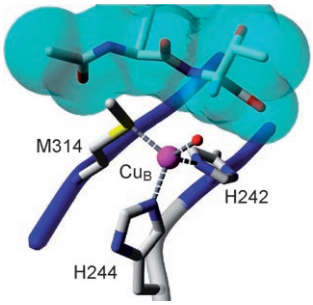
VIP *The following Communications have been judged by at least two referees to be "very important papers" and will be published online at www.angewandte.org soon:*

Obituary

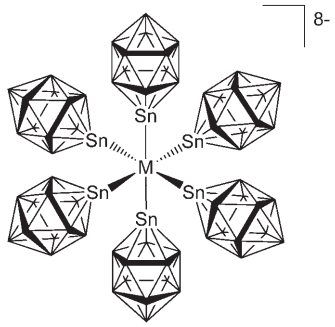
Books

Highlights

Copper at work: The aliphatic ligand hydroxylation by a copper–oxygen center has been observed for the first time on a model system of the enzyme PHM (peptidylglycine-α-hydroxylating monooxygenase). This result is put in the context of the enzymatic mechanism, which presumably involves a high-valent copper oxo unit (violet-red) that hydroxylates the substrate (cyan).



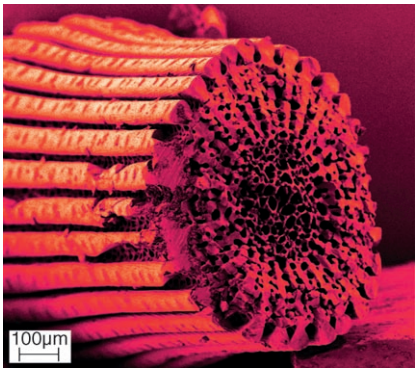
Copper Monooxygenases



Encased in stannaborates: The synthesis of the homoleptic, octahedral M^{IV} complexes $[M(SnB_{11}H_{11})_6]^{8-}$ (M = Ni, Pd, Pt) has been reported. Spectroscopic data, together with the square-planar structure obtained for the corresponding tetrakis-ligated Ni^{II} complex $[Ni(SnB_{11}H_{11})_4]^{6-}$, provide ample evidence for the extremely strong σ-donor properties of the $[SnB_{11}H_{11}]^{2-}$ ligand.

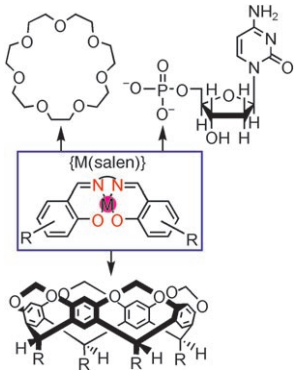
Group 10 Complexes

Contents



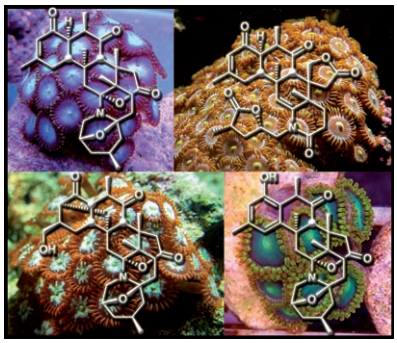
Nature is able to produce large single crystals with complex shape via amorphous precursor phases in the process of biomineralization (the picture shows an SEM image of a fracture surface of a sea urchin spicule). This strategy can be mimicked for the template synthesis of large single-crystalline materials with controllable complex shape.

Minireviews



The salens are comin': Salen synthons are becoming increasingly important for various chemical applications that go beyond their conventional use as versatile ligands in homogeneous catalysis. A recent increase in the use of these highly accessible building blocks has paved the way for the development of interesting hybrid materials with new catalytic, magnetic, and supramolecular properties.

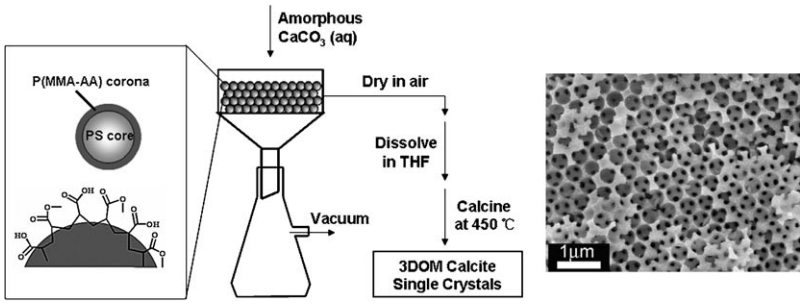
Reviews



More than meets the eye! Marine zoanthids have more to offer than stunning colors in home aquariums. They are the source of a host of fascinating natural products with great structural complexity and important biological activities. This Review chronicles the isolation and activity of zoanthamines, and describes the synthetic efforts toward this amazing class of natural products.

For the USA and Canada: ANGEWANDTE CHEMIE International Edition (ISSN 1433-7851) is published weekly by Wiley-VCH, PO Box 191161, 69451 Weinheim, Germany. Air freight and mailing in the USA by Publications Expediting Inc., 200 Meacham Ave., Elmont, NY 11003. Periodicals postage paid at Jamaica, NY 11431. US POSTMASTER: send address changes to *Angewandte Chemie*, Wiley-VCH, 111 River Street, Hoboken, NJ 07030. Annual subscription price for institutions: US$ 7225/6568 (valid for print and 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.

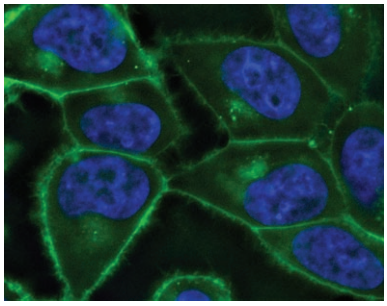
Communications



Filling the gaps: Unique 3D ordered macroporous (3DOM) calcite single crystals with controlled orientation and well-defined nanopatterns are fabricated by introducing amorphous $CaCO_3$ into a colloidal crystal template of polymer spheres (see picture). Such a bioinspired strategy suggests a route to functional single-crystalline materials and sheds light on biomineralization mechanisms.

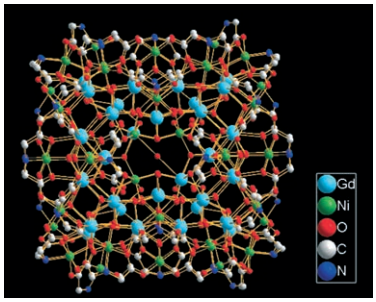
Colloidal Crystal Templating

Azide imaging: A fluorogenic phosphine based on a FRET-quenching mechanism allows for live-cell imaging of azido sugars by the Staudinger ligation. This design strategy can accommodate numerous fluorophores and complementary quenchers, enabling extension to multicolor imaging. In the image shown, the nuclei are blue while the cell surfaces and Golgi are green.



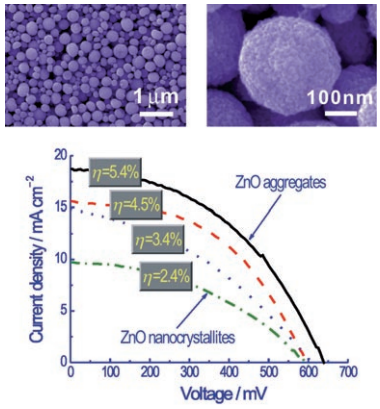
Live-Cell Imaging

A Russian doll: A heterometallic 108-metal cluster featuring an unprecedented four-shell, nesting doll-like structure (see picture) and overall antiferromagnetic coupling is reported.



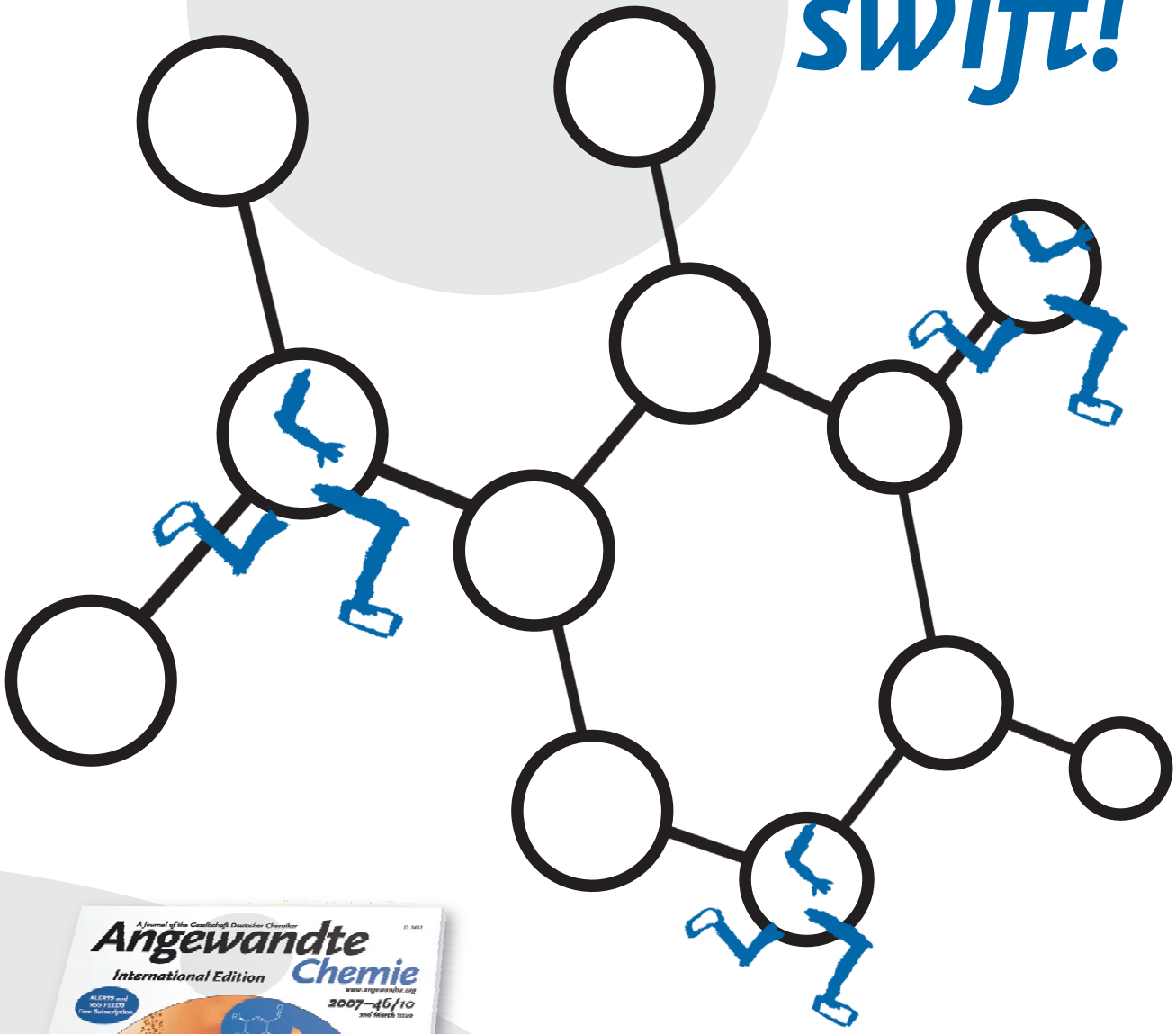
Heterometallic Clusters

Here comes the sun: A conversion efficiency as high as 5.4% has been achieved on dye-sensitized ZnO solar cells with photoelectrode films consisting of polydisperse aggregates, compared to 2.4% for the films with only nanosized crystallites. The aggregation of nanocrystallites with a broad size distribution is effective in enhancing the light-harvesting efficiency by inducing light scattering within the photoelectrode films.

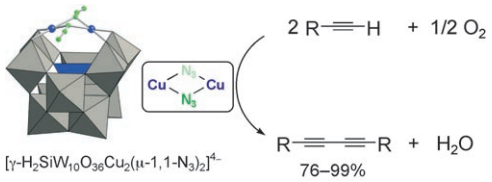


Dye-Sensitized Solar Cells

Incredibly swift!

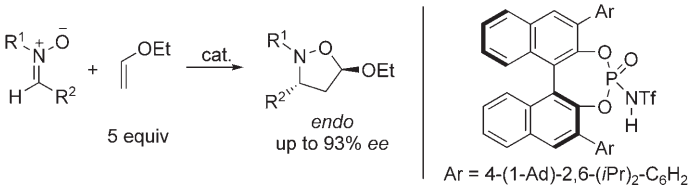


Manuscripts submitted to *Angewandte Chemie* can be published in a matter of days, and that's including meticulous peer review, copy-editing, and corrections. The peer-review process requires an average of just 13 days, and 30% of all Communications are brought to readers within two months after submission. The articles are not only published rapidly, they are also swiftly assimilated within the scientific community, as reflected by the extremely high Immediacy Index of *Angewandte Chemie* (2006: 2.106), meaning that each article in *Angewandte* is cited twice on average within the same year it was published.



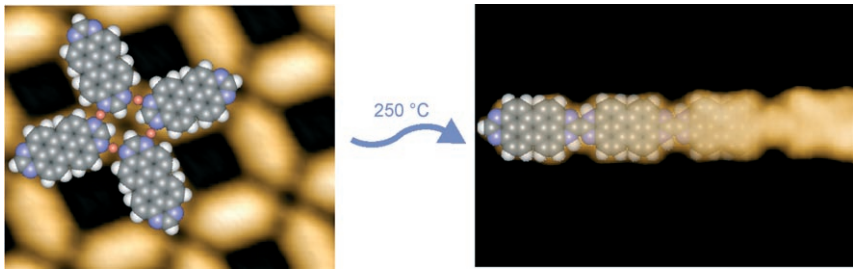
It goes on the dicopper core! A monomeric γ-Keggin silicotungstate with a dicopper core that is bridged by two μ-1,1-azido ligands catalyzes oxidative alkyne homocoupling reactions whereby various kinds of aromatic and aliphatic alkynes are selectively converted into the corresponding diynes (see picture).

Homogeneous Catalysis



Brønsted and Lewis face off: A new chiral *N*-triflyl phosphoramide is used for asymmetric 1,3-dipolar cycloaddition of diaryl nitrones to ethyl vinyl ether to give the *endo* products in up to 93% *ee* (see scheme; Tf = trifluoromethanesulfonyl; Ad = adamantyl). The structure of the chiral phosphoramide was confirmed by X-ray crystallographic analysis.

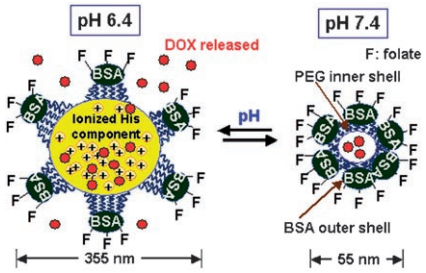
Asymmetric Synthesis



Isomerize and polymerize! Thermally induced tautomerization of the N-heteropolycyclic 1,3,8,10-tetraazaperopyrene to a Wanzlick-type carbene intermediate on a Cu(111) surface leads to covalently linked polyaromatic chains, which can be mechanically manipulated. The pictures show the respective structures superimposed on the STM images.

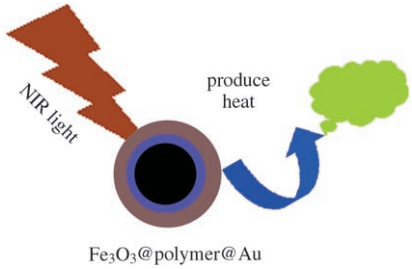
Surface Chemistry

Delivering the goods: A pH-sensitive nanogel consists of a hydrophobic copolymer core and two layers of hydrophilic shell (see picture). The core is loaded with a model anticancer drug, doxorubicin (DOX). The nanogel infects tumor cells in a receptor-dependent manner, kills the cells, and migrates to neighboring cells like a virus. BSA = bovine serum albumin, F = folate, PEG = polyethylene glycol.



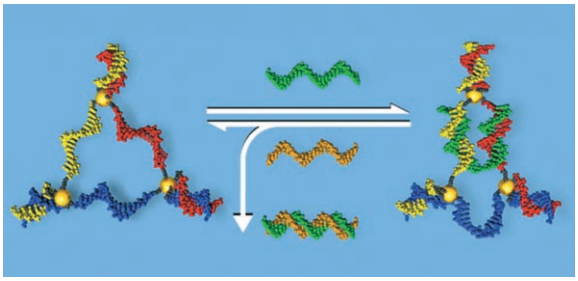
Drug Delivery

Contents



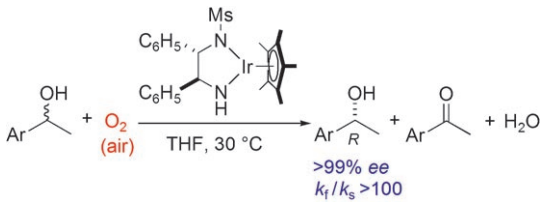
The best of both worlds: Multifunctional Fe_3O_4@polymer@Au shell nanoparticles (see scheme; Fe_3O_4 is black, polymer is blue, gold shell is brown) display good dispersibility and stability in aqueous solution. Strong magnetization and good NIR absorption are preserved in the core–shell structures. These features should facilitate biomedical applications, combining the benefits of MRI diagnosis, magnetically targeted delivery, and photothermal ablation.

Magnetic Nanoparticles



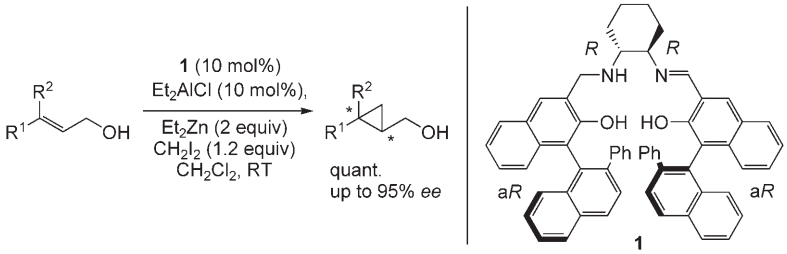
Templated metalation of DNA junctions allows incorporation of a range of transition metals into DNA assemblies. The resulting highly stable metal–DNA junctions can be assembled into dynamic multinuclear structures, with metal centers as their corners and DNA single strands as their sides. Ready and reversible structural switching of these assemblies with external agents (see picture) allows for control of geometry and metal–metal distances.

DNA Nanotechnology



Up for air: The aerobic oxidative kinetic resolution of racemic secondary alcohols with chiral bifunctional Ir, Rh, and Ru catalysts proceeds smoothly under mild conditions to provide chiral alcohols with up to 99% *ee*, and O_2 serves as an excellent hydrogen acceptor.

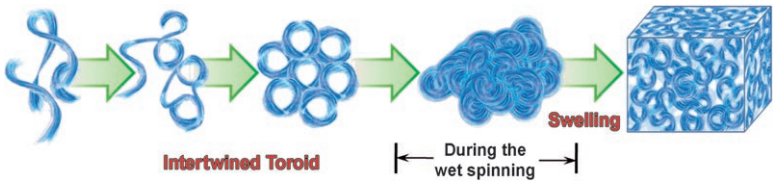
Aerobic Oxidation



Three angles: A highly enantioselective Simmons–Smith reaction of *trans*-disubstituted allylic alcohols was achieved by using a catalytic amount of an Al(salalen) complex at room temperature (see scheme).

Asymmetric Catalysis

Contents

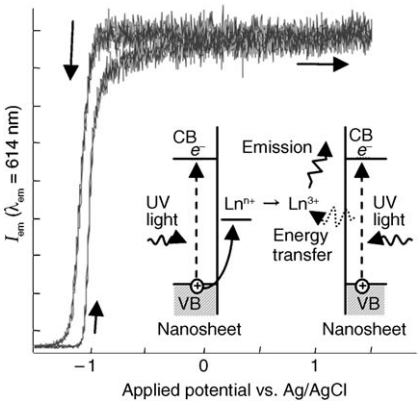


Spinning strands: A hydrogel fiber made entirely of DNA without any covalent cross-links, composed of intertwined toroid entanglements of flexible DNA strands (see scheme), was prepared by a one-step wet-spinning method with a hydrophilic ionic liquid as the condensing agent and coagulation solvent. The internal structure of the fiber was a disordered arrangement of strands with a B-DNA form. The fiber was also stable in various aqueous solutions.

DNA Structures

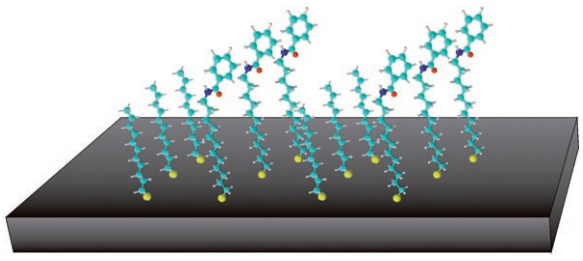
A good neighbor is better than a far-away friend: A tethering strategy is used to self-select groups that assist in the cleavage of a neighboring carboxylic ester moiety (see picture, TSA = transition-state analogue). A correlation is observed between the amplification at thermodynamic equilibrium and the catalytic efficiency.

Dynamic Selection



Getting turned on: A photoelectrochemical reaction has been used to control the photoluminescence of self-assembled nanosheet films intercalated with Ln^{3+} ions. Emission (em) occurs under anodic bias (mechanism shown) and not under cathodic bias because of the oxidation and reduction of Ln^{3+}/Ln^{n+} by holes and electrons by UV light, respectively (see picture, VB = valence band, CB = conduction band), which allows control of the emission on/off response.

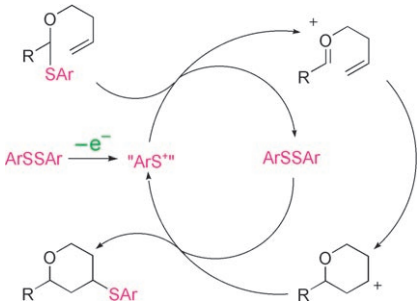
Luminescence



Controlled confinement: A supramolecular approach for the design of multicomponent self-assembled monolayers on Au(111) is employed to obtain subnanometer-resolved patterns on the solid substrate (see picture). The formation of crystalline bicomponent domains is discussed in view of their potential applications in the development of new electronic devices.

Scanning Probe Microscopy

Contents



The treatment of an olefinic thioacetal with a catalytic amount of ArS(ArSSAr)-$^{+}B(C_6F_5)_4^{-}$, or the electrolysis of a mixture of an olefinic thioacetal and ArSSAr, gives rise to effective intramolecular carbon–carbon bond formation (see scheme). This transformation opens up great potential for electroinitiated cation chain reactions in organic synthesis.

Electroinitiated Reactions

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).

The issues for March 2008 appeared online on the following dates
Issue 9: February 11. · Issue 10: February 15. · Issue 11: February 22. · Issue 12: March 3

Service