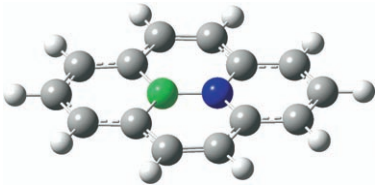
The following Communications have been judged by at least two referees to be "very important papers" and will be published online at www.angewandte.org soon:

Books

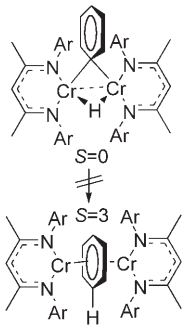
Highlights

One of these bonds is not like the others: Cyclic π systems in which B–N units replace their isoelectronic C–C counterparts have intrigued chemists and materials scientists for decades. The recent report of Piers et al. on the synthesis, crystal structure, and optical properties of 10a-aza-10b-borapyrenes (see picture) represents a major breakthrough in this field.



Heteropolycyclic Aromatics

Spin blocking: Facile reductive C–H elimination is a key step in chromium-catalyzed selective trimerization of olefins. The direct conversion (see scheme) is prevented by the change in spin states. This Highlight also describes the latest advances in the mechanistic understanding of the catalytic trimerization with a focus on spin states.

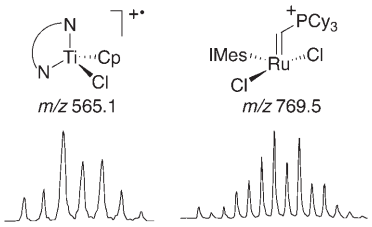


Reductive C–H Eliminations

Contents

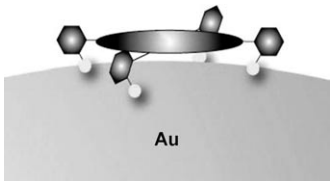
For the USA and Canada:
ANGEWANDTE CHEMIE International Edition (ISSN 1433-7851) is published weekly by Wiley-VCH, PO Box 191161, 69451 Weinheim, Germany. Air freight and mailing in the USA by Publications Expediting Inc., 200 Meacham Ave., Elmont, NY 11003. Periodicals postage paid at Jamaica, NY 11431. 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.

Getting the air out: A bottleneck in transition-metal chemistry is the laborious process of identifying organometallic molecules. Anaerobic, charge-transfer MALDI-MS is a powerful new tool for observation of these reactive, often fragile species. Examples are drawn from catalysts relevant to olefin metathesis, hydrogenation, polymerization, and cyclopropanation. IMes = *N*,*N*′-bis-(mesityl)imidazol-2-ylidene.

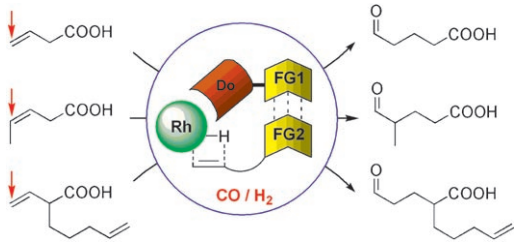


Inert-Atmosphere MALDI-MS

Bound through S–Au bonds, multidentate macrocyclic porphyrin thioester derivatives densely protect Au nanoparticles in a face-coordination fashion (see picture) to form quite stable Au^0 porphyrins. The spectroscopic Soret-band intensity can be tuned by the distance between the porphyrin ring and the Au surface.

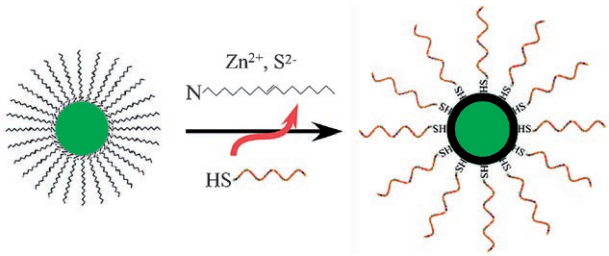


Gold(0) Porphyrins



The quest to capture the catalytic power of enzymes is one of the great challenges of modern chemistry. A novel system inspired by the principles of enzymatic catalysis combines recognition of the substrate and transition-metal catalysis (see scheme; Do = donor, FG = functional group) and mimics enzyme properties—high efficiency, substrate selectivity, and reaction-site selectivity.

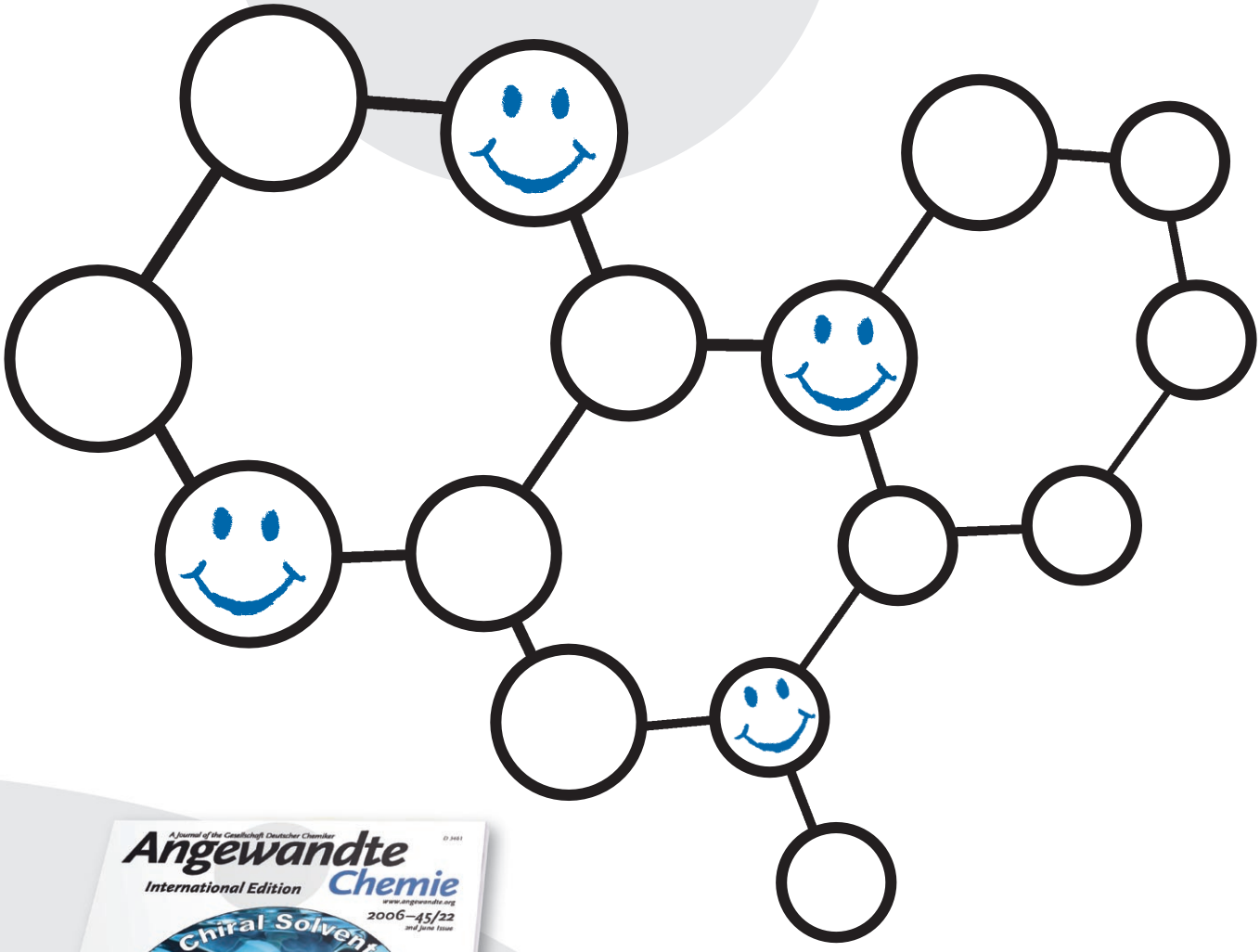
Supramolecular Catalysis



One small step: A facile and robust one-step method for creating stable, water-soluble quantum dot (QD)–biomolecule conjugates is described. DNA molecules can be readily attached to QDs during core–shell synthesis (see picture of DNA functionalization of a CdSe@ZnS core–shell QD).

Quantum Dots

Incredibly reader-friendly!



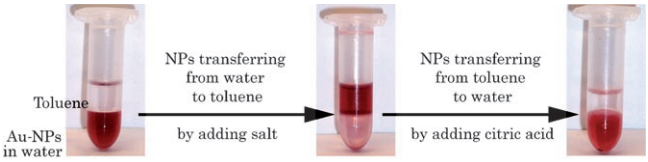
An aesthetically attractive cover picture that arouses curiosity, a well-presented and most informative graphical table of contents, and carefully selected articles that are professionally edited give *Angewandte Chemie* its distinctive character, which allows both easy browsing and further in-depth 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.

GDCh Gesellschaft Deutscher Chemiker

BICENTENNIAL 1807 WILEY 2007 BICENTENNIAL

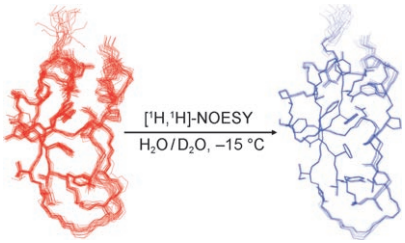
service@wiley-vch.de
www.angewandte.org

WILEY-VCH



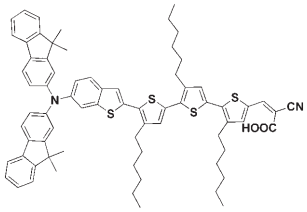
To cap it all: With the aid of stimuli-responsive polymer capping, gold nanoparticles (Au-NPs) can be highly colloidally stable in both aqueous and organic media. They spontaneously and reversibly cross water/oil interfaces in both directions upon formation of a biphasic salty water–oil system (see picture).

Nanoparticle Transport



Fidelity without frostbite: Refinement of an NMR solution structure of 6-kDa protein BPTI determined at 36 °C (see picture, red) with NOE distance constraints measured in supercooled water at −15 °C increased precision of backbone and core side-chain coordinates about twofold (blue). In contrast to cryogenic X-ray crystallography (−150 °C), supercooling to about −15 °C hardly affects the conformation of flexibly disordered surface side chains.

Protein Structures

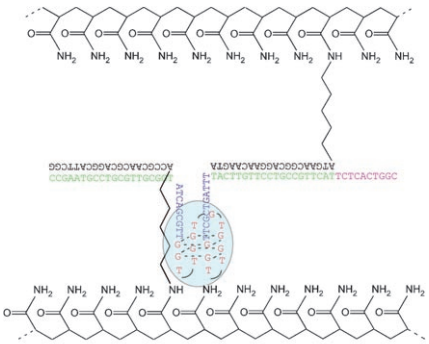


JK-46

A sense for sensitizers: Devices based on JK-46 (see structure) and a volatile electrolyte yielded an extremely high overall conversion efficiency of 8.6% under AM 1.5 sunlight. Solar cells fabricated employing the JK-46 sensitizer and a solvent-free ionic-liquid electrolyte gave an efficiency of over 7% and demonstrated excellent stability under light soaking at 60 °C for 1000 h.

Solar Cells

Cross-links holding on, then letting go: Polyacrylamide main chains were branched with DNA strands, which could be gelatinized by DNA base pairing with a thrombin-bound cross-linking strand (see scheme). A complementary DNA strand can form a duplex with the cross-linking strand to dissolve the hydrogel and release the thrombin.

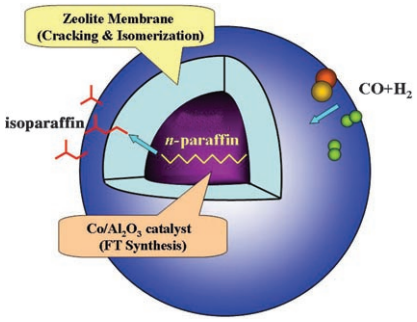


DNA Hydrogels

Contents

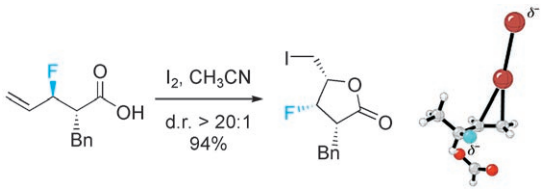
Multicomponent Reactions

A synergism: The multicomponent assembly of an alkyne, a nucleophile, and a carboxylic acid gave indole derivatives in good yield and high regioselectivity by a one-pot Curtius rearrangement/palladium-catalyzed indolization process (see scheme). A synergistic effect was observed; the by-product of the first reaction served as a reagent for the second step. The first synthesis of indole *N*-carboxamide derivatives by heteroannulation is also described.



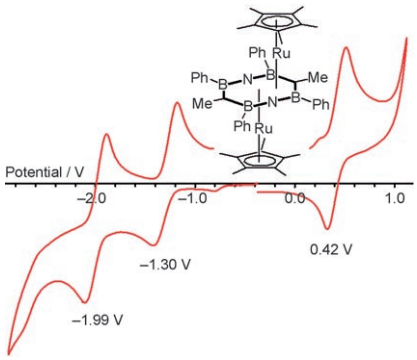
Core/Shell Catalysts

A well-wrapped catalyst: Coating an H-beta zeolite membrane onto the surface of a preshaped Co/Al_2O_3 pellet leads to a novel core/shell catalyst with a confined reaction environment which shows excellent selectivity for the synthesis of isoparaffins from syngas (see picture; FT = Fischer–Tropsch). Long-chain hydrocarbon formation is totally suppressed by the zeolite membrane. This kind of membrane catalyst could be extended to various other consecutive reactions by modifying the shell membrane and the core catalyst.



Stereoelectronic Effects

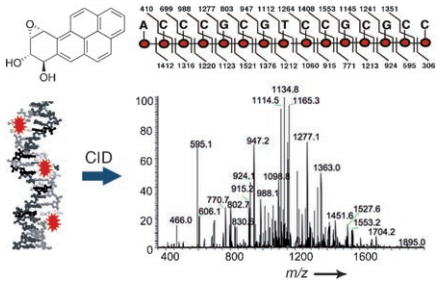
An inside job: β-Fluorinated lactones and tetrahydrofurans are synthesized by iodocyclization of various allylic fluorides. The fluorine substituent acts as a highly efficient *syn*-stereodirecting group for the ring closure. The experimental results combined with theoretical studies provide evidence in support of an "*inside* fluoro effect" to account for the sense and level of stereocontrol of these reactions.



Sandwich Complexes

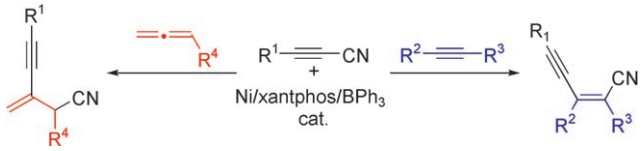
Open, sesame: The reaction of a heterobicyclic pentalenediyl-like $Me_2Ph_4B_4N_2C_2$ dianion with $[\{(C_5Me_5)RuCl\}_4]$ cleaves the N—N bond of the ligand and affords a pseudo-triple-decker sandwich complex containing a $B_4N_2C_2$ middle deck (see picture). This eight-membered ring features nearly linear B-N-B moieties and brings the ruthenium centers unusually close. Cyclic voltammetry indicates efficient electron delocalization over the framework.

Contents



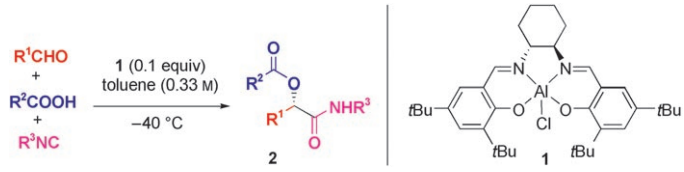
Map reading: Alkylation of a 15-base-pair double-stranded oligonucleotide modified with the carcinogen (±)-*anti*-benzo[*a*]pyrene diol epoxide (see picture) or *N*-hydroxy-4-aminobiphenyl is mapped by liquid chromatograhy–tandem mass spectrometry and collision-induced dissociation (CID). The method does not require prior DNA cleavage or hydrolysis.

DNA Damage



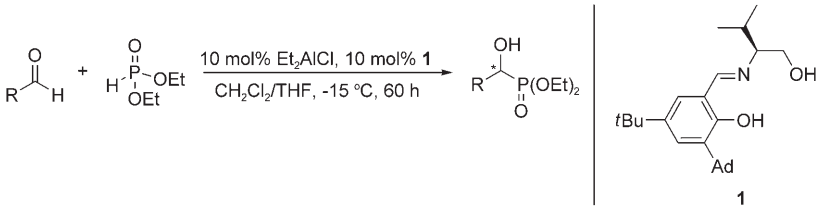
Adding across: A C(sp)–C(sp) bond of alkynyl cyanides is activated by nickel/Lewis acid catalysis derived from [Ni(cod)$_2$] and BPh_3, and the alkynylcyanation reaction of alkynes and 1,2-dienes is achieved by the binary catalysis for the first time to give a range of functionalized conjugated enyne molecules with defined stereo- and regioselectivities.

Enyne Synthesis



Make it enantioselective: The [(salen)-Al^{III}Cl] complex **1** catalyzes the title reaction of an aldehyde, a carboxylic acid, and an isocyanide to afford α-acyloxyamides **2** with good to excellent enantioselectivity. A variety of nonchelating substrates can be used to generate the versatile chiral products. R^1 = alkyl; R^2 = alkyl, alkenyl, aryl; R^3 = alkyl, aryl.

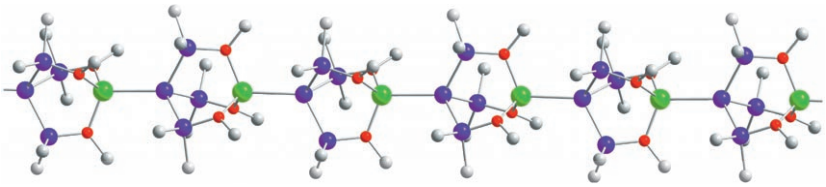
Asymmetric Catalysis



Active in dimeric form: A tridentate Schiff base aluminum(III) complex has been applied in the asymmetric hydrophosphonylation of various aldehydes, giving the corresponding products in good yields with good to excellent *ee* values (up to 97%). The strong positive nonlinear effect, along with high-resolution MS analyses, indicates that the reaction is performed in the presence of a dimeric aluminum species. Ad = adamantyl.

Asymmetric Catalysis

Contents



Chain gang: Introducing methoxy groups into $(Me_3Si)_4Si$ and treatment with alkali metal alkoxides leads to hitherto unknown zwitterionic alkali metal silanides [$(MeOMe_2Si)_3SiM$] with a bicyclooctane (Li, Na) or heterocubane (K) structure. The lithium and sodium compounds form infinite chains in the solid state (see picture: green Li, blue Si, red O, gray C) and dissociate in THF solutions into zwitterionic monomers.

Silanide Clusters

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).

Service