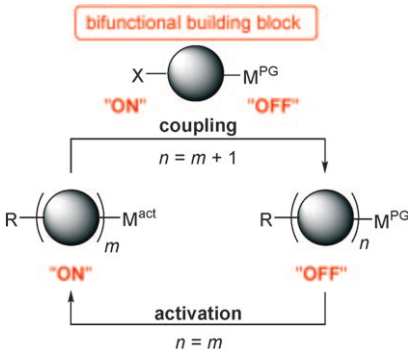
VIP The following Communications have been judged by at least two referees to be "very important papers" and will be published online at www.angewandte.org soon:

Author Profile

"My favorite subject at school was chemistry! The most significant scientific advance of the last 100 years has been the discovery of how DNA works. …"
This and more about Uwe T. Bornscheuer can be found on page 5236.

Books

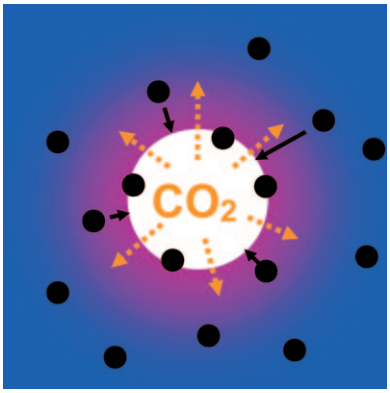
Highlights



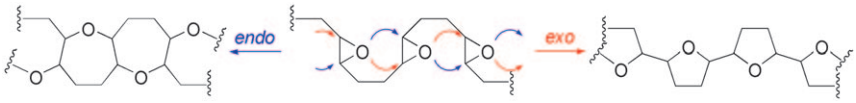
Repetition does not hurt! New strategies for the modulation of the reactivity of difunctional building blocks are discussed, allowing the palladium-catalyzed controlled iterative cross-coupling and, thus, the efficient formation of complex molecules of defined size and structure (see scheme). As in peptide synthesis, this development will enable the automation of these reactions. M^{PG} = protected metal, M^{act} = metal.

Cross-Coupling

Contents

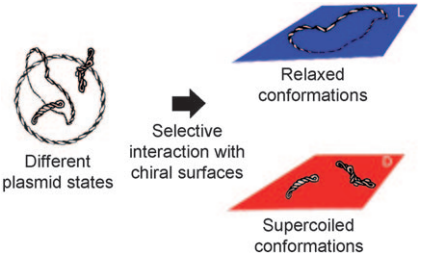


Reviews



The structural features of polycyclic polyether natural products can, in some cases, be traced to their biosynthetic origin. However in case that are less well understood, only biosynthetic pathways that feature dramatic, yet speculative, epoxide-opening cascades are proposed. We summarize how such epoxide-opening cascade reactions have been used in the synthesis of polycyclic polyethers (see scheme) and related natural products.

Communications



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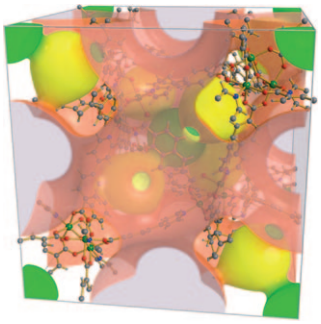
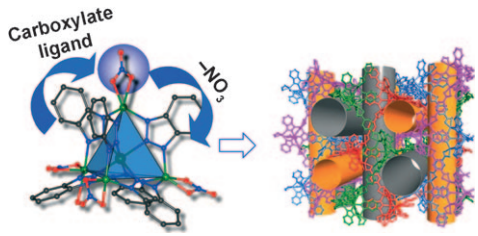


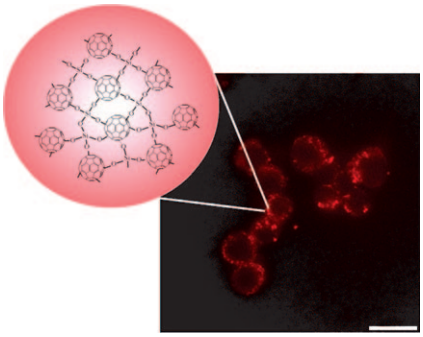
Making connections: A hydroxy-centered trinuclear nickel cluster has been employed to construct a highly connected, highly symmetric framework with a uninodal nine-connected topology. An array of triakis tetrahedra leads to a biporous intersecting-channel system (see picture).

Porous Materials



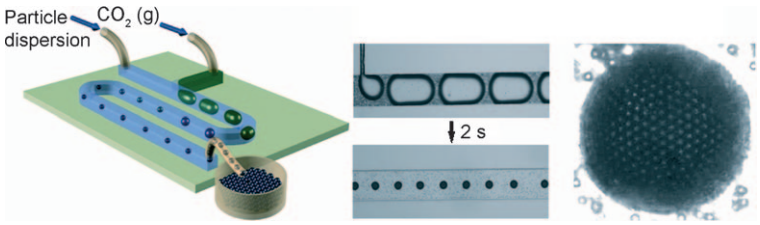
Top down goes bottom up: A family of microporous interpenetrating diamond frameworks can be constructed from a pentanuclear tetrahedral complex with nitrate groups at the apical positions as an inorganic precursor. A "bottom-up" methodology was used for substitution of the nitrate groups by linear ditopic carboxylate ligands (see picture). The Langmuir surface area of the resulting frameworks is higher than that of classical zeolites.

Microporous Frameworks



Bright lights: Fullerene–silica hybrid nanoparticles have bright photoluminescence, high photostability, and low cytotoxicity, which are assets for bioimaging agents. The origin of the photoluminescence of the nanoparticle is the C–O–Si bond (see picture).

Photoluminescent Nanoparticles



Bubbling up: Dissolution of CO_2 bubbles in a suspension of colloidal particles chemically induces the assembly of particles on the surface of shrunken bubbles, and thus yields rapid continuous formation of a colloidal armor. This approach maintains the high colloidal stability of particles in bulk, has increased productivity, and allows the formation of bubbles with precisely controlled dimensions.

Colloidal Assembly

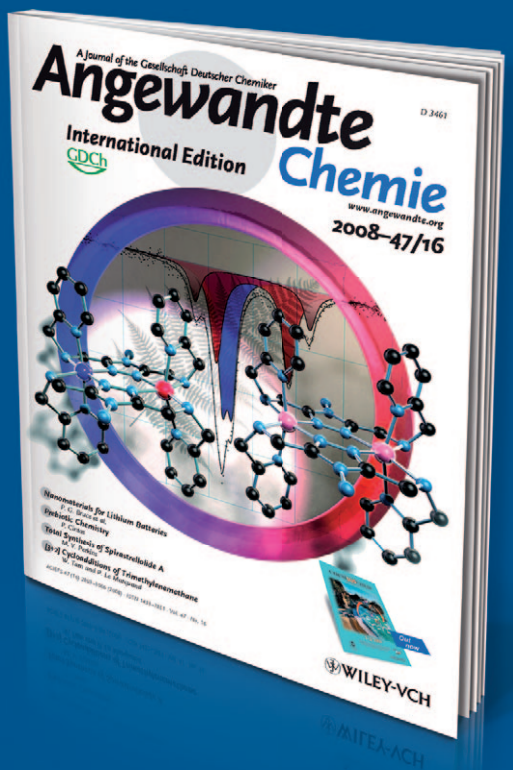
Incredibly

R E A D E

R F R I

E N D

L Y



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An aesthetically attractive **cover picture** that arouses curiosity, a well-presented and most informative graphical **table of contents**, and carefully selected articles that are professionally edited give *Angewandte Chemie* its distinctive character, which allows both easy browsing and further in-depth reading. Nearly 20 well-trained chemists, as well as eight further associates, work week in and week out to assemble reader-friendly issues and daily Early View articles online.

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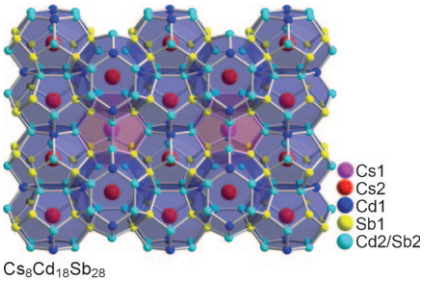
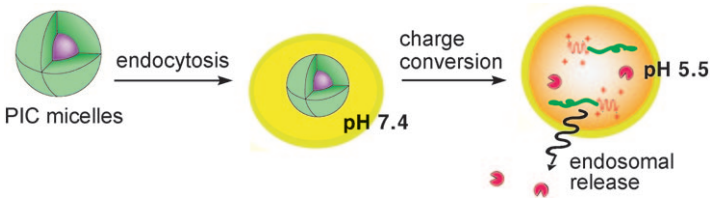


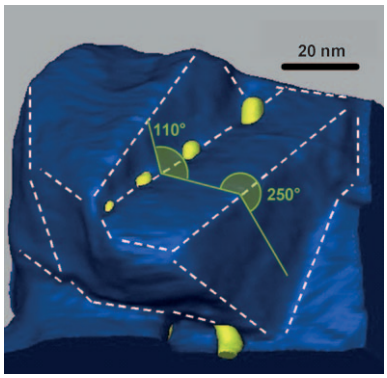
In phase: The title compounds lie in a new region of phase space for such a structure, and have stoichiometries in accord with a classical Zintl phase formulation. The small semiconductor gaps indicated by DFT calculations are also supported by their diamagnetic susceptibilities.

Clathrates



Special delivery! Polyionic complex (PIC) micelles that contain the charge-conversional moieties citaconic amide or *cis*-aconitic amide were developed for cytoplasmic protein delivery. The increase of the charge density on the protein cargo helped the stability of the PIC micelles without cross-linking, and the charge-conversion in endosomes induced the dissociation of the PIC micelles to result in efficient endosomal release (see picture).

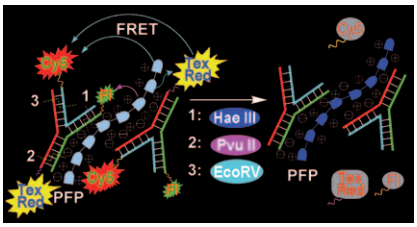
Protein Delivery



Living on the edge: Three-dimensional reconstructions from electron tomography data recorded from Au/$Ce_{0.50}Tb_{0.12}Zr_{0.38}O_{2-x}$ catalysts show that gold nanoparticles (see picture; yellow) are preferentially located on stepped facets and nanocrystal boundaries. An epitaxial relationship between the metal and support plays a key role in the structural stabilization of the gold nanoparticles.

Supported-Catalyst Tomography

An energy-transfer cascade is generated from a cationic conjugated polymer (PFP) and negatively charged, Y-shaped DNA labeled with three dyes at its termini (fluorescein (Fl), Tex Red, and Cy5). Multistep fluorescence resonance energy transfer regulates the fluorescence intensities of PFP and the dyes. Different types of logic gates can be operated by observing the emission wavelengths of different dyes with multiplex nucleases as inputs.



Biosensors

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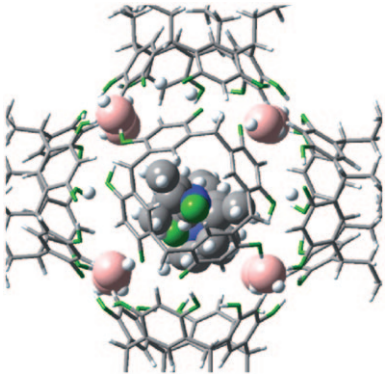
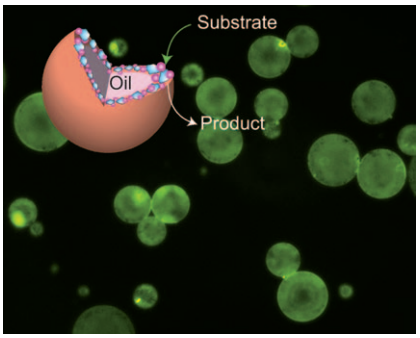


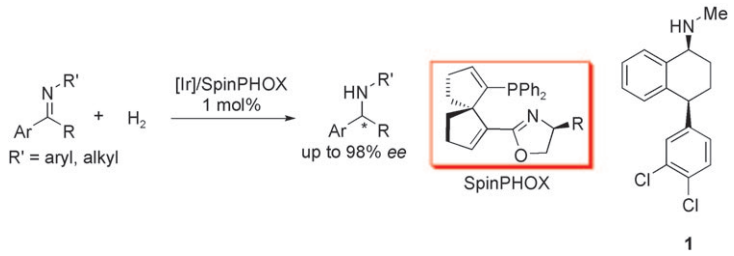
In quarantine: Nitroxide spin probes are encapsulated by hexameric resorcinarene molecular capsules in dichloromethane solutions (see picture). A substantial reduction in the tumbling rates occurs upon encapsulation of two cationic probes and one neutral probe. As the molecular volume of the probe increases, the tumbling rate of the probe reflects the overall tumbling rate of the entire supramolecular assembly.

Supramolecular Chemistry



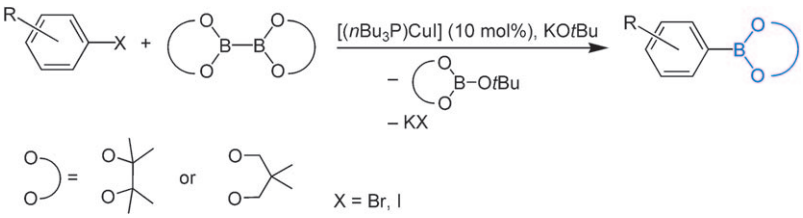
Involuntary association: Anionic β-galactosidase enzymes associate with positively charged Au nanoparticles to produce reduced-charge conjugates, which assemble at oil–water interfaces to result in stable microcapsules (see picture). The microcapsules were formed quickly and showed high enzymatic activity, which makes them promising materials for biotechnology applications.

Enzyme Immobilization



From imines to amines through catalysis by Ir^{I} complexes of a new type of P,N ligand (see scheme): This reaction affords the corresponding optically active amines with up to 98% *ee* and has also been used with perfect stereoselectivity in the asymmetric synthesis of sertraline (**1**), an important antidepressant chiral drug.

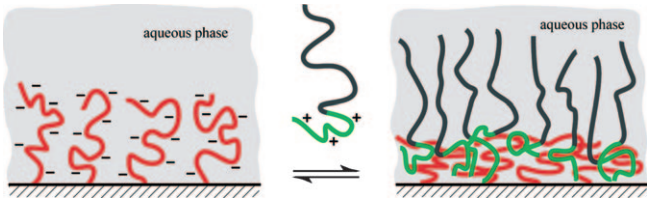
Asymmetric Catalysis



A simple but effective copper-catalyzed borylation of aryl halides, including electron-rich and sterically hindered aryl bromides, with alkoxy diboron reagents occurs under mild conditions (see scheme). Preliminary DFT studies of the mechanism suggest that σ-bond metathesis between a copper–boryl intermediate and the aryl halide generates the aryl boronate product.

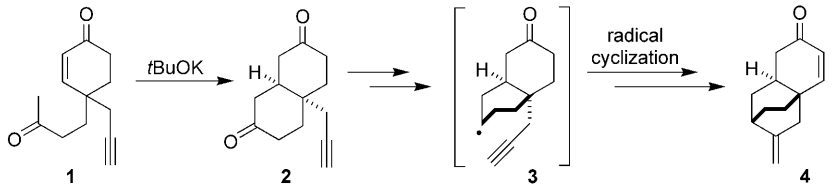
Borylation

Contents



Standing room only: Dense polymer brushes can be prepared by adsorbing a diblock copolymer comprising a neutral block and a polyelectrolyte block to an oppositely charged polyelectrolyte brush (see picture). The density of the resulting neutral brush is determined by charge compensation, leading to brush densities well over 1 nm^{-2}. The diblock copolymer can be desorbed by changing the solution conditions.

Polymer Brushes



Quick access: A concise and efficient formal synthesis of platencin has been accomplished in nine steps from a commercially available starting material. The synthesis utilized only one protecting group. The base-catalyzed Michael cyclization of precursor **1** afforded the key diketone **2**, which was converted into the desired core structure **4** via the radical intermediate **3**.

Antibiotic Synthesis

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

The issues for June 2009 appeared online on the following dates
Issue 24: May 26 · Issue 25: June 3 · Issue 26: June 9 · Issue 27: June 17