



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:

S. T. Scroggins, Y. Chi, J. M. J. Fréchet*

Polarity-Directed One-Pot Asymmetric Cascade Reactions Mediated by Two Catalysts in an Aqueous Buffer

A. B. Chaplin, A. S. Weller*

B–H Activation at a Rhodium(II) Center: A Missing Link in the Transition-Metal-Catalyzed Dehydrocoupling of Amine–Boranes

I. U. Khan, D. Zwanziger, I. Böhme, M. Javed, H. Naseer, S. W. Hyder, A. G. Beck-Sickingher*

Breast Cancer Diagnosis by Neuropeptide Y Analogues: From Synthesis to Clinical Application

Y.-S. Li,* F.-Y. Liang, H. Bux, A. Feldhoff, W.-S. Yang, J. Caro*

Metal–Organic Framework Molecular Sieve Membrane: Supported ZIF-7 Layer with High Hydrogen Selectivity by Microwave-Assisted Seeded Growth

S. Yamago,* Y. Watanabe, T. Iwamoto

Synthesis of [8]Cycloparaphenylene from a Square-Shaped Tetranuclear Platinum Complex $[\{\text{Pt}(\text{cod})(4,4'\text{-biphenyl})\}_4]$

S. M. Lang, T. M. Bernhardt,* R. N. Barnett, U. Landman*

Methane Activation and Catalytic Ethylene Formation on Free Au_2^+

E. Kang, H. Su Min, J. Lee, M. H. Han, H. J. Ahn, I.-C. Yoon, K. Choi, K. Kim, K. Park, I. C. Kwon*

Nanobubbles from Gas-Generating Polymeric Nanoparticles for Ultrasound Imaging of Living Subjects

A. M. Todea, A. Merca, H. Bögge, T. Glaser, J. M. Pigga, M. L. Langston, T. Liu, R. Prozorov, M. Luban, C. Schröder, W. H. Casey, A. Müller*

Porous Capsules $\{(\text{M})\text{M}_5\}_{12}\text{Fe}^{\text{III}}_{30}$ ($\text{M} = \text{Mo}^{\text{VI}}, \text{W}^{\text{VI}}$): Sphere-Surface Supramolecular Chemistry with Twenty Ammonium Ions, Related Solution Properties, and Tuning of Magnetic Exchange Interactions



“I chose chemistry as a career because I could make things that did not exist.

If I wasn't a scientist, I would be a writer ...”

This and more about Luis Echegoyen can be found on page 248.

Author Profile

Luis Echegoyen _____ 248



G. Ertl



M. Rueping



C. J. Chang

News

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G. Ertl Honored _____ 249

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M. Rueping and C. J. Chang
Awarded _____ 249

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Gold Chemistry

Fabian Mohr

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Oxidation of Organic Compounds by
Dioxiranes

Waldemar Adam, Cong-Gui Zhao, Chantun
R. Saha-Möller, Kavitha Jakka

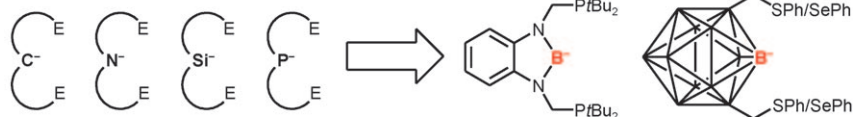
reviewed by A. Greer _____ 251

Highlights

Tridentate Boryl Ligands

J. I. van der Vlugt* — 252–255

Boryl-Based Pincer Systems: New Avenues in Boron Chemistry



Pincer Chemistry 1973-2008: non-Boron

Pincer Chemistry 2009: Boryl

To B or not to B? Incorporation of BH into tridentate ligands has recently allowed the isolation of the first boryl-based pincer complexes. Functionalized diaminoborane and *m*-carbaborane (see picture) form

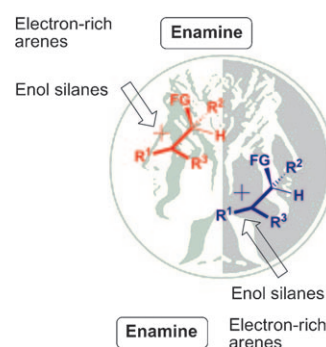
Ir and Pd complexes, respectively. Novel reactivity, including in catalysis, is expected to result from the M–boryl bond and electronic communication with the specific ligand framework.

Carbocations

P. G. Cozzi,* F. Benfatti — 256–259

Stereoselective Reactions with Stabilized Carbocations

Blocking one face: Benzylic carbocations, which are easily generated in situ from alcohols or acetates by Brønsted or Lewis acids, undergo selective facial discrimination in diastereoselective reactions (see scheme; FG = functional group). The A values are responsible for the facial selectivity. Catalytic amounts of various Lewis acids can be employed in discriminating one face of the carbocation.

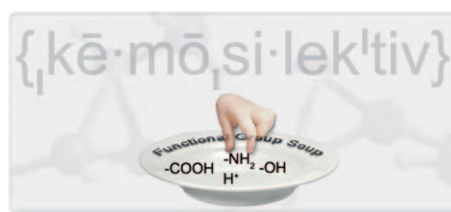


Reviews

Synthesis Design

N. A. Afagh, A. K. Yudin* — 262–310

Chemoselectivity and the Curious Reactivity Preferences of Functional Groups



Spoilt for choice? Chemoselectivity is a central aspect of chemical synthesis, but the endeavor to find the right reaction pathway from the many that are often

available can be tedious. A careful analysis of the reaction mechanism can usually help to arrive at the “right pathway”.

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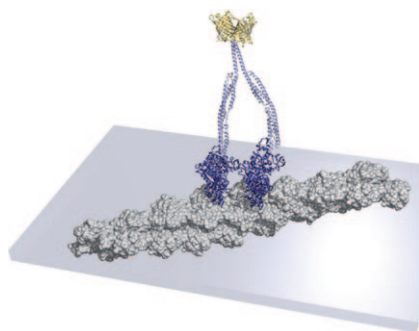
individuals who are personal members of a national chemical society prices are available on request. Postage and handling charges included. All prices are subject to local VAT/sales tax.

Communications

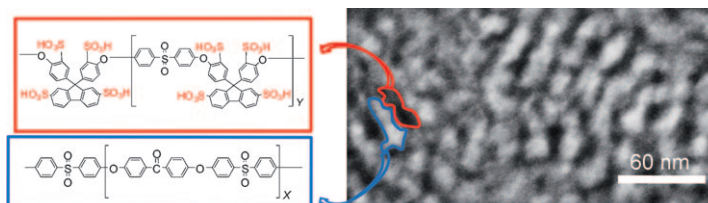
Nanotechnology

M. Amrute-Nayak, R. P. Diensthuber, W. Steffen, D. Kathmann, F. K. Hartmann, R. Fedorov, C. Urbanke, D. J. Manstein, B. Brenner, G. Tsiavaliaris* — **312–316**

Targeted Optimization of a Protein Nanomachine for Operation in Biohybrid Devices



A long life with controlled movement: Engineered protein nanomachines with defined and adjustable functional features offer opportunities for controlling movement on nano- to microscale biohybrid devices. Myosin motors (the picture shows a dimeric motor) have now been constructed with optimized properties with regard to stability and regulation, including switchable processivity and tight control of the velocity of movement.



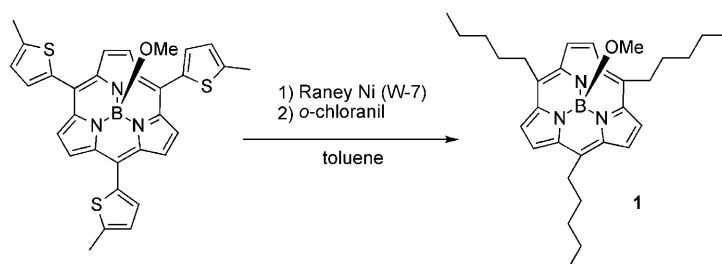
Segregation is a key theme of this film: Poly(arylene ether sulfone ketone) multi-block membranes containing highly sulfonated hydrophilic blocks were prepared by postsulfonation. High local concentrations of sulfonic acid groups within the

hydrophilic blocks enhanced the phase separation of the two block types (see picture), and the high interconnectivity of the rodlike hydrophilic aggregates led to high proton conductivity even at low humidity.

Fuel-Cell Membranes

B. Bae, T. Yoda, K. Miyatake,* H. Uchida, M. Watanabe* — **317–320**

Proton-Conductive Aromatic Ionomers Containing Highly Sulfonated Blocks for High-Temperature-Operable Fuel Cells



The desulfurization of meso-trithienyl-subporphyrins leads to meso-trialkylsubporphyrins (see scheme). Oxidation at the benzylic position of the meso-alkyl substituent of **1** has been used to prepare a

valeryl-substituted subporphyrin that exhibits highly perturbed optical and electrochemical properties compared to other subporphyrins.

Porphyrinoids

S. Hayashi, Y. Inokuma, S. Easwaramoorthi, K. S. Kim, D. Kim,* A. Osuka* — **321–324**

Meso-Trialkyl-Substituted Subporphyrins



Frontiers of Chemistry: From Molecules to Systems

A One-Day Symposium

On 21st May 2010 in Paris

at the Maison de la Chimie

(near the Eiffel Tower and Les Invalides)

Speakers



Gerhard Ertl
Nobel Prize 2007



Jean-Marie Lehn
Nobel Prize 1987



Roger Y. Tsien
Nobel Prize 2008



Ada Yonath
Nobel Prize 2009



Luisa De Cola



Alan R. Fersht



Marc Fontecave



Michael Grätzel



Michel Orrit



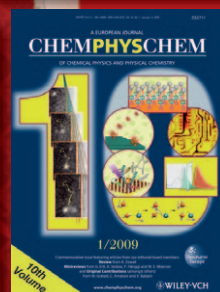
Nicolas Winssinger

Posters

will be displayed also online from 1st April.

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Celebrating 10 Years of



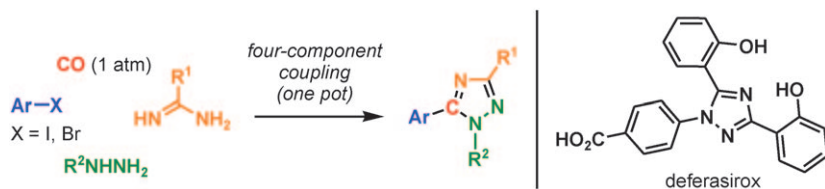
Scientific committee

E. Amouyal, M. Che,
F. C. De Schryver,
A. R. Fersht, P. Göllitz,
J. T. Hynes, J.-M. Lehn

Topics

catalysis, biochemical imaging,
chemical biology, bionanotechnology,
proteomics, spectroscopy, solar cells





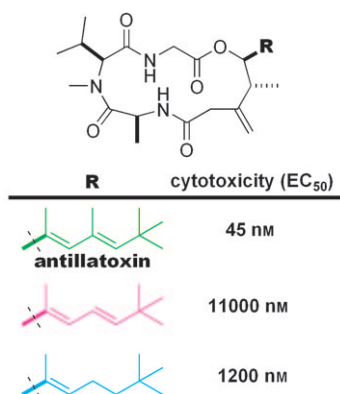
All 4 one: Palladium-catalyzed carbonylation initiates a highly regioselective triazole synthesis. In this four-partner protocol, the aryl halide, amidine, and hydrazine partners are easily varied, allowing the synthesis of fully substituted 1,2,4-

triazoles in a modular fashion. This methodology is demonstrated with the synthesis of druglike and/or pharmaceutically relevant molecules such as deferasirox.

Multicomponent Reactions

S. T. Staben,* N. Blaquiere — 325–328

Four-Component Synthesis of Fully Substituted 1,2,4-Triazoles



Side-chain plays lead role: Antillatoxin is a cyclic peptide and potent neurotoxin, and the total syntheses and biological evaluations of antillatoxin and its side-chain analogues are reported. A subtle side-chain modification led to dramatic changes in the cytotoxicity; detailed conformational analyses revealed that the shape of the twisted side chain is critical for the biological activity of antillatoxin.

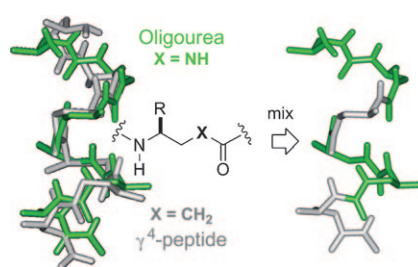
Natural Products

K. Okura, S. Matsuoka, R. Goto, M. Inoue* — 329–332

The Twisted Side Chain of Antillatoxin is Important for Potent Toxicity: Total Synthesis and Biological Evaluation of Antillatoxin and Analogues



Fraternal twins: Oligoureas and γ -peptides are isosteric, quasi-isostructural helical foldamers endowed with distinct biomolecular recognition properties. Combination of the two backbones to generate urea/amide hybrids (see picture) was found to give more potent yet less cytotoxic antimicrobial helical foldamers.



Helical Foldamers

P. Claudon, A. Violette, K. Lamour, M. Decossas, S. Fournel, B. Heurtault, J. Godet, Y. Mély, B. Jamart-Grégoire, M.-C. Averlant-Petit, J.-P. Briand, G. Duportail, H. Monteil, G. Guichard* — 333–336

Consequences of Isostructural Main-Chain Modifications for the Design of Antimicrobial Foldamers: Helical Mimics of Host-Defense Peptides Based on a Heterogeneous Amide/Urea Backbone

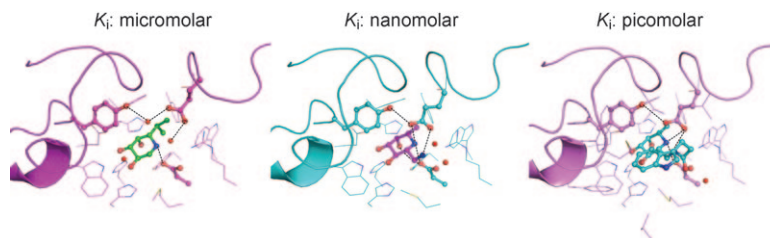


Enzyme–Inhibitor Complexes

H.-J. Wu, C.-W. Ho, T.-P. Ko, S. D. Popat, C.-H. Lin,* A. H.-J. Wang* — 337–340



Structural Basis of α -Fucosidase Inhibition by Iminocyclitols with K_i Values in the Micro- to Picomolar Range



Two loops were found to move inward toward the α -fucosidase active site to produce a closed conformation of complexes with inhibitors with increasing K_i values from the micro- to nanomolar range. Although no further conforma-

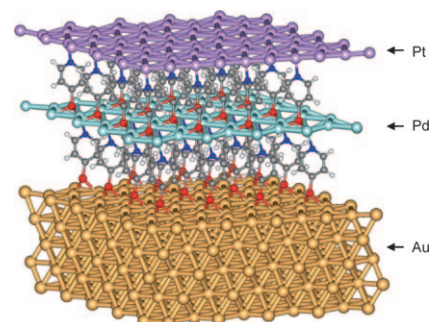
tional changes in the two loops are observed for inhibitors with sub-nanomolar K_i values, the loops are additionally stabilized by hydrogen bonds and hydrophobic interactions.

Hybrid Composites

F. Eberle, M. Saitner, H.-G. Boyen,* J. Kucera, A. Gross, A. Romanyuk, P. Oelhafen, M. D'Olieslaeger, M. Manolova, D. M. Kolb — 341–345

A Molecular Double Decker: Extending the Limits of Current Metal–Molecule Hybrid Structures

Towards the third dimension: A new type of organic–inorganic hybrid comprises two independent molecular layers separated by a metal monolayer and sandwiched between outer electrodes (see picture). The interlayer reveals metallic properties despite its reduced dimensions and the presence of chemical bonds at both sides. It might be useful as an intermediate electrode to control charge transport through molecule-based devices.



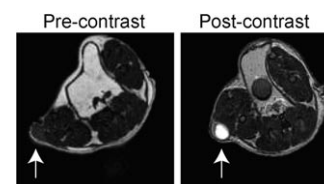
MRI Contrast Agents

Z. Cheng, D. L. J. Thorek, A. Tsourkas* — 346–350



Gadolinium-Conjugated Dendrimer Nanoclusters as a Tumor-Targeted T_1 Magnetic Resonance Imaging Contrast Agent

Light heavyweight champion: Chemically cross-linked dendrimer nanoclusters (DNCs) have been developed as a platform for preparing targeted magnetic resonance contrast agents. The extremely high gadolinium payload causes the DNCs to show a significant improvement in tumor contrast compared with pre-contrast images (see picture).



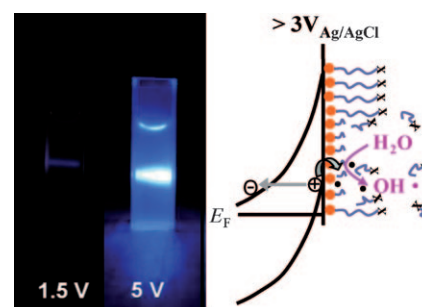
Dark Photocatalysis

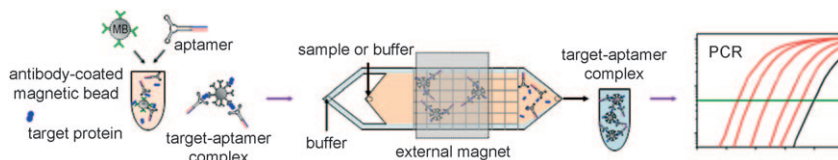
Y. Y. Song, P. Roy, I. Paramasivam, P. Schmuki* — 351–354



Voltage-Induced Payload Release and Wettability Control on TiO_2 and TiO_2 Nanotubes

Please release me: Hydrocarbon monolayers attached to a TiO_2 surface can be cut by electrochemical means, thus allowing active molecules or proteins to be released from the TiO_2 surface (see picture). Requirements are suitable electronic properties of TiO_2 combined with a voltage to cause Schottky barrier breakdown; valence band holes are then sufficiently reactive to generate OH^\bullet radicals.





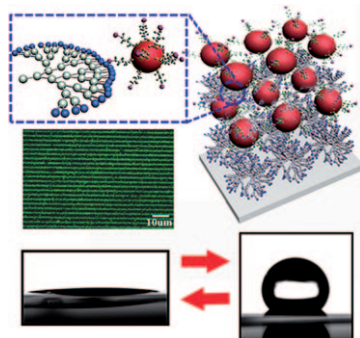
Microfluidic Biotechnology

A. Csordas, A. E. Gerdon, J. D. Adams,
J. Qian, S. S. Oh, Y. Xiao,*
H. T. Soh* 355–358

On the MAP: The title technique combines microfluidic magnetic sample preparation with highly specific aptamer-based molecular recognition and quantitative PCR. Using platelet-derived growth

factor as a model, a fm detection limit was obtained in fetal bovine serum with a dynamic range that spanned five orders of magnitude.

Detection of Proteins in Serum by Micromagnetic Aptamer PCR (MAP) Technology



Highly stable photoluminescent (PL) nanocomposite multilayers including quantum dots (see picture) were prepared using a nucleophilic substitution reaction. The assembly of functional nanoparticles in a nonpolar solvent can allow selective deposition and induce a hydrophobic surface with a water contact angle above 115°, which significantly enhances the PL durability of nanocomposite films.

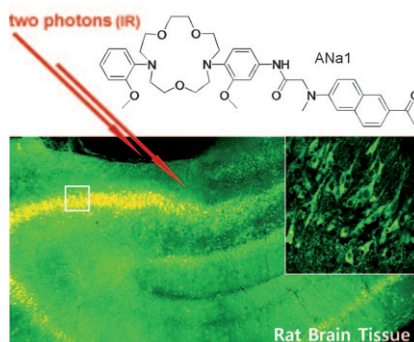
Nanocomposites

B. Lee, Y. Kim, S. Lee, Y. S. Kim, D. Wang,
J. Cho* 359–363

Layer-by-Layer Growth of Polymer/Quantum Dot Composite Multilayers by Nucleophilic Substitution in Organic Media



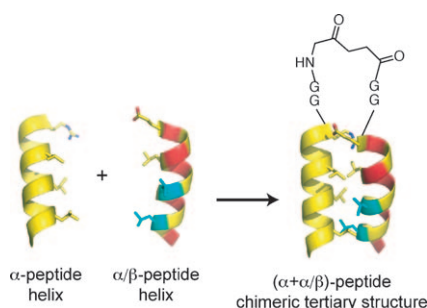
Two photons are better than one: A two-photon probe (ANa1, see picture) shows strong two-photon fluorescence enhancement in response to Na⁺ and a dissociation constant (K_d) of (26 ± 2) mM in the cell. It can be easily loaded into the cells and can selectively detect intracellular free Na⁺ in live cells and living tissues at a depth of 100–200 μm for a long period of time.



Fluorescent Probes

M. K. Kim, C. S. Lim, J. T. Hong, J. H. Han,
H. Y. Jang, H. M. Kim,*
B. R. Cho* 364–367

Sodium-Ion-Selective Two-Photon Fluorescent Probe for In Vivo Imaging



Backbone thioester exchange is used to explore a fundamental type of protein-foldamer packing motif, the association of an α helix and an α/β -peptide foldameric helix, which is analogous to an antiparallel coiled-coil tertiary structure in a pure α -residue backbone. Side-chain packing preferences at this chimeric tertiary interface are comparable to those that determine pairing propensities among antiparallel α helices.

Protein Folding

J. L. Price, E. B. Hadley, J. D. Steinkruger,
S. H. Gellman* 368–371

Detection and Analysis of Chimeric Tertiary Structures by Backbone Thioester Exchange: Packing of an α Helix against an α/β -Peptide Helix

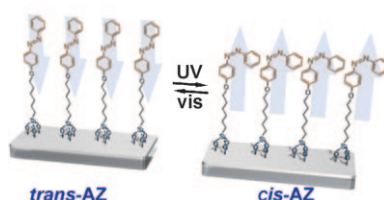


Photocontrolled Superconductivity

A. Ikegami, M. Suda, T. Watanabe,
Y. Einaga* 372–374



Reversible Optical Manipulation of
Superconductivity



Flicking the switch: Photoirradiation has a dramatic effect on the superconducting properties of a passivated ultrathin Nb film functionalized with a photochromic self-assembled azobenzene (AZ) monolayer (see picture). These effects can be attributed to photoisomerization-induced changes in the amount of charge transfer between the substrate and the photochromic monolayer. The changes are accompanied by alternation of the surface dipoles.

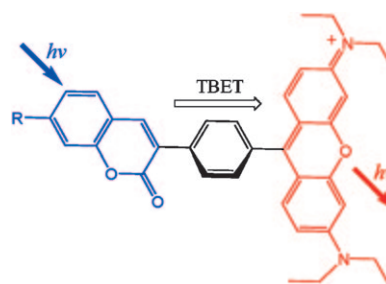
Fluorescent Dyes

W. Lin,* L. Yuan, Z. Cao, Y. Feng,
J. Song 375–379



Through-Bond Energy Transfer Cassettes with Minimal Spectral Overlap between the Donor Emission and Acceptor Absorption: Coumarin–Rhodamine Dyads with Large Pseudo-Stokes Shifts and Emission Shifts

Cassette recording: A new class of coumarin–rhodamine through-bond energy-transfer (TBET) cassettes with minimal spectral overlap between the donor emission and the acceptor absorption (see picture) show large pseudo-Stokes shifts (up to 230 nm) and emission shifts (up to 170 nm). The utility of this TBET platform for TBET-based probe development was demonstrated by a new ratiometric fluorescence pH probe.

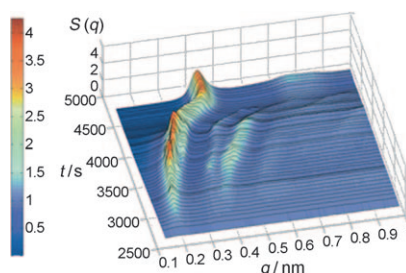


Soft Nanoparticle Crystals

W. L. Cheng, M. R. Hartman,
D.-M. Smilgies, R. Long,
M. J. Campolongo, R. Li, K. Sekar,
C.-Y. Hui, D. Luo* 380–384



Probing in Real Time the Soft
Crystallization of DNA-Capped
Nanoparticles



The crystallization events occurring in a drying droplet containing DNA-capped nanoparticles were probed by means of small-angle X-ray scattering (SAXS; the picture shows a series of 1D SAXS patterns recorded over time). Unusual nanoparticle supracrystals form that are both soft and elastic with continuously scalable crystalline states over a wide range of lattice constants.

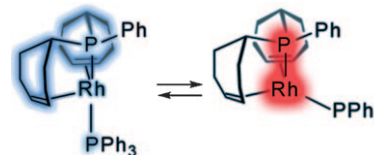
Electronic Structure

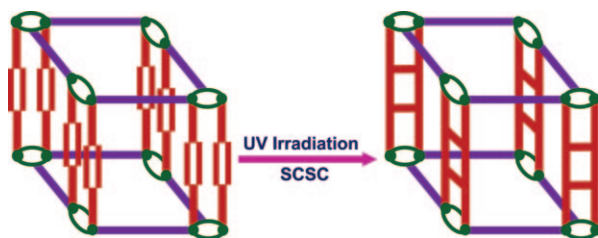
F. F. Puschmann, J. Harmer, D. Stein,
H. Rügger, B. de Bruin,*
H. Grützmacher* 385–389



Electromeric Rhodium Radical Complexes

Radical changes: One single P–Rh–P angle determines whether the odd electron in the paramagnetic complex [Rh(trop₂PPh)(PPh₃)] is delocalized over the whole molecule (see picture, blue) or is localized on the P–Rh unit (red). The two energetically almost degenerate electromers exist in a fast equilibrium, and the “red” complex has the highest spin density at Rh of all low valent Rh complexes observed to date.





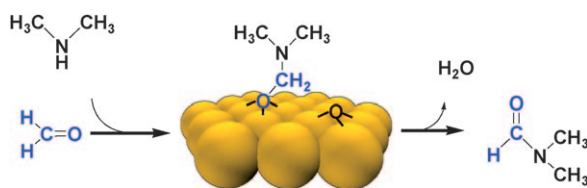
Photosensitive pillars: Perfectly aligned C=C bonds in *trans*-1,2-bis(4-pyridyl)ethene ligand pairs undergo 100% photochemical [2+2] cycloaddition reactions

in interpenetrated 3D coordination polymers, accompanied by single-crystal to single-crystal (SCSC) transformation (see scheme).

Photoreactive MOFs

M. H. Mir, L. L. Koh, G. K. Tan, J. J. Vittal* 390–393

Single-Crystal to Single-Crystal Photochemical Structural Transformations of Interpenetrated 3D Coordination Polymers by [2+2] Cycloaddition Reactions



Completely coupled: The acylation of dimethylamine through coupling to form aldehyde occurs with almost 100% selectivity at low coverage of adsorbed O atoms on metallic gold and with a low activation energy. Oxygen creates an

active intermediate $(\text{CH}_3)_2\text{N}_{(a)}$, which attacks the carbonyl carbon of the aldehyde (see picture). A general mechanistic framework for efficient and selective acylation of amines promoted by Au is established.

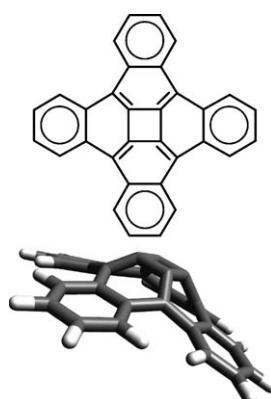
Gold Catalysis

B. Xu, L. Zhou, R. J. Madix, C. M. Friend* 394–398

Highly Selective Acylation of Dimethylamine Mediated by Oxygen Atoms on Metallic Gold Surfaces



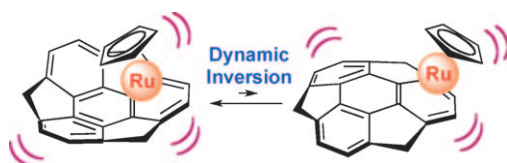
Approaching the curve: A [4]circulene (see picture) has been prepared in five steps. Although the [4]circulene motif has never before been observed, these findings suggest that the square may join the pentagon as a motif for viable fullerenes.



Small Circulenes

Bharat, R. Bhola, T. Bally, A. Valente, M. K. Cyrański, Ł. Dobrzycki, S. M. Spain, P. Rempała, M. R. Chin, B. T. King* 399–402

Quadrannulene: A Nonclassical Fullerene Fragment



The super bowl: The dynamic inversion behaviour of $[\text{CpRu}(\eta^6\text{-sumanene})]\text{PF}_6$ (see picture; sumanene = $\text{C}_{21}\text{H}_{12}$) was investigated in solution by NMR studies.

This result, the first elucidation of bowl-to-bowl inversion in π -bowl transition metal complexes, is solvent- and temperature-dependent.

π -Bowl Complexes

T. Amaya, W.-Z. Wang, H. Sakane, T. Moriuchi, T. Hirao* 403–406

A Dynamically Inverting π -Bowl Complex

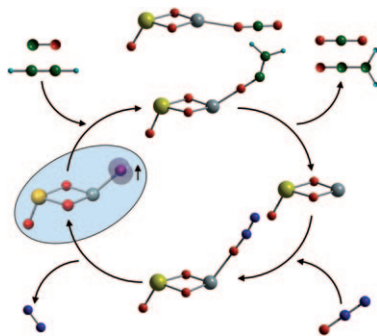


Radical Clusters

M. Nöbber, R. Mitrić,
V. Bonačić-Koutecký,* G. E. Johnson,
E. C. Tyo, A. W. Castleman, Jr.* **407–410**



Generation of Oxygen Radical Centers in Binary Neutral Metal Oxide Clusters for Catalytic Oxidation Reactions



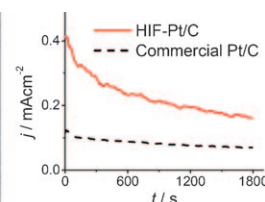
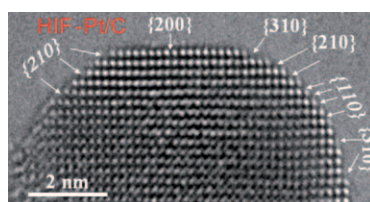
One more, one less: Radical centers are generated in binary neutral zirconium oxide clusters by replacing one Zr atom in single-metal cationic and anionic clusters with radical oxygen centers by an atom that has one less (Sc) or one more electron (Nb). This study reveals that these isoelectronic systems promote similar oxidation reactions and can undergo full catalytic cycles (see picture; Zr yellow, Sc gray, O red, C green, H teal, N blue).

Electrooxidation Catalysts

Z. Y. Zhou, Z. Z. Huang, D. J. Chen,
Q. Wang, N. Tian, S. G. Sun* **411–414**



High-Index Faceted Platinum Nanocrystals Supported on Carbon Black as Highly Efficient Catalysts for Ethanol Electrooxidation



Platinum nanocrystals on carbon black were synthesized by an electrochemical square-wave potential method (HIF-Pt/C, see picture). The nanocrystals have high-index facets and a high density of atomic

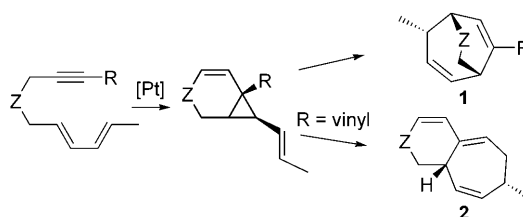
steps. Thanks to this high density, the catalysts exhibit at least twice the activity and selectivity of commercial Pt/C catalysts for ethanol electrooxidation into CO₂.

Tandem Reactions

S. Y. Kim, Y. Park, Y. K. Chung* **415–418**



Sequential Platinum-Catalyzed Cycloisomerization and Cope Rearrangement of Dienynes



Enyne-enyne-o: Tandem cycloisomerization of dienynes catalyzed by platinum dichloride and subsequent Cope rearrangement affords bicyclic rings (see

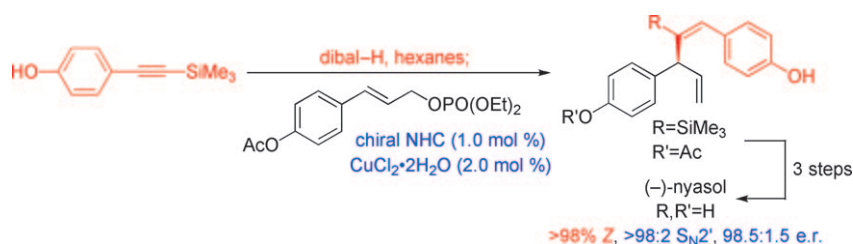
scheme; Z = NTs, O, CH₂), such as bicyclo[3.2.2]nonadienes **1** or tetrahydrocyclohepta[c]pyrans and -pyridines **2**, in high yields.

Enantioselective Synthesis

K. Akiyama, F. Gao,
A. H. Hoveyda* **419–423**

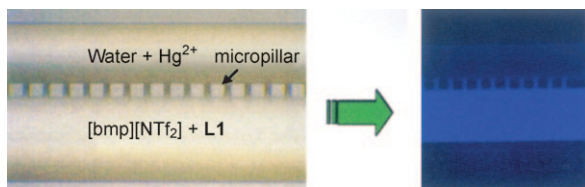


Stereoisomerically Pure Trisubstituted Vinylaluminum Reagents and their Utility in Copper-Catalyzed Enantioselective Synthesis of 1,4-Dienes Containing Z or E Alkenes



The desired isomer of a chiral 1,4-diene containing an E or Z double bond can be accessed readily by a regio- and stereo-selective hydroalumination of silyl-substituted alkynes and subsequent enantioselective copper-catalyzed allylic alkylation.

The utility of the procedure was demonstrated through the synthesis of (–)-nyasol (see scheme). dibal-H = diisobutylaluminum hydride, NHC = N-heterocyclic carbene.



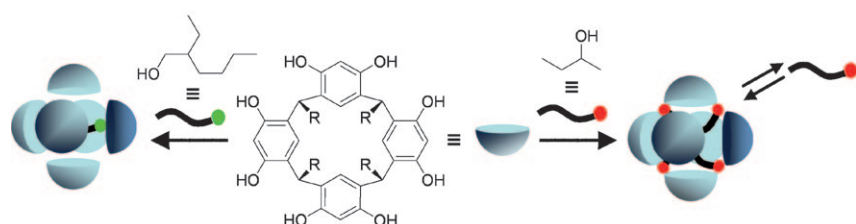
Quick test for quicksilver: A microdevice for liquid-liquid extraction and sensing of mercury ions in water uses an ionic liquid containing a task-specific ionic fluorogenic salt (L1) as the extracting liquid

phase. The “off-on” sensing response decreases the likelihood of false positives and allows detection of Hg^{2+} in aqueous solution down to 50 ppb.

Analytical Microsystems

F. Loe-Mie, G. Marchand,* J. Berthier, N. Sarrut, M. Pucheault, M. Blanchard-Desce, F. Vinet, M. Vaultier* 424–427

Towards an Efficient Microsystem for the Real-Time Detection and Quantification of Mercury in Water Based on a Specifically Designed Fluorogenic Binary Task-Specific Ionic Liquid



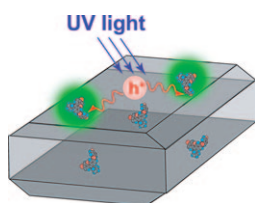
Knock, knock! Despite the similar high-field ^1H NMR spectra of different alcohols in the presence of hexameric capsules of resorcin[4]arenes, diffusion NMR spectroscopy showed that only some of these

alcohols are truly encapsulated in the hexameric capsules, whereas other alcohols are part of the hexameric structure of the capsules (see schematic representation; $\text{R} = \text{C}_{11}\text{H}_{23}$).

Molecular Capsules

S. Slovak, L. Avram, Y. Cohen* 428–431

Encapsulated or Not Encapsulated? Mapping Alcohol Sites in Hexameric Capsules of Resorcin[4]arenes in Solution by Diffusion NMR Spectroscopy

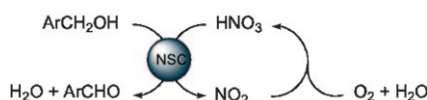


Proper lighting: Investigation of photocatalytic oxidation by in situ fluorescence imaging with a redox-responsive fluorescent dye (see picture, green) shows that acid treatment of single titanosilicate crystals significantly increases both the adsorption and reaction efficiencies and the heterogeneity of photocatalytic activity among crystals. Furthermore, crystal defects serve as reactive sites during the photocatalytic reaction.

Photocatalysis

T. Tachikawa,* S. Yamashita, T. Majima* 432–435

Probing Photocatalytic Active Sites on a Single Titanosilicate Zeolite with a Redox-Responsive Fluorescent Dye



Swapping places: The use of carbon to replace transition metals in the selective aerobic oxidation of benzylic alcohols has been demonstrated to be feasible. The HNO_3 additive is activated by the carbon catalyst NSC, which serves as the primary oxidant for alcohol oxidations and is regenerated by O_2 . NSC = nanoshell carbon.

Aerobic Oxidation

Y. Kuang, N. M. Islam, Y. Nabae, T. Hayakawa, M.-a. Kakimoto* 436–440

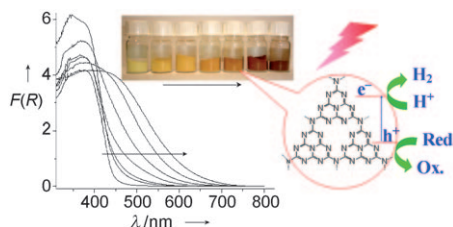
Selective Aerobic Oxidation of Benzylic Alcohols Catalyzed by Carbon-Based Catalysts: A Nonmetallic Oxidation System

Photocatalysis

J. Zhang, X. Chen, K. Takanabe, K. Maeda, K. Domen,* J. D. Epping, X. Fu, M. Antonietti, X. Wang* — 441–444



Synthesis of a Carbon Nitride Structure for Visible-Light Catalysis by Copolymerization



Just like a melon: Carbon nitride photocatalysts (see formula) structurally akin to poly(aminoimino)heptazine (Liebig's melon) can be prepared by direct copolymerization of dicyandiamide with barbituric acid (BA). The picture shows how

increasing the amount of BA in the copolymerization mixture (arrows) extends the optical absorption of the products further into the visible region, as is favorable for solar-energy applications.

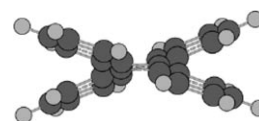
Liquid Crystals

H. Nagayama, S. K. Varshney, M. Goto, F. Araoka, K. Ishikawa, V. Prasad, H. Takezoe* — 445–448



Spontaneous Deracemization of Disc-like Molecules in the Columnar Phase

Chiral discs: Seemingly flat disc-like molecules form a columnar phase and spontaneously segregate into macroscopic chiral domains (deracemization). Quantum chemical calculations suggest that these molecules have a twisted axially chiral core (see picture). Their aggregation into chiral superstructures is evidenced by electronic and vibrational circular dichroism spectra.



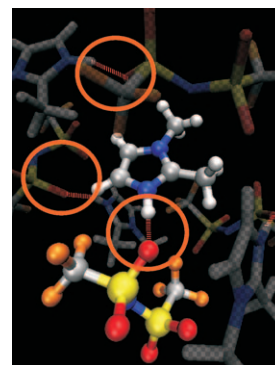
Ionic Liquids

A. Wulf, K. Fumino, R. Ludwig* — 449–453



Spectroscopic Evidence for an Enhanced Anion–Cation Interaction from Hydrogen Bonding in Pure Imidazolium Ionic Liquids

Building bridges: Increasing capabilities of hydrogen bond formation in a set of imidazolium ionic liquids allow the direct observation of hydrogen bonding (circled in picture; C gray, H white, F orange, N blue, O red, S yellow) by far-IR spectroscopy. Frequency shifts are assigned to the ability and strength of H-bond formation. Reduced mass effects are negligible and the interactions are local and directional.



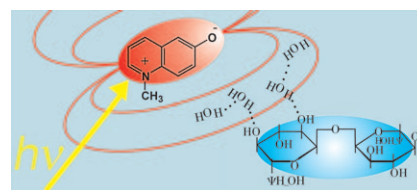
Spectroscopic Methods

M. Sajadi, Y. Ajaj, I. Ioffe, H. Weingärtner,* N. P. Ernsting* — 454–457



Terahertz Absorption Spectroscopy of a Liquid Using a Polarity Probe: A Case Study of Trehalose/Water Mixtures

The fluorescence relaxation of *N*-methyl-6-quinolone was used to determine the frequency-dependent permittivity of the molecular environment over a large spectral range (see picture), for example in trehalose–water solution. Local THz-FIR spectroscopy can be realized by covalent attachment of the probe molecule to a supramolecular structure.



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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Authors _____ 460

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Corrigendum



In the Supporting Information for this Communication there was some ambiguity in the way that two ^1H NMR spectra were assigned. Upon inspection, the authors noticed that two peaks marked as l and m for Poly(GEMA)_{RAFT} and P2 were wrongly labeled.

Therefore, these spectra have been now been correctly assigned and are available online.

The authors apologize for this oversight and emphasize that the changes have no impact on the identity and behavior of the polymers.

Sweet Talking Double Hydrophilic Block Copolymer Vesicles

G. Pasparakis,
C. Alexander* _____ 4847–4850

Angew. Chem. Int. Ed. **2008**, 47

DOI 10.1002/anie.200801098

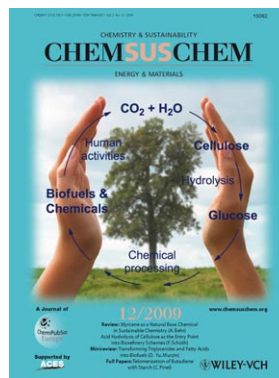
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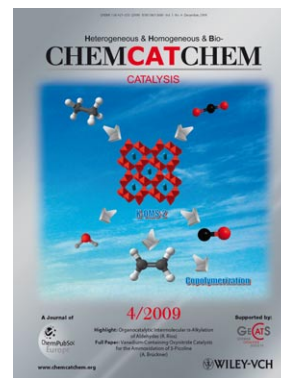
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