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:

M. A. Newton, M. Di Michiel, A. Kubacka, A. Iglesias-Juez, M. Fernández-García**
Observing Oxygen Storage and Release at Work under Cycling Redox Conditions: Synergies between Noble Metal and Oxide Promoter

*P. Berrouard, A. Najari, A. Pron, D. Gendron, P.-O. Morin, J.-R. Pouliot, J. Veilleux, M. Leclerc**
Synthesis of 5-Alkyl[3,4-*c*]thienopyrrole-4,6-dione-Based Polymers through Direct Heteroarylation

*J. Zeng, C. Zhu, J. Tao, M. Jin, H. Zhang, Z.-Y. Li, Y. Zhu, Y. Xia**
Controlling the Nucleation and Growth of Silver on Palladium Nanocubes by Manipulating the Reaction Kinetics

*C. A. DeForest, K. S. Anseth**
Photoreversible Patterning of Biomolecules within Click-Based Hydrogels

*H. Chinen, K. Mawatari, Y. Pihosh, K. Morikawa, Y. Kazoe, T. Tsukahara, T. Kitamori**
Enhancement of Proton Mobility in Extended Nanospace Channels

*C. Kolbeck, I. Niedermaier, N. Taccardi, P. S. Schulz, F. Maier, P. Wasserscheid, H.-P. Steinrück**
Monitoring Liquid Phase, Organic Reactions by Photoelectron Spectroscopy

Author Profile

"My favorite place on earth is where my family is. My best investment was a Colnago racing bike. …"
This and more about Michael Müller can be found on page 1514.

News

D. Aurbach

D. Cahen

A. Brik

Obituaries

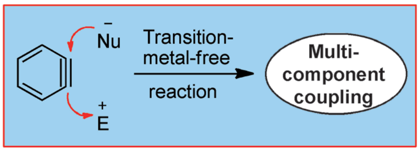
Books

Highlights

Aryne Chemistry

S. S. Bhojgude, A. T. Biju* — **1520 – 1522**

Arynes in Transition-Metal-Free Multicomponent Coupling Reactions



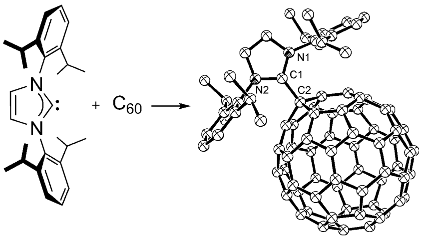
Let's couple together! The multicomponent reactions involving arynes offer direct access to unusual heterocyclic scaffolds and 1,2-disubstituted arenes. This transition-metal-free, one-pot construction of molecular complexity is likely to play a pivotal role in various carbon–carbon and carbon–heteroatom bond-forming reactions.

Organic Frustrated Lewis Pairs

J. Iglesias-Sigüenza,
M. Alcarazo* ———— **1523 – 1524**

Fullerenes as Neutral Carbon-Based Lewis Acids

Lewis adducts between N-heterocyclic carbenes and fullerenes have been isolated and their structures confirmed by X-ray crystallography. This work shows that simple fullerenes such as C_{60} or C_{70} can act as Lewis acids. This result not only opens new perspectives in fullerene chemistry but might also have strong implications in emerging fields such as the metal-free activation of small molecules.

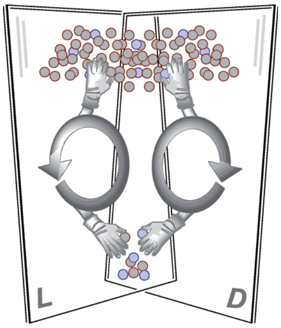


Minireviews

Asymmetric Catalysis

L. A. Evans, N. S. Hodnett,
G. C. Lloyd-Jones* ———— **1526 – 1533**

The Even-Handed Approach: Strategies for the Deployment of Racemic Chiral Catalysts

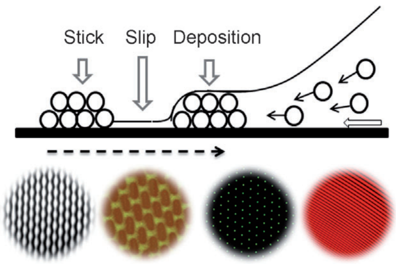


Twin set: Our obsession for (enantio)-selectivity in catalysis means we tend to analyze and graphically communicate our findings in the form of single-handed cycles. However, dual-cycle racemic catalysts are of distinct utility in polymerization, prediction of stereoselectivity, and mechanistic study.

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*, Journal Customer Services, John Wiley & Sons Inc., 350 Main St., Malden, MA 02148-5020. Annual subscription price for institutions: US$ 11.738/10.206 (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.

Reviews

Self-Assembly

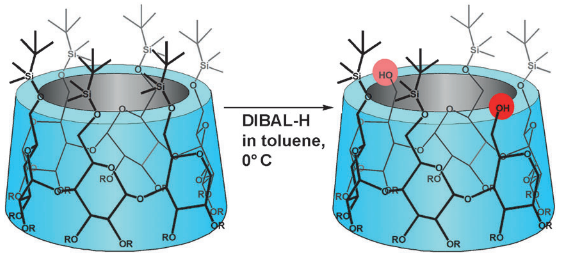


Drying out: The evaporation of solutions of nonvolatile solutes is one way to generate complex ordered structures. An array of facile and robust preparative strategies based on controlled evaporative self-assembly (CESA) of confined solutions have been exploited to rationally assemble various soft and hard materials into spatially ordered structures (see picture) with engineered properties and functionality over large surface areas.

Communications

Synthetic Methods

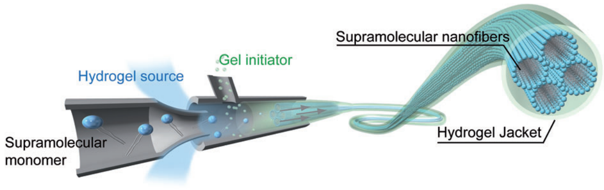
Frontispiece



A face off: Diisobutylaluminum hydride (DIBAL-H) has been found to be an effective O-desilylating reagent at the primary face of cyclodextrins. This methodology shows high chemo- and regioselectivity and provides an effective route to orthogonally protected, multisubstituted cyclodextrin derivatives.

Supramolecular Strands

Front Cover



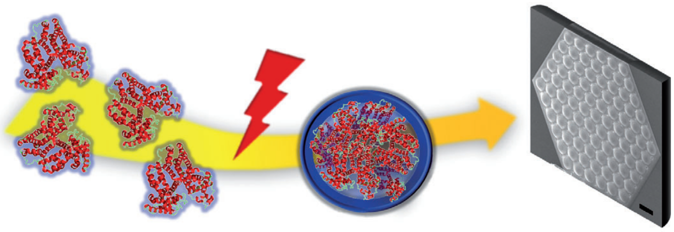
Jacketed supramolecular strand: Meter-long supramolecular strands were obtained by encapsulating them in polymer gels using a microfluidic channel (see picture). The nanofibers in the strands are self-assembled and aligned under the laminar flow conditions. Their mechanical strength was sufficiently high to allow their patterning onto a substrate and use them as a template for synthesizing an insoluble, conductive polymer.

Protein Microdevices

Y. L. Sun, W. F. Dong,* R. Z. Yang,
X. Meng, L. Zhang, Q. D. Chen,
H. B. Sun* ______________ 1558 – 1562

Dynamically Tunable Protein Microlenses

Inside Cover



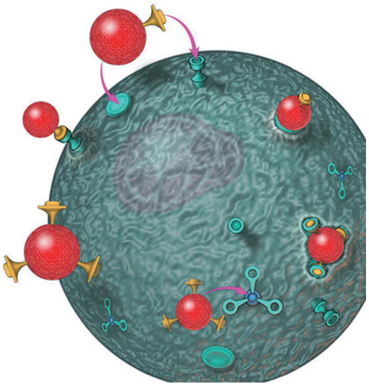
Proteins in focus: Dynamically tunable protein microdevices were built up by a simple “top-down”, maskless, femtosecond laser direct writing approach with bovine serum albumin. This technique was used to produce biocompatible microlenses that swell and shrink reversibly in response to changes in the pH of the surrounding solution. These responses to environmental stimuli can be used to focus the microlenses.

Drug Delivery

S. Bhattacharyya, R. D. Singh, R. Pagano,
J. D. Robertson, R. Bhattacharya,
P. Mukherjee* ______________ 1563 – 1567

Switching the Targeting Pathways of a Therapeutic Antibody by Nanodesign

Back Cover

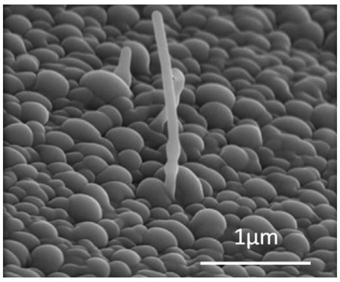


On the right path: The mechanisms of endocytosis of cetuximab (C225) and its nanoconjugates have been elucidated in a pancreatic cancer cell line. By using gold nanoparticles as a scaffold, it is possible to switch the pathway for endocytosis from a Dyn-2-dependent caveolar mechanism to Cdc42-dependent pinocytosis/phagocytosis. Tailoring endocytotic mechanisms may enable specific intracellular pathways to be targeted.

Carbon Composite Electrodes

M. Noked, S. Okashy, T. Zimrin,
D. Aurbach* ______________ 1568 – 1571

Composite Carbon Nanotube/Carbon Electrodes for Electrical Double-Layer Super Capacitors

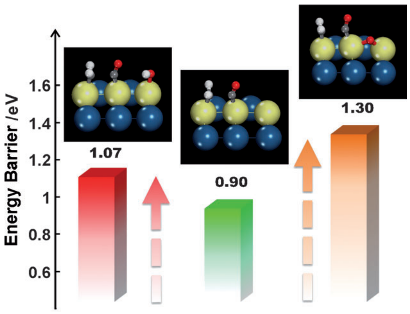


Carbon in charge: A straightforward method is presented for the synthesis of carbon nanotube (CNT)/porous carbon composite electrodes with uniform distribution of the CNTs and high surface area of the carbon material. The crystallinity of the CNTs is not affected by the high-temperature activation process. Monolithic CNT/activated carbon composite electrodes that do not need binder or current collector were also developed.

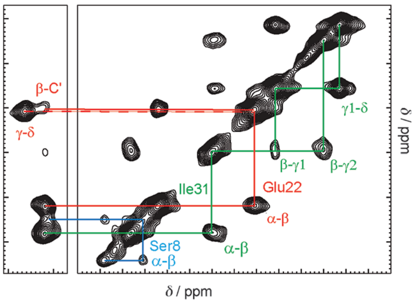
Heterogeneous Catalysis

R. Kavanagh, X.-M. Cao, W.-F. Lin,*
C. Hardacre, P. Hu* ________ 1572 – 1575

Origin of Low CO_2 Selectivity on Platinum in the Direct Ethanol Fuel Cell



Calculated answer: First-principles calculations have been applied to calculate the energy barrier for the key step in CO formation on a Pt surface (see picture; Pt blue, Pt atoms on step edge yellow) to understand the low CO_2 selectivity in the direct ethanol fuel cell. The presence of surface oxidant species such as O (brown bar) and OH (red bar) led to an increase of the energy barrier and thus an inhibition of the key step.



Learn about Alzheimer: The molecular conformation of a toxic β-amyloid oligomer structure was determined by NMR spectroscopy (see picture). The measurements show a N-terminal β strand that controls the partitioning between oligomer and protofibril formation. Targeting the N-terminus of the peptide neutralizes Aβ-dependent neuronal dysfunctions. The data have important implications for understanding the structural basis of Alzheimer's disease.

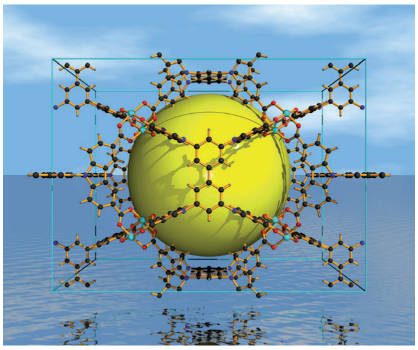
Solid-State NMR spectroscopy

C. Haupt, J. Leppert, R. Rönicke,
J. Meinhardt, J. K. Yadav,
R. Ramachandran, O. Ohlenschläger,
K. G. Reymann, M. Görlach,*
M. Fändrich* ______ **1576 – 1579**

Structural Basis of β-Amyloid-Dependent Synaptic Dysfunctions

---

Picky cage: A dicopper(II)-paddle-wheel-based metal–organic framework (PCN-80, see picture) with a rare (3,3,4)-connected topology has been synthesized by using a unique octatopic ligand featuring 90° bridging-angle dicarboxylate moieties. PCN-80 has Brunauer-Emmett-Teller (BET) and Langmuir surface areas of 3850 and 4150 $m^2 g^{-1}$, respectively. It exhibits high gas-uptake capacity for H_2 and large adsorption selectivity of CO_2 over N_2.



Gas Storage

W. Lu, D. Yuan, T. A. Makal, J.-R. Li,
H.-C. Zhou* ______ **1580 – 1584**

A Highly Porous and Robust (3,3,4)-Connected Metal–Organic Framework Assembled with a 90° Bridging-Angle Embedded Octacarboxylate Ligand

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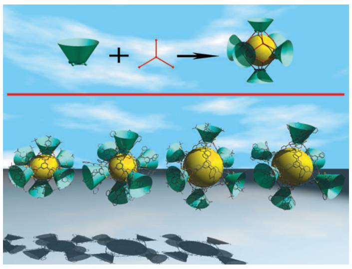
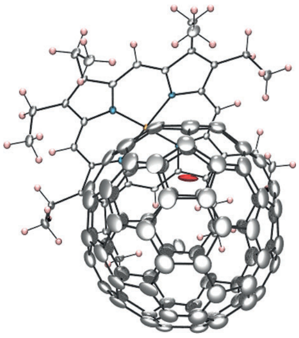


Molecular shuttlecocks: The introduction of tripodal ternary acids (red; see picture) to the cobalt/calixarene (green) systems led to the formation of four unprecedented calixarene-based nanoscale coordination cages through a [6+8] condensation. The overall periphery diameters of the nanocages ranged from 3.3 to 4.7 nm, and there were two sizes for the internal cavities (1.1 and 1.7 nm).

Nanocages

M. Liu, W. P. Liao,* C. H. Hu, S. C. Du,
H. J. Zhang* ______ **1585 – 1588**

Calixarene-Based Nanoscale Coordination Cages



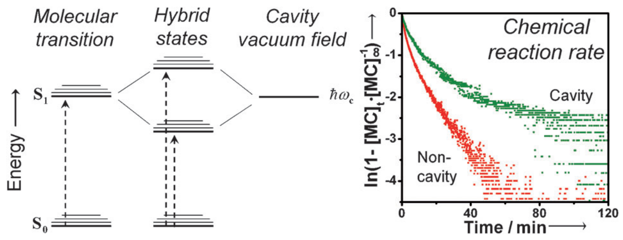
Ball and plane: The structure of La@C_{82} was clarified by single-crystal X-ray diffraction of samples co-crystallized with [Ni^{II}(OEP)] (OEP = octaethylporphyrin; see structure La red, N blue, Ni yellow, H pink). The charge-carrier mobility of the co-crystal was determined using flash-photolysis time-resolved microwave conductivity measurements. The material exhibited an anisotropic and high electron mobility of up to 0.9 $cm^2 V^{-1} s^{-1}$.

Endohedral Fullerenes

S. Sato, H. Nikawa, S. Seki,* L. Wang,
G. Luo, J. Lu,* M. Haranaka, T. Tsuchiya,
S. Nagase,* T. Akasaka* ___ **1589 – 1591**

A Co-Crystal Composed of the Paramagnetic Endohedral Metallofullerene La@C_{82} and a Nickel Porphyrin with High Electron Mobility

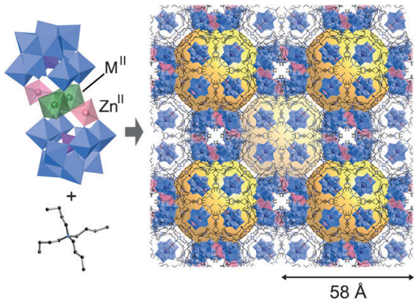
Quantum Electrodynamics



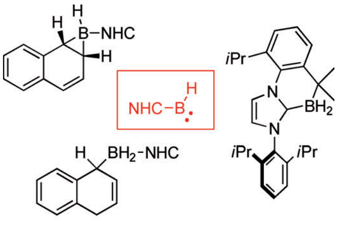
Electromagnetic vacuum fields are omnipresent in our universe, inducing many events such as spontaneous emission, Lamb shift, and Van der Waals forces. As demonstrated here, a chemical reaction can be influenced by strongly coupling the energy landscape governing the reaction pathway to vacuum fields in an optical cavity (see picture; MC = merocyanine).

Porous Materials

A void in the issue: A one-step self-assembly of γ-Keggin sandwich-type silicotungstates with M_2Zn_2 (M = Co, Ni, Zn) tetranuclear cores and tetrabutylammonium cations gave porous ionic crystals. These porous crystals are hollow frameworks containing large voids (ca. 38 × 38 × 38 Å^3, see picture, voids yellow), between which guest molecules can be exchanged through the connecting channels.



Borylenes

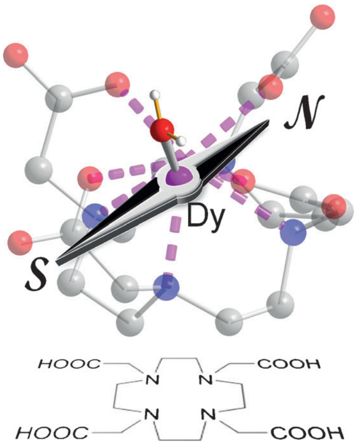


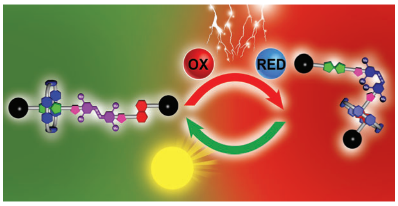
Borylenes, caught in the middle between various products

Still elusive: The reduction of dimethylimidazol-2-ylidene dichloroborane by sodium naphthalenide has been suggested to provide a borylene that cycloadds to naphthalene to make a borirane. Evidence has been provided that this borirane instead arises from coupling of a boryl radical and sodium naphthalenide. In contrast, reduction of 1,3-bis(2,6-diisopropylphenyl)imidazol-2-ylidene dichloroborane and the related dimesityl derivative provide novel C–H insertion products that may have arisen from a borylene.

Single-Molecule Magnets

Magnetic moments: The orientation of the title single-molecule magnet was investigated by magnetic single crystal and luminescence characterization, supported by ab initio calculations, and was found to be governed by the position of the hydrogen atoms of the apical water molecules. This finding suggests that simple magneto-structural correlations can give misleading clues for research in molecular magnetism as well as in the design of MRI contrast agents.





Something to remember: A rotaxane could be operated as a bistable memory element under kinetic control (see picture). Data was written on the molecule by an oxidation stimulus and locked by UV light irradiation. After the writing session, the oxidized species was reduced back to the original form without losing the written data for a few hours. Light irradiation also protects nonoxidized rotaxanes from accidental writing.

Molecular Devices

T. Avellini, H. Li, A. Coskun, G. Barin, A. Trabolsi, A. N. Basuray, S. K. Dey, A. Credi,* S. Silvi, J. F. Stoddart,* M. Venturi* ______ **1611 – 1615**

Photoinduced Memory Effect in a Redox Controllable Bistable Mechanical Molecular Switch

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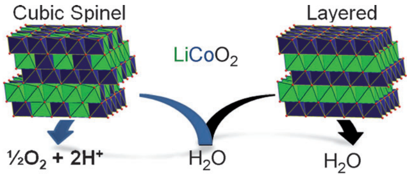
Who can split water? Two polymorphs of nanocrystalline cubic spinel and rhombohedral layered lithium cobalt oxides have been prepared and their application in the photocatalytic oxidation of water examined. The main factor that determines the catalytic activity of the different phases is the presence of a Co_4O_4 cubic core, which is present in the cubic form of the catalyst, but not in the layered structure (see scheme).



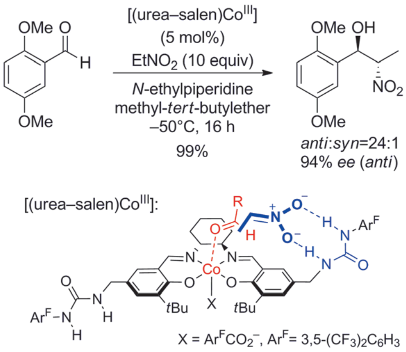
Heterogeneous Catalysis

G. P. Gardner, Y. B. Go, D. M. Robinson, P. F. Smith, J. Hadermann, A. Abakumov, M. Greenblatt,* G. C. Dismukes* ______ **1616 – 1619**

Structural Requirements in Lithium Cobalt Oxides for the Catalytic Oxidation of Water

---

A cooperative catalyst that features urea H-bonding and a cobalt center was developed for *anti*-selective asymmetric Henry reactions (see scheme). The H-bonds of urea play a crucial role in the improvement in yield (from 30 % to 84 %), enantioselectivity (from 78 % to 96 %), and *anti* diastereoselectivity (from 3:1 to 48:1). A short synthesis of (1*R*,2*S*)-methoxamine hydrochloride was also accomplished with this catalyst.



Cooperative Catalysis

K. Lang, J. Park, S. Hong* ___ **1620 – 1624**

Urea/Transition-Metal Cooperative Catalyst for *anti*-Selective Asymmetric Nitroaldol Reactions

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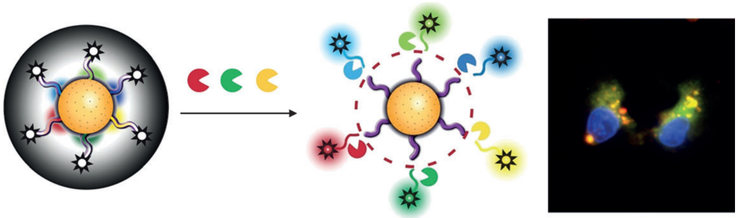


Turn off the lights! A universal nanoquencher that quenches a broad range of visible to near-infrared dyes by using a series of dark quenchers incorporated into a cell-permeable mesoporous silica nanoparticle has been developed. In combination with dye-labeled substrates, this nanoquencher boosts multiple fluorescence signals upon specific proteolysis, which allows real-time imaging of proteolytic cascades (see scheme).

Nanosensors

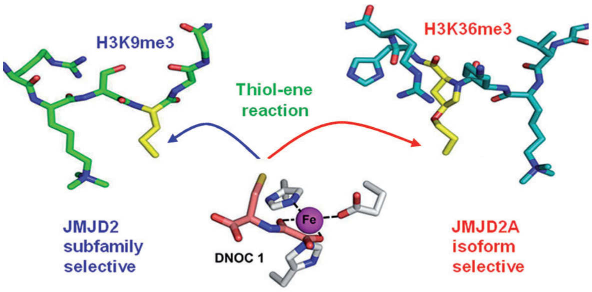
X. Huang, M. Swierczewska, K. Y. Choi, L. Zhu, A. Bhirde, J. Park, K. Kim, J. Xie, G. Niu, K. C. Lee, S. Lee,* X. Chen* ______ **1625 – 1630**

Multiplex Imaging of an Intracellular Proteolytic Cascade by using a Broad-Spectrum Nanoquencher

Histone Demethylase Inhibition

E. C. Y. Woon, A. Tumber, A. Kawamura,
L. Hillringhaus, W. Ge, N. R. Rose,
J. H. Y. Ma, M. C. Chan, L. J. Walport,
K. H. Che, S. S. Ng, B. D. Marsden,
U. Oppermann, M. A. McDonough,
C. J. Schofield* ________ 1631 – 1634

Linking of 2-Oxoglutarate and Substrate Binding Sites Enables Potent and Highly Selective Inhibition of JmjC Histone Demethylases

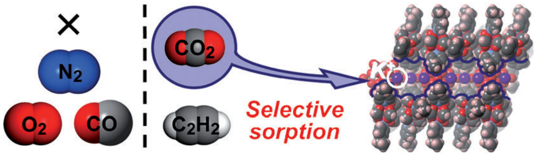


Select an isoform: Linking of cosubstrate and substrate binding sites enables highly selective inhibiton of isoforms of human histone lysine demethylases. The results should provide a basis for the development of potent and selective JmjC inhibitors, possibly suitable for clinical use.

Porous Materials

R. Eguchi, S. Uchida,
N. Mizuno* ________ 1635 – 1639

Inverse and High CO_2/C_2H_2 Sorption Selectivity in Flexible Organic–Inorganic Ionic Crystals

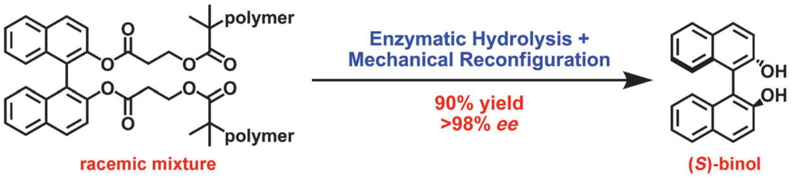


Highly selective CO_2 sorption and inverse CO_2/C_2H_2 sorption selectivity (4.8 at 278 K, 100 kPa) were achieved with an organic–inorganic ionic crystal. The key for the high affinity toward CO_2 is the combination of structural flexibility and strong binding sites (K^+) characteristic of organic–inorganic ionic crystals.

Mechanochemistry

K. M. Wiggins,
C. W. Bielawski* ________ 1640 – 1643

A Mechanochemical Approach to Deracemization

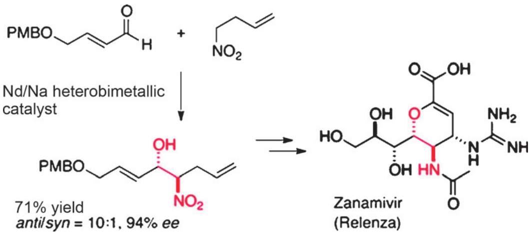


Good combination: Enantioselective enzymatic hydrolysis was combined with a mechanically facilitated racemization process to prepare (*S*)-1,1′-binapthol ((*S*)-binol) in high yield and enantiopurity from a racemic precursor in a single step (see scheme). The enzyme cholesterol esterase stereoselectively hydrolyzes esters of (*S*)-binol and ultrasound was applied to achieve mechanically facilitated racemization of the precursor material.

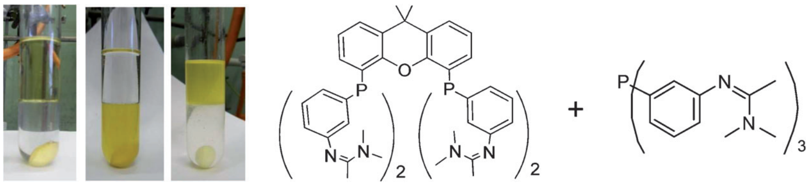
Synthetic Methods

T. Nitabaru, N. Kumagai,*
M. Shibasaki* ________ 1644 – 1647

Catalytic Asymmetric *anti*-Selective Nitroaldol Reaction En Route to Zanamivir



Battling the flu: Zanamivir (Relenza) is widely prescribed as an anti-influenza drug. It contains a vicinal amino alcohol, which is in an *anti* orientation, and is readily accessed by an *anti*-selective catalytic asymmetric nitroaldol (Henry) reaction promoted by a heterobimetallic complex (see scheme; PMB = *p*-methoxybenzyl). Additional synthetic manipulation of the nitroaldol product allowed the enantioselective synthesis of zanamivir.



It takes two: Xantphos ligands that contain amidate groups are selective for the linear versus the branched-chain products in the rhodium-catalyzed hydroformylation of 1-octene. However, the catalyst only undergoes CO_2-mediated phase switching in the presence of amidine-substituted triphenylphosphine (see scheme).

Catalysis

M. Mokhadinyana, S. L. Desset,
D. B. G. Williams,*
D. J. Cole-Hamilton* ______ **1648 – 1652**

Cooperative Ligand Effects in Phase-Switching Homogeneous Catalysts

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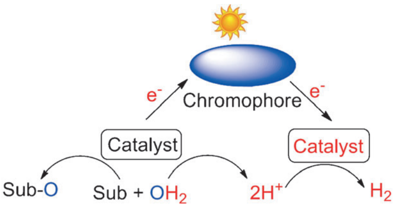


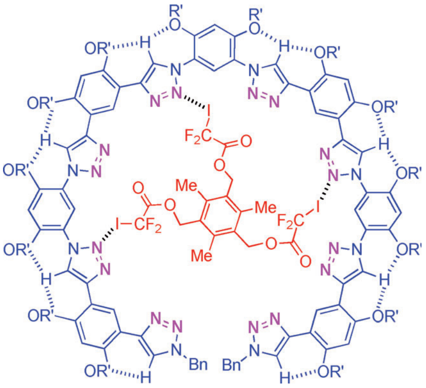
On the sunny side: A homogeneous system for H_2 production and hydrocarbon oxidation was developed in the absence of any sacrificial reagent. This system consists of $[Ru(TPA)(H_2O)_2]^{2+}$ and $[Fe_3(CO)_{12}]$ as catalysts and $[Ru(bpy)_3]^{2+}$ and $[Ir(bpy)(ppy)_2]^{+}$ as photosensitizers (PS). Water is the oxygen source as well as the source for H_2 formation (see picture; Sub = organic substrate).

Photocatalysis

W. M. Singh, D. Pegram, H. Duan,
D. Kalita, P. Simone, G. L. Emmert,
X. Zhao* ______ **1653 – 1656**

Hydrogen Production Coupled to Hydrocarbon Oxygenation from Photocatalytic Water Splitting

Inside Back Cover



Into the fold: Intramolecular C–H···O hydrogen bonding has been utilized to create new aromatic triazole foldamers. Remarkably, all the triazole units of the foldamers are guided to orientate inward to form a nitrogen ring. As a result, they can efficiently bind neutral tri- and didentate organohalogens through multiple N···X (X = Cl, Br, I) halogen bonds to form stable 1:1 complexes.

Molecular Recognition

L.-Y. You, S.-G. Chen, X. Zhao,* Y. Liu,
W.-X. Lan, Y. Zhang, H.-J. Lu, C.-Y. Cao,
Z.-T. Li* ______ **1657 – 1661**

C–H···O Hydrogen Bonding Induced Triazole Foldamers: Efficient Halogen Bonding Receptors for Organohalogens

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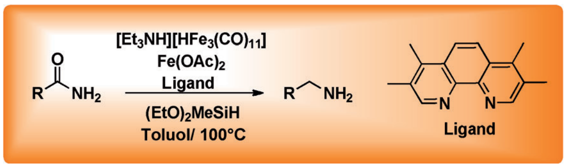


It takes two: For the reduction of amides to amines iron catalysts were developed. A combination of two different iron catalysts made possible the challenging reduction of primary amides (see picture).

Homogeneous Catalysis

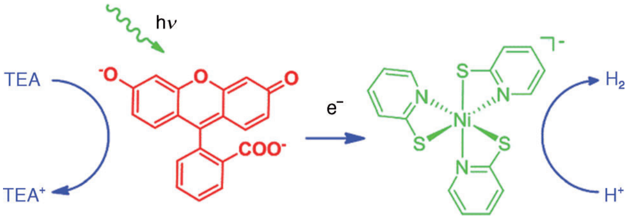
S. Das, B. Wendt, K. Möller, K. Junge,
M. Beller* ______ **1662 – 1666**

Two Iron Catalysts are Better than One: A General and Convenient Reduction of Aromatic and Aliphatic Primary Amides

Hydrogen Production

Z. Han, W. R. McNamara, M.-S. Eum,
P. L. Holland,*
R. Eisenberg* ________ 1667 – 1670

A Nickel Thiolate Catalyst for the Long-Lived Photocatalytic Production of Hydrogen in a Noble-Metal-Free System

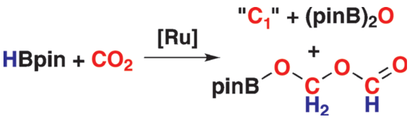


A question of nobility: A biomimetic nickel thiolate complex (see scheme; TEA = triethylamine) exhibits unprecedented activity for the title reaction. By using a low concentration of a sacrificial donor, the system maintains significant activity for at least 60 hours. The enhanced stability of the system is ascribed to the ability to proceed through an oxidative quenching pathway.

CO_2 Reduction

S. Bontemps, L. Vendier,
S. Sabo-Etienne* ________ 1671 – 1674

Borane-Mediated Carbon Dioxide Reduction at Ruthenium: Formation of C_1 and C_2 Compounds

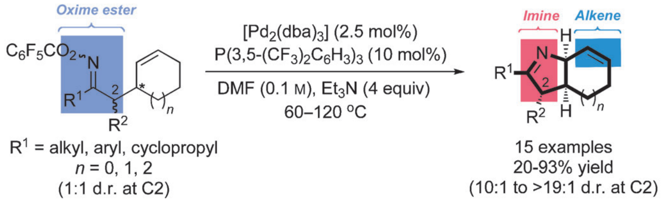


One and two: The C_2 compound pinBOCH$_2$OCHO (see scheme; HBpin = pinacolborane) and several C_1 compounds have been obtained from the borane-mediated reduction of CO_2 under mild conditions with the catalyst precursor $[RuH_2(H_2)_2(PCy_3)_2]$. Mechanistic investigation highlights the role of a series of new carbonyl ruthenium complexes that were characterized by multinuclear NMR spectroscopy, IR spectroscopy, and X-ray diffraction studies.

Palladium-Catalyzed Cyclization

A. Faulkner, J. F. Bower* ________ 1675 – 1679

Highly Efficient Narasaka–Heck Cyclizations Mediated by $P(3,5\text{-}(CF_3)_2C_6H_3)_3$: Facile Access to N-Heterobicyclic Scaffolds

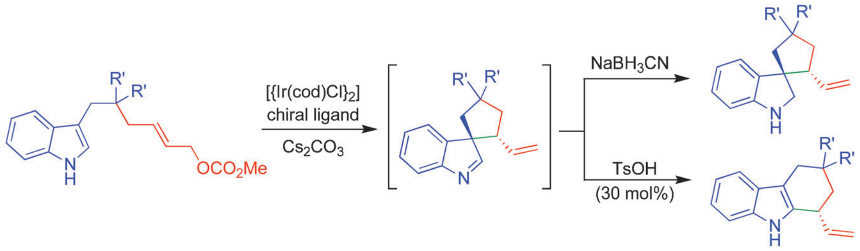


N-heterobicyclic scaffolds: Highly efficient palladium-catalyzed cyclizations of oxime esters with cyclic alkenes were used as a general entry to perhydroindole and related scaffolds. The chemistry is reliant upon the use of $P(3,5\text{-}(CF_3)_2C_6H_3)_3$ for the key C(sp^3)–N bond-forming process and this facilitates cyclizations with enhanced levels of efficiency across a range of sterically and electronically distinct substrates.

Stereospecific Migration

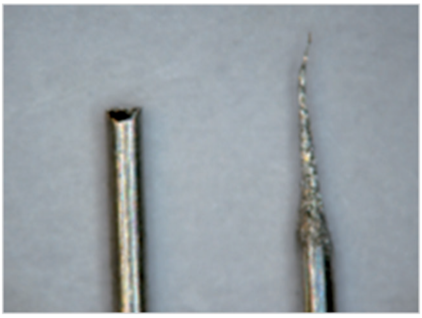
Q.-F. Wu, C. Zheng,
S.-L. You* ________ 1680 – 1683

Enantioselective Synthesis of Spiro Cyclopentane-1,3′-indoles and 2,3,4,9-Tetrahydro-1*H*-carbazoles by Iridium-Catalyzed Allylic Dearomatization and Stereospecific Migration



Rings with a twist: The highly enantioselective construction of five-membered spiroindolenines has been realized by the iridium-catalyzed intramolecular allylic dearomatization of indoles. The stereospecific migration of these spiro cyclopentane-1,3′-indole products provides enantioenriched 2,3,4,9-tetrahydro-1*H*-carbazoles.

Dissolving platinum: A noncorrosive, basic ionic liquid has been developed as a solvent system for the electrodissolution of platinum (see image). The metal was dissolved at an ultrahigh rate, and the facile recovery of pure platinum and platinum alloys from the same solution was achieved without any additional treatment of the solution or exchange of the medium.



Electrochemistry

J.-F. Huang,* H.-Y. Chen ___ **1684 – 1688**

Heat-Assisted Electrodissolution of Platinum in an Ionic Liquid

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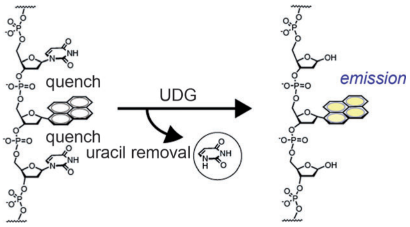
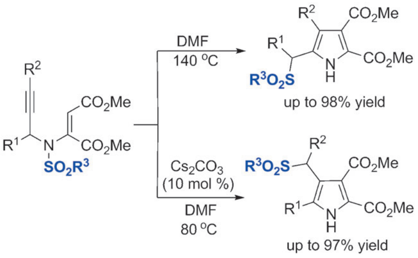
Uracil is a common form of DNA damage resulting from hydrolysis of cytosine, and cellular uracil DNA glycosylases (UDG) have evolved to remove it specifically. The use of nonnatural pyrene deoxyriboside in short DNA oligomers to directly report on UDG enzymatic activity is described. The mechanism relies on the use of uracil as a strong quencher of pyrene, and enzyme repair activity can be directly imaged with bacterial cells in real time.



Sensing DNA Repair

T. Ono, S. Wang, C.-K. Koo, L. Engstrom, S. S. David, E. T. Kool* ___ **1689 – 1692**

Direct Fluorescence Monitoring of DNA Base Excision Repair



Good migrations: The highly regioselective migration of a sulfonyl group for the synthesis of functionalized pyrroles is reported (see scheme; DMF = *N*,*N*-dimethylformamide). The migration of the sulfonyl group to different positions can be controlled with high selectivity, thus allowing the formation of both α- and β-(arylsulfonyl)methyl pyrroles with high yields.

Heterocycles

X. Y. Xin, D. P. Wang, X. C. Li, B. S. Wan* ___ **1693 – 1697**

Highly Regioselective Migration of the Sulfonyl Group: Easy Access to Functionalized Pyrroles

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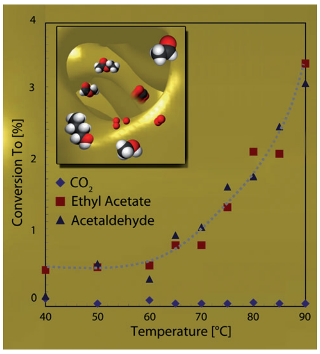


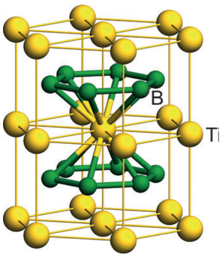
Unsupported catalyst for green chemistry: The aerobic oxidation and coupling of primary alcohols (methanol, ethanol, *n*-butanol) to give the corresponding aldehydes and esters at temperatures below 100 °C is facilitated by unsupported nanoporous gold catalysts. The experimental conditions employed allow a close comparison to model experiments and open the door to a molecular-level understanding of the reaction.

Alcohol Oxidation

K. M. Kosuda, A. Wittstock,* C. M. Friend, M. Bäumer ___ **1698 – 1701**

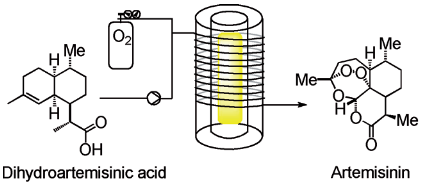
Oxygen-Mediated Coupling of Alcohols over Nanoporous Gold Catalysts at Ambient Pressures

Planar B_6 Ring



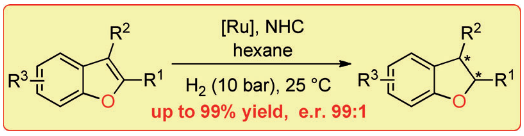
Now we are six: Planar B_6 rings embedded in one-dimensional Ti_7 wheels have been found in the crystal structure of a solid-state phase ($Ti_7Rh_4Ir_2B_8$) for the first time. First-principles calculations indicated strong B–B bonding but also significant interactions with the surrounding titanium atoms (see picture).

Anti-Malaria Drugs



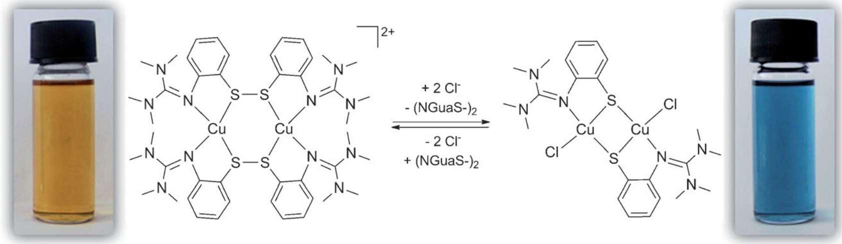
Malaria is a serious global health issue. Artemisinin combination treatments are the first-line drugs, but supplies are limited because artemisinin is obtained solely by extraction from *Artemisia annua*. A continuous-flow process that converts dihydroartemisinic acid into artemisinin (see scheme) was shown to be an inexpensive and scalable process that can ensure a steady, affordable supply of artemisinin.

Asymmetric Hydrogenation



H_2-O-T! Aromatic **O**-heterocycles are a challenging substrates for asymmetric hydrogenation (**H_2**). An in situ formed chiral N-heterocyclic carbene (NHC) ruthenium complex allows the high yielding, completely regioselective, and highly asymmetric hydrogenation of substituted benzofurans at room **T**emperature, giving valuable 2,3-dihydrobenzofurans (see scheme).

Redox Active Complexes

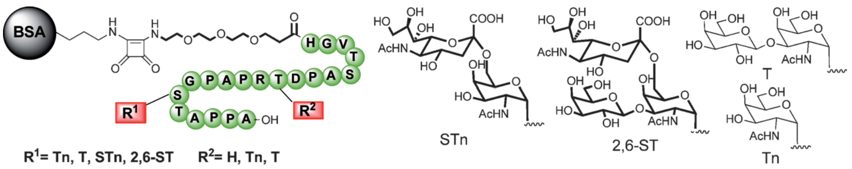


One to two and back again: A disulfide–thiolate interconversion process in a dinuclear copper complex is induced by chloride ions (see scheme). Within this compound, the coordinating copper atoms serve either as electron source or as electron sink and thus oscillate between the oxidation states +I and +II.

Glycopeptide Vaccines

H. Cai, Z. H. Huang , L. Shi, Z. Y. Sun,
Y. F. Zhao, H. Kunz,*
Y. M. Li* ——— **1719 – 1723**

Variation of the Glycosylation Pattern in MUC1 Glycopeptide BSA Vaccines and Its Influence on the Immune Response

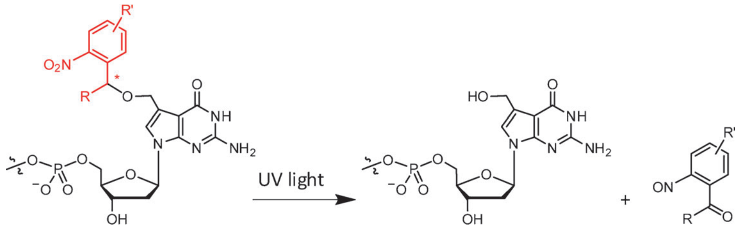


A shot in the arm for anticancer vaccines: Synthetic MUC1 glycopeptides bearing the STn and 2,6-ST antigens were conjugated covalently to BSA (see scheme). The obtained synthetic vaccines induced very strong immune responses in Balb/c mice. Predominant IgG isotype antibodies were induced. The antibodies exhibited strong binding to breast cancer cells of the MCF-7 cell line.

Lightning Terminators

B. P. Stupi, H. Li, J. Wang, W. Wu,
S. E. Morris, V. A. Litosh, J. Muniz,
M. N. Hersh,
M. L. Metzker* ——— **1724 – 1727**

Stereochemistry of Benzylic Carbon Substitution Coupled with Ring Modification of 2-Nitrobenzyl Groups as Key Determinants for Fast-Cleaving Reversible Terminators



A complete set of 2-nitrobenzyl-modified reversible terminators have been developed, which upon exposure to UV light generate natural hydroxymethyl nucleotides (see scheme). The combination of a stereospecific (*S*)-*tert*-butyl group (R) at the benzylic carbon and a 5-OMe group (R′) on the 2-nitrobenzyl ring substantially increase the rate of photochemical cleavage. For 7-deaza-7-hydroxymethyl-2′-deoxyguanosine, these modifications led to a rate increase of more than one order of magnitude.

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).

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