tyr100 green). However, relaying correlated motions that facilitate catalysis from distal sites of the protein to the hydride donor may also be involved.





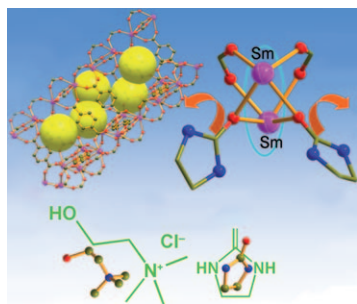
Why beat about the bush? An operationally simple and mild reaction based on the direct fixation of $^{11}\text{C}\text{O}_2$ with 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU) has been developed for the synthesis of ^{11}C -labeled carbamates at 75 °C within 10 minutes in

radiochemical yields above 70% (see scheme). This strategy should be immediately useful for the construction of new radiotracers for positron emission tomography and other applications.

Radiotracer Synthesis

J. M. Hooker,* A. T. Reibel, S. M. Hill,
M. J. Schueller, J. S. Fowler – 3482 – 3485

One-Pot, Direct Incorporation of $[^{11}\text{C}]\text{CO}_2$ into Carbamates

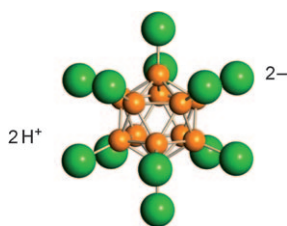


Trap it in and burn it out: A deep-eutectic solvent provides a versatile medium for the creation of highly stable porous frameworks encapsulating neutral coordinating ligand molecules, which can escape intact from the pores upon heating to form crystals directly, leaving behind permanent porosity and coordinatively unsaturated metal sites with potential applications in gas storage and catalysis.

Deep-Eutectic Solvents

J. Zhang, T. Wu, S. Chen, P. Feng,
X. Bu* – 3486 – 3490

Versatile Structure-Directing Roles of Deep-Eutectic Solvents and Their Implication in the Generation of Porosity and Open Metal Sites for Gas Storage

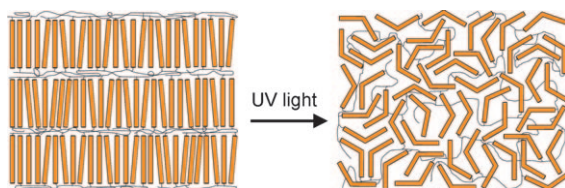


Acid remarks: The anhydrous diprotic boron acids $\text{H}_2(\text{B}_{12}\text{X}_{12})$ ($\text{X} = \text{Cl}, \text{Br}$; see picture, B orange, X green) are the first examples of diprotic superacids and may be the strongest acids yet isolated. Both protons protonate benzene to give benzenium ion salts that are stable at room temperature. These acids owe their existence to the stability of the icosahedral B_{12} cluster with its dinegative charge buried beneath a layer of halide substituents.

Diprotic Superacids

A. Avelar, F. S. Tham,
C. A. Reed* – 3491 – 3493

Superacidity of Boron Acids $\text{H}_2(\text{B}_{12}\text{X}_{12})$ ($\text{X} = \text{Cl}, \text{Br}$)



Manipulation makes light work: The morphology and rheological properties of a liquid-crystalline system can be dynamically manipulated with UV light by attaching photoresponsive liquid-crystalline moieties to a siloxane-based polymer.

Stimulation with UV light induces a conformational change in the molecule, which disrupts the liquid-crystalline mesophase (see picture), and results in a dramatic change in its rheological properties.

Photoresponsive Polymers

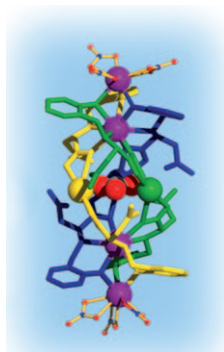
E. Verploegen, J. Soulages, M. Kozberg,
T. Zhang, G. McKinley,
P. Hammond* – 3494 – 3498

Reversible Switching of the Shear Modulus of Photoresponsive Liquid-Crystalline Polymers



Heptameric Lanthanum Clusters

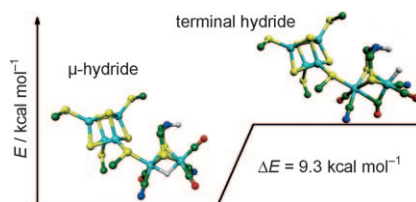
X.-L. Tang, W.-H. Wang, W. Dou, J. Jiang,
W.-S. Liu,* W.-W. Qin, G.-L. Zhang,
H.-R. Zhang, K.-B. Yu,
L.-M. Zheng ————— 3499–3502



Cluster's last stand: Six chiral reduced Schiff base ligands containing amino acids and seven La^{III} ions self-assemble to form a novel heptameric lanthanum supramolecule with the aid of the CO₃²⁻ ion (see picture). The cluster exists as a single chiral triple helix. The CO₃²⁻ ion, which is derived from atmospheric CO₂, adopts a rare μ_3 -tridentate bridging mode that links three La^{III} ions, thus allowing the cluster to efficiently fix CO₂.

Hydrogenases

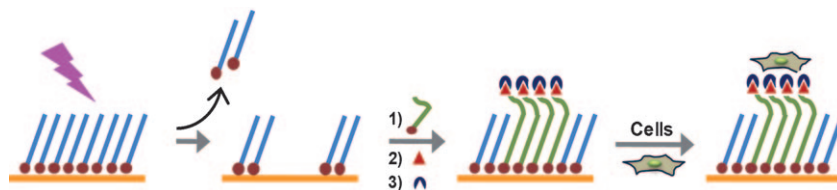
M. Bruschi,* C. Greco, M. Kaukonen,
P. Fantucci, U. Ryde,*
L. De Gioia* ————— 3503–3506



Nature's recipe: A theoretical study analyzes how the environment of the [FeFe] hydrogenase's catalytic cofactor affects its chemical properties, particularly the relative stability of complexes with bridging and terminal hydride ligands (see picture; Fe teal, S yellow, C green, N blue, O red, H gray). The results help to elucidate key rules for the design of bioinspired synthetic catalysts for H₂ production.

Cell Patterning

Y.-K. Kim, S.-R. Ryoo, S.-J. Kwack,
D.-H. Min* ————— 3507–3511

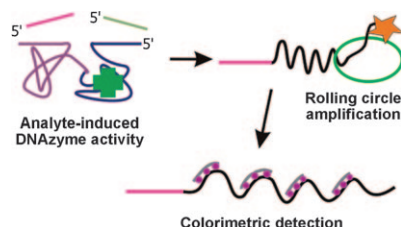


Pattern of events: A simple and flexible method has been developed for patterning cell adhesion ligands. Locally erasing self-assembled monolayers with tri(ethyleneglycol) groups on a gold substrate by using a MALDI-TOF MS nitrogen laser

and filling the exposed gold surface with an alkanethiol presenting carboxylic acid groups enables subsequent immobilization of maleimide and a cell adhesion peptide, which can then recognize cells (see scheme).

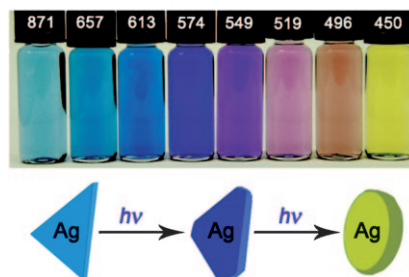
Biosensing

M. M. Ali, Y. Li* ————— 3512–3515



Target detection by the naked eye: The action of an RNA-cleaving allosteric DNzyme in response to ligand binding was coupled to a rolling circle amplification process to generate long single-stranded DNA molecules for colorimetric sensing (see scheme). Upon hybridization of the resulting DNA with a complementary PNA sequence in the presence of a duplex-binding dye, the color of the dye changed from blue to purple.

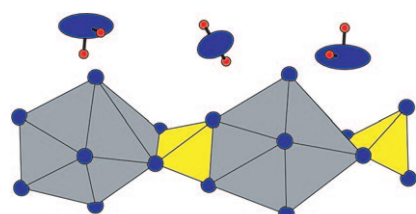
The size and shape of it: The optical properties of Ag nanoplates can be precisely tuned in a wide range through a UV-light-induced reconstruction process in which the morphology of the nanoparticles is changed from thin triangular plates to thick round plates (see picture). This unconventional “backward tuning” strategy is a practical route to stable silver nanoplates that display a wide range of plasmon wavelengths.



Nanoparticles

Q. Zhang, J. Ge, T. Pham, J. Goebel, Y. Hu, Z. Lu, Y. Yin* — 3516–3519

Reconstruction of Silver Nanoplates by UV Irradiation: Tailored Optical Properties and Enhanced Stability



Ordered water: Gypsum has been used for construction for millennia. The structure and water content of calcined gypsum, $\text{CaSO}_4 \cdot 0.5 \text{H}_2\text{O}$, has been under discussion until now: single-crystal structure analysis (see picture: S yellow, Ca gray, O blue, H red) provides an ordered model that is confirmed by DFT calculations.

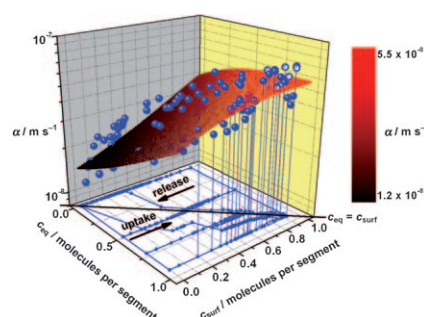
Solid-State Chemistry

H. Weiss, M. F. Bräu* — 3520–3524

How Much Water Does Calcined Gypsum Contain?



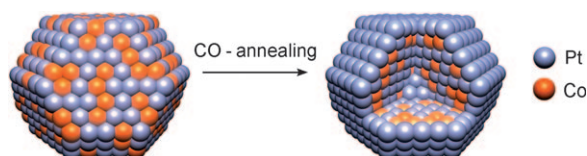
Easy come, easy go? Transport resistances on particle surfaces are important for mass transfer in nanoporous materials and bulk diffusion in crystals. Interference microscopy and IR micro-imaging are shown to be excellent tools for determining such transport resistances. By studying short-chain-length alkane guest molecules in crystals of the metal–organic framework compound $\text{Zn}(\text{tbip})$ a data collection of surface permeabilities is established.



Surface Permeabilities

D. Tzoulaki, L. Heinke, H. Lim, J. Li, D. Olson, J. Caro, R. Krishna, C. Chmelik, J. Kärger* — 3525–3528

Assessing Surface Permeabilities from Transient Guest Profiles in Nanoporous Host Materials



Coming to the surface: The surface composition of carbon-supported Pt_3Co catalyst particles changes upon a CO-annealing treatment. Platinum atoms segregate to the particle surface so that nanoparticles with a platinum shell surrounding an

alloy core are formed. This modified catalyst has a superior activity in the oxygen reduction reaction compared to both a plain platinum catalyst and the untreated alloy particles.

Core–Shell Catalyst

K. J. J. Mayrhofer,* V. Juhart, K. Hartl, M. Hanzlik, M. Arenz* — 3529–3531

Adsorbate-Induced Surface Segregation for Core–Shell Nanocatalysts

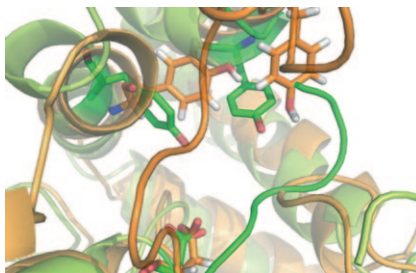


Divergent Evolution

H. Jochens, K. Stiba, C. Savile, R. Fujii,
J.-G. Yu, T. Gerassenkov, R. J. Kazlauskas,*
U. T. Bornscheuer* ————— **3532–3535**



Converting an Esterase into an Epoxide
Hydrolase



Entering the fold: A common structural motif in hydrolytic enzymes is the α,β -hydrolase fold. The interconversion of one enzyme into another by introduction of mechanistically important residues is not enough; only substitution of a loop allows epoxide hydrolase activity in the esterase scaffold to be formed (see picture; structure comparison of epoxide hydrolases (green) with the esterase (orange)). The result is an enantioselective chimeric enzyme.



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



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Corrigendum

A Stable Tetraalkyl Complex of Nickel(IV)

M. Carnes, D. Buccella, J. Y.-C. Chen,
A. P. Ramirez, N. J. Turro, C. Nuckolls,*
M. Steigerwald* ————— **290–294**

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In this Communication, the authors inadvertently failed to reference the paper “Stereochemistry and Spin State in Four-Coordinate Transition Metal Compounds” from Prof. Santiago Alvarez (*Inorg. Chem.* **2008**, 47, 2871–2899). The authors apologize for this oversight.