VIP 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:

News

H. Yamamoto

T. Aida

G. Frenking

Author Profile

„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.

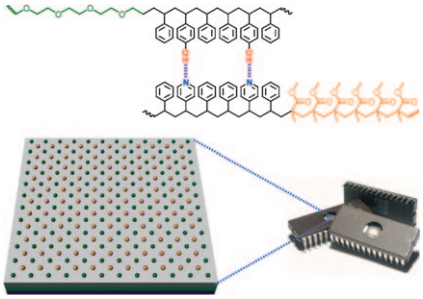
Contents

Books

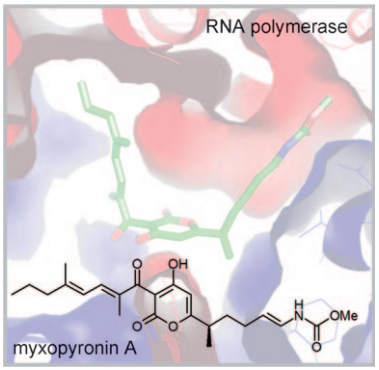
Highlights

Supramolecular Chemistry

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).

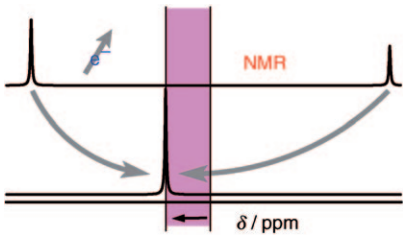


Natural Antibiotics



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



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.

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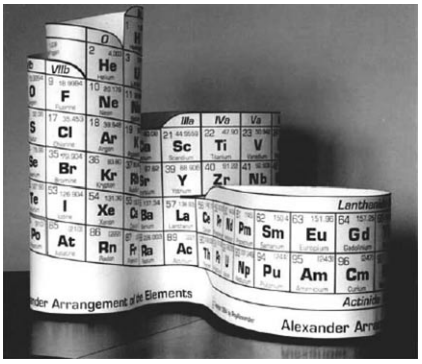
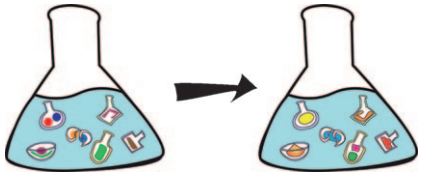
Essays



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.

Periodic System

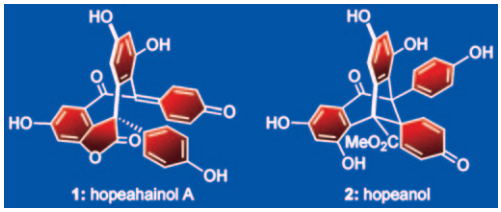
Reviews



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.

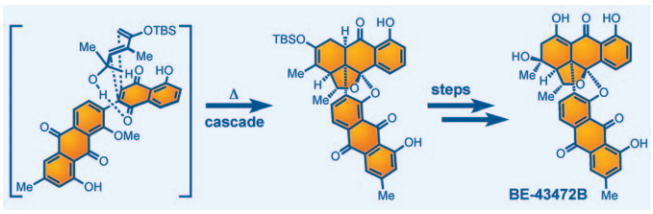
Molecular Flasks

Communications



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.

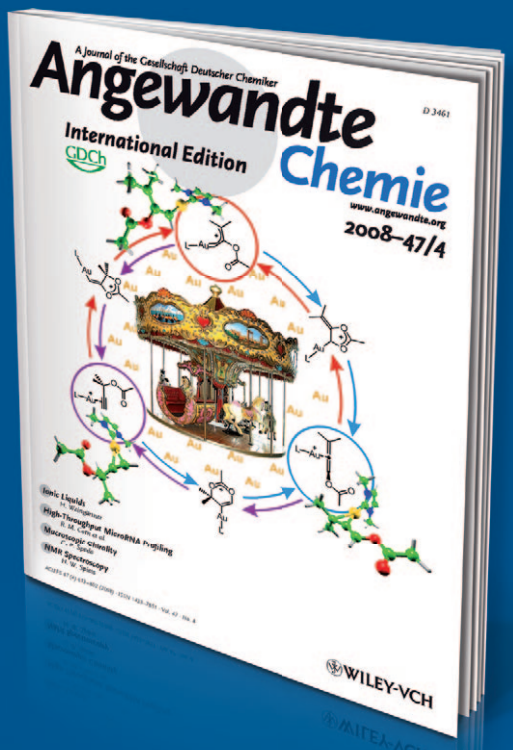
Natural Product Synthesis



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

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. Kuschk, *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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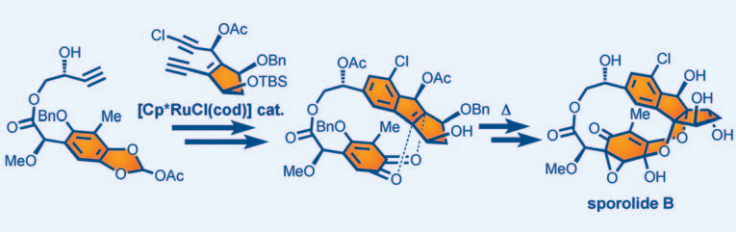
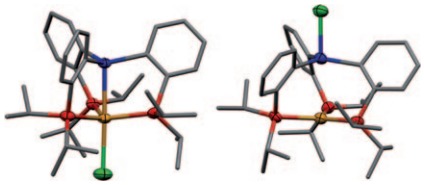
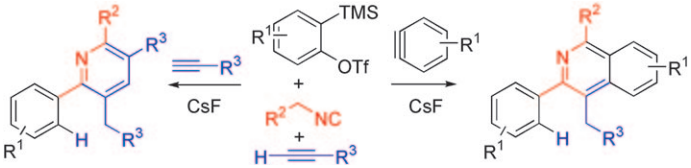


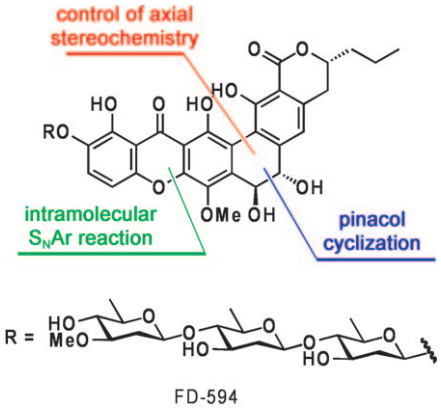
An ocean of discovery: The first total synthesis of the highly oxygenated, marine-derived, natural product sporolide B has been achieved through a convergent strategy. The key steps involve a ruthenium-catalyzed [2+2+2] cycloaddition to assemble the indene structural motif and a thermally induced Diels–Alder-type reaction to forge the macrocycle (see scheme).

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).



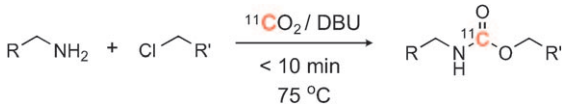


Many components make light work: A novel synthetic strategy for the preparation of pyridines and isoquinolines in high chemo- and regioselectivity has been developed. By manipulating the reaction conditions, either product can be generated smoothly in a highly efficient and atom-economic manner (see scheme).



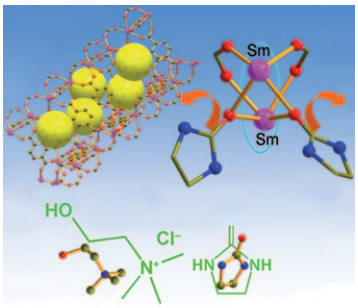
Stereocontrolled access to the hexacyclic core of FD-594 has been achieved. The key steps include the intramolecular S_NAr reaction for construction of the densely functionalized xanthone skeleton, the stereoselective lactone cleavage using a chiral nucleophile to induce the axial stereochemistry, and the SmI_2-mediated pinacol cyclization for the stereocontrolled conversion of axially chiral biaryl dialdehyde into the corresponding *trans* diol.

Contents



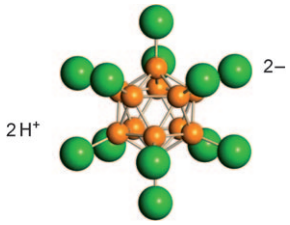
Why beat about the bush? An operationally simple and mild reaction based on the direct fixation of $^{11}CO_2$ with 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU) has been developed for the synthesis of ^{11}C-labeled carbamates at 75 °C within 10 minutes in radiochemical yields above 70% (see scheme). This strategy should be immediately useful for the construction of new radiotracers for positron emission tomography and other applications.

Radiotracer Synthesis



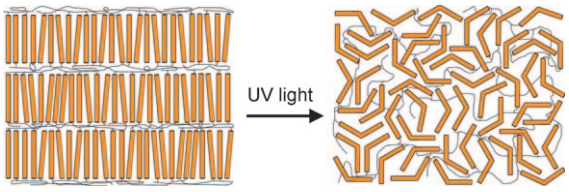
Trap it in and burn it out: A deep-eutectic solvent provides a versatile medium for the creation of highly stable porous frameworks encapsulating neutral coordinating ligand molecules, which can escape intact from the pores upon heating to form crystals directly, leaving behind permanent porosity and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

Deep-Eutectic Solvents



Acid remarks: The anhydrous diprotic boron acids $H_2(B_{12}X_{12})$ (X = Cl, 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

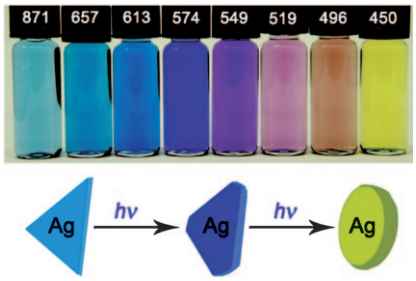


Manipulation makes light work: The morphology and rheological properties of a liquid-crystalline system can be dynamically manipulated with UV light by attaching photoresponsive liquid-crystalline moieties to a siloxane-based polymer. Stimulation with UV light induces a conformational change in the molecule, which disrupts the liquid-crystalline mesophase (see picture), and results in a dramatic change in its rheological properties.

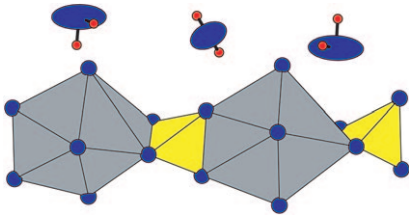
Photoresponsive Polymers

Contents

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.



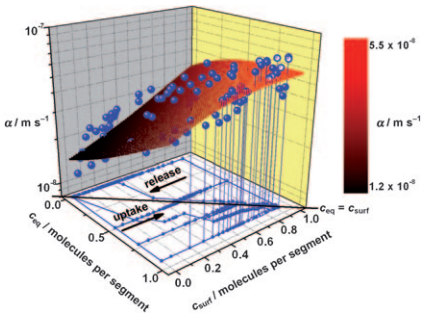
Nanoparticles



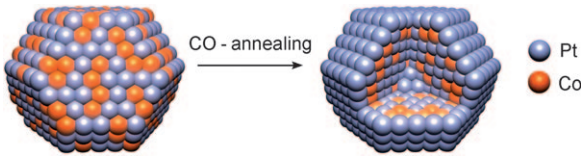
Ordered water: Gypsum has been used for construction for millennia. The structure and water content of calcined gypsum, $CaSO_4 \cdot 0.5\,H_2O$, has been under discussion until now: single-crystal structure analysis (see picture: S yellow, Ca gray, O blue, H red) provides an ordered model that is confirmed by DFT calculations.

Solid-State Chemistry

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 Zn(tbip) a data collection of surface permeabilities is established.



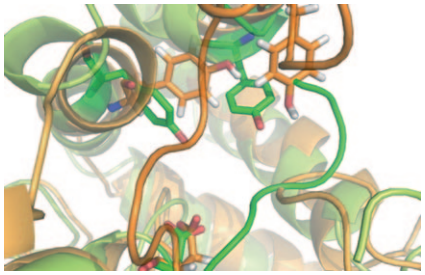
Surface Permeabilities



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

Contents



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).

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

Service

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**

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.

Angew. Chem. Int. Ed. **2009**, *48*

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