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:

Z.-C. Wang, N. Dietl, R. Kretschmer, T. Weiske, M. Schlangen, H. Schwarz**
Catalytic Redox Reactions in the CO/N$_2$O System Mediated by the Bimetallic Oxide-Cluster Couple AlVO$_3^+$/AlVO$_4^+$

*C. D. N. Gomes, O. Jacquet, C. Villiers, P. Thuéry, M. Ephritikhine, T. Cantat**
A Diagonal Approach to Chemical Recycling of Carbon Dioxide: New Organocatalytic Transformation for the Reductive Functionalization of CO$_2$

Editorial

Author Profile

"A good work day begins with telling a student that their paper has just been accepted, especially if it is for Angewandte Chemie.
What I look for first in a publication is that surprise element that we all strive for in our own studies. …"
This and more about Robert Mulvey can be found on page 11836.

News

J.-M. Tarascon

M. Fontecave

S. Mann

G. J. Hutchings

M. Peruzzini

K. Matyjaszewski

J.-C. Hierso

J. A. Baceiredo

G. Evano

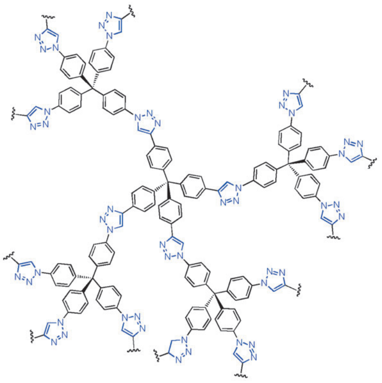
Obituaries

Books

Highlights

Porous Organic Materials

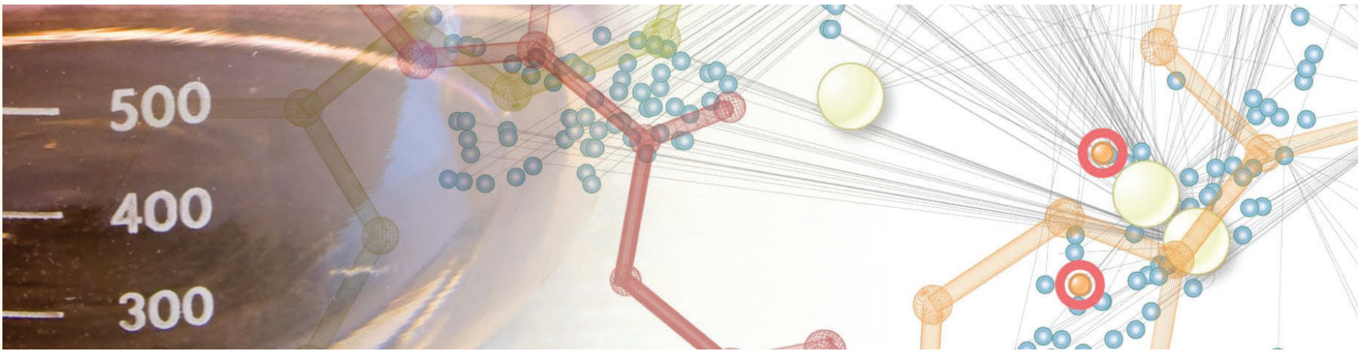
Click the CMPs and POPs: The Huisgen 1,3-dipolar cycloaddition reaction can be used to generate covalent porous organic materials such as conjugated microporous polymers (CMPs) and porous organic polymers (POPs). A triazole-linked network based on complementary tetrahedral monomers has been prepared by means of click chemistry.



Crystal Engineering

Engineering crystals: Molecular single crystals of well-defined metal complexes selectively and reversibly undergo ligand-exchange reactions. These results are a prelude to sensing and new catalytic reactions within the confined space of a crystal lattice.

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.



Novartis is pleased to announce the 2011 recipients of the

Novartis Early Career Award in Organic Chemistry

Professor David Chen, *Seoul National University, South Korea*

David Chen obtained his Ph.D. from Cambridge University working with Professor Ian Paterson. He then completed post-doctoral studies with Professor K. C. Nicolaou at The Scripps Research Institute. In 2005 he joined the newly formed Chemical Synthesis Laboratory at Biopolis in Singapore as a Principal Investigator. He then moved to Seoul National University in 2011 where he is an Associate Professor. Throughout his career he has pursued the synthesis of architecturally complex natural products demonstrating great flair and creativity often devising elegant solutions to solve synthetic problems. His research now extends to understanding the biological action of these natural products.

Professor David Spiegel, *Yale University, USA*

David Spiegel obtained his Ph.D. in 2005 from Yale University working with Professor John Wood. He then carried out post-doctoral studies at the Broad Institute of Harvard and M.I.T. in the laboratory of Professor Stuart Schreiber. In 2007 he returned to Yale to start his independent career. Professor Spiegel is recognized for his efforts to build an innovative and ambitious synthetic immunology program. His group has been successful in exploiting cellular machinery using synthetic small molecules to functionalize bacterial cell walls, and recruiting endogenous antibodies against cancer cells and the human immunodeficiency virus.

The Novartis Early Career Award in Organic Chemistry is presented annually to outstanding scientists within 10 years of having established an independent academic research career, in the areas of organic or bioorganic chemistry in the broadest sense. Two winners are identified, from the Global Research community, each of whom receives an unrestricted research grant.

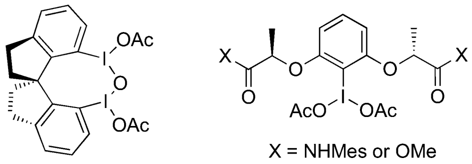
Past Awardees: Professor Karl Gademann, University of Basel (2010); Professor Jin-Quan Yu, The Scripps Research Institute (2010); Magnus Rueping, RWTH Aachen University (2009); Christopher J. Chang, University of California, Berkeley (2009); Matthew J. Gaunt, University of Cambridge (2008); Jeffrey S. Johnson, University of North Carolina at Chapel Hill (2008); Lukas J. Goossen, Technische Universität Kaiserslautern (2007); Anna K. Mapp, University of Michigan Ann Arbor (2007); Armido Studer, University of Münster (2006); F. Dean Toste, University of California Berkeley (2006); Benjamin List, Max Planck Institute Mülheim (2005); Dirk Trauner, University of California Berkeley (2005); J. Stephen Clark, University of Nottingham (2004); Jonathan P. Clayden, University of Manchester (2004); Thorsten Bach, Technical University of Munich (2003); Bernhard Breit, University of Freiburg (2002); Thomas Carell, University of Munich (2002).

NOVARTIS

Asymmetric Synthesis

H. Liang,*
M. A. Ciufolini* ________ **11849 – 11851**

Chiral Hypervalent Iodine Reagents in Asymmetric Reactions



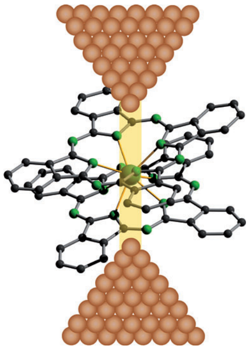
All hyper: Recent advances in the area of chiral hypervalent iodine reagents, notably by the groups of Kita, Ishihara, and Fujita, enable some oxidative transformations to be conducted in an enantioselective manner and with asymmetric inductions in the range of 86–95 % *ee* (see scheme, Mes = mesityl). This contribution highlights representative reactions, reagent/catalyst design, and mechanistic aspects of the reported transformations.

Essays

Quantum Molecular Magnetism

A. Dei, D. Gatteschi* ____ **11852 – 11858**

Molecular (Nano) Magnets as Test Grounds of Quantum Mechanics



A bitter pill? The dose of quantum concepts that chemists must digest is steadily increasing. The drug perhaps tastes bitter, but it produces good effects yielding novel systems to test the foundations of quantum mechanics. This point is considered in reference to molecular nanomagnets (see structure of a terbium phthalocyaninate complex), a class of materials that continues to show new facets requiring the exploration of new quantum effects.

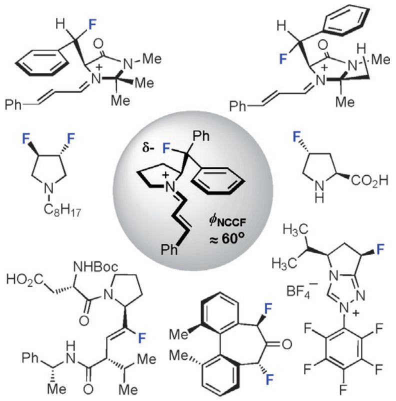
Minireviews

Catalyst Design

L. E. Zimmer, C. Sparr,
R. Gilmour* ____________ **11860 – 11871**

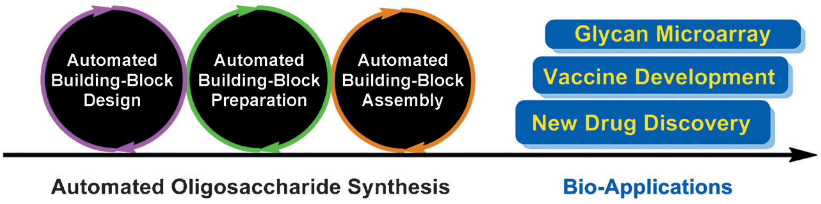
Fluorine Conformational Effects in Organocatalysis: An Emerging Strategy for Molecular Design

F in control: Conformational effects of fluorinated molecules have hitherto mainly been restricted to bio-organic chemistry. The renaissance of organocatalysis, however, offers the possibility to exploit many of the stereoelectronic and electrostatic effects of fluorinated organic molecules for molecular preorganization. In this Minireview, we highlight examples of catalyst refinement by the introduction of an aliphatic C–F bond which functions as a chemically inert steering group for conformational control.



Reviews

Carbohydrates

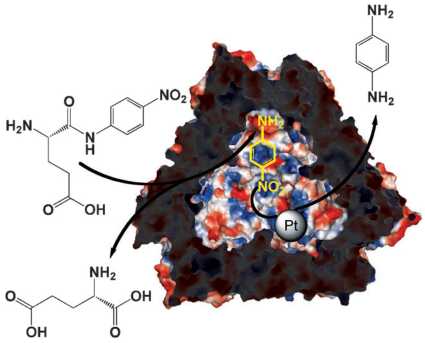


Sweet dreams: Carbohydrates play important roles in biological processes. The pace of carbohydrate research is, however, relatively slow due, amongst other things, to the lack of general synthetic methods. Current developments in the automated synthesis of oligosaccharides can help overcome many of these problems and to pave the way for biomedical applications.

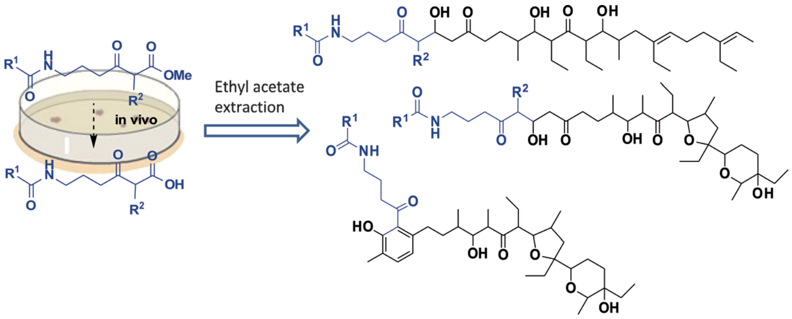
Communications

Nanoparticle Hybrids

Two birds with one stone: When platinum nanoparticles are encapsulated by a bacterial aminopeptidase, the novel hybrid combines platinum-catalyzed hydrogenation and peptidase-catalyzed hydrolysis for multistep synthesis (see picture). This concept of bioinorganic integration can be extended to various enzymes and inorganic materials, allowing for the design and fabrication of novel multifunctional materials.



Enzymes



Caught in the act: Intermediates in the biosynthesis of lasalocid A are captured in vivo by malonyl carba(dethia)-*N*-acetyl cysteamine probes. These species constitute novel snapshots of the timing of ether and aromatic ring formation, thus providing valuable insights for the reconstruction and the engineering of polyether biosynthetic pathways.

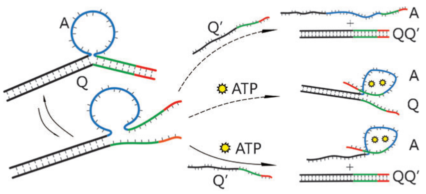
Contents

DNA Switch

Y. Xing, Z. Yang, D. Liu* _ **11934 – 11936**

A Responsive Hidden Toehold To Enable Controllable DNA Strand Displacement Reactions

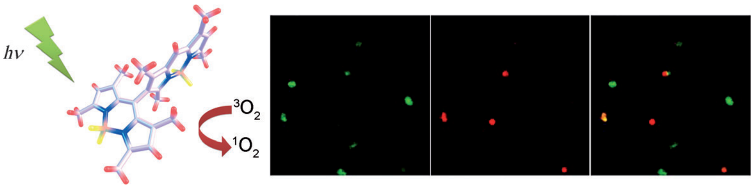
In the loop: A hidden toehold in a metastable DNA bulge-loop structure allows regulation of DNA strand displacement reactions by the addition of ATP, which can bind to an aptamer located partly on the loop sequence (see picture, blue and green in A), thereby exposing the hidden toehold (green and red in Q). By introducing other aptamer sequences, this regulation mechanism could be easily extended to a variety of other ligands.



Photosensitizers

Y. Cakmak, S. Kolemen, S. Duman, Y. Dede, Y. Dolen, B. Kilic, Z. Kostereli, L. T. Yildirim, A. L. Dogan, D. Guc, E. U. Akkaya* ______ **11937 – 11941**

Designing Excited States: Theory-Guided Access to Efficient Photosensitizers for Photodynamic Action

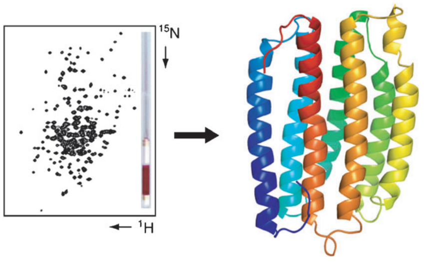


The in silico design of tetraradical S_1 states was validated experimentally through synthesis, followed by characterization including phosphorescence measurements, use of trap molecules, and cell culture studies, leading to a series of orthogonal dimers of Bodipy chromophores with remarkable singlet oxygen efficiencies (see picture). A new path for the rational development of efficient photosensitizers is thus revealed.

VIP Structural Biology

S. Reckel, D. Gottstein, J. Stehle, F. Löhr, M.-K. Verhoefen, M. Takeda, R. Silvers, M. Kainosho, C. Glaubitz, J. Wachtveitl, F. Bernhard, H. Schwalbe, P. Güntert, V. Dötsch* ______ **11942 – 11946**

Solution NMR Structure of Proteorhodopsin



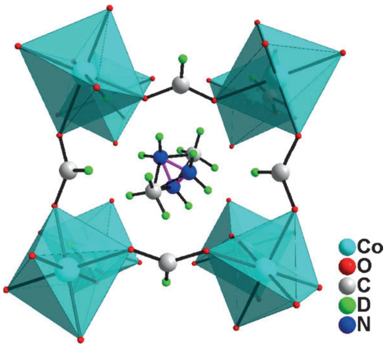
A solved puzzle: The structure of the seven-transmembrane-helix proton pump proteorhodopsin obtained by solution NMR spectroscopy is based on NOE data combined with distance restraints derived from paramagnetic relaxation enhancement (see picture). Restraints from residual dipolar couplings improved the structural accuracy.

Metal–Organic Frameworks

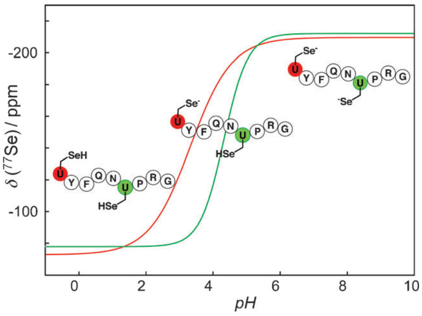
D.-W. Fu, W. Zhang,* H.-L. Cai, Y. Zhang, J.-Z. Ge, R.-G. Xiong,* S. D. Huang, T. Nakamura ______ **11947 – 11951**

A Multiferroic Perdeutero Metal–Organic Framework

Vitamin “D”: The perdeutero metal–organic framework $[(CD_3)_2ND_2][Co(DCOO)_3]$ (see structure) undergoes two phase transitions, including one above room temperature, which is unprecedented for metal formates. Magnetic and dielectric hysteresis loops make it an example of a multiferroic MOF without coupling of magnetic and electric ordering.



Selenocysteine (Sec), the 21st amino acid, is a component of a variety of proteins in all lineages of life, and the greater acidity of selenols compared to thiols provides Sec with unique chemical properties. By using ^{77}Se NMR spectroscopy the pK_a of Sec residues in a protein could be measured at atomic resolution. This information can be used to predict chemical reactions.



Selenocysteine

M. Mobli,* D. Morgenstern, G. F. King,
P. F. Alewood,
M. Muttenthaler* ______ **11952 – 11955**

Site-Specific pK_a Determination of Selenocysteine Residues in Selenovasopressin by Using ^{77}Se NMR Spectroscopy

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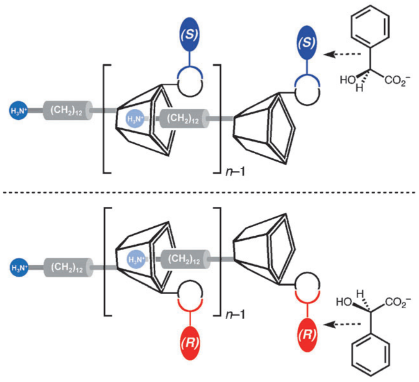
Anions do make a difference! Counterions released during the acid-promoted self-assembly of AB-type monomer precursors dock into designated ancillary binding sites and thus facilitate the polymerization process while transferring their molecular properties to the entire supramolecular structure (see picture).



Supramolecular Polymers

C. Capici, Y. Cohen, A. D'Urso,
G. Gattuso,* A. Notti, A. Pappalardo,
S. Pappalardo,* M. F. Parisi,* R. Purrello,*
S. Slovak, V. Villari ______ **11956 – 11961**

Anion-Assisted Supramolecular Polymerization: From Achiral AB-Type Monomers to Chiral Assemblies

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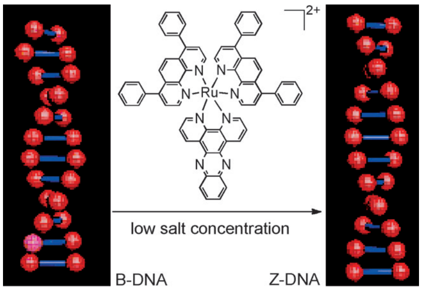

Switched: The metal complex [Ru(dip)$_2$dppz]$^{2+}$ can induce the transition from B-DNA to Z-DNA and stabilize the Z conformation in aqueous low-salt solution (see scheme; dip = 4,7-diphenyl-1,10-phenanthroline, dppz = dipyridophenazine). The transition is sequence-independent (including non-alternating pyrimidine–purine and AT-rich sequences) and was monitored by CD and 2D NMR spectroscopy, AFM, isothermal titration calorimetry, and gel electrophoresis.

DNA Conformations

Z. G. Wu, T. Tian, J. P. Yu, X. C. Weng,
Y. Liu, X. Zhou* ______ **11962 – 11967**

Formation of Sequence-Independent Z-DNA Induced by a Ruthenium Complex at Low Salt Concentrations

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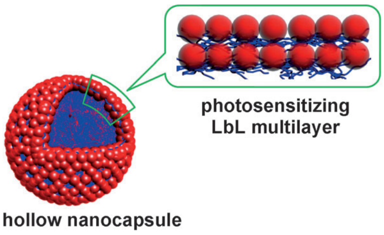


Many layers make light work: Layer-by-layer (LbL) self-assembly of a dendritic porphyrin (red; see picture) and poly(allylamine hydrochloride) (blue) on polystyrene nanoparticles followed by removal of the polystyrene core produces multifunctional hollow nanocapsules. These species can be both loaded with anticancer drugs and used in photodynamic therapy (PDT) and therefore have potential in combined cancer therapy.

Antitumor Agents

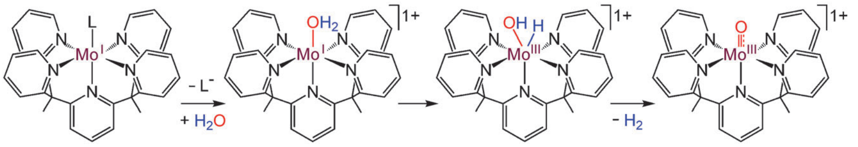
K. J. Son, H.-J. Yoon, J.-H. Kim,
W.-D. Jang,* Y. Lee,
W.-G. Koh* ______ **11968 – 11971**

Photosensitizing Hollow Nanocapsules for Combination Cancer Therapy

Hydrogen Generation

J. Li, K. Yoshizawa* ______ **11972 – 11975**

Computational Evidence for Hydrogen Generation by Reductive Cleavage of Water and α-H Abstraction on a Molybdenum Complex

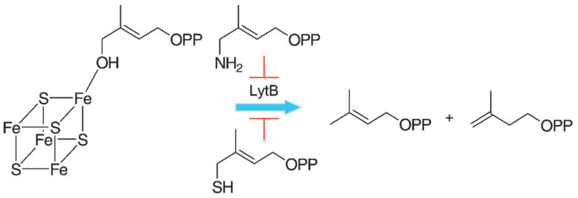


Long-standing hypothesis now verified: H_2 generation by reductive cleavage of water and α-H abstraction has long been considered as a possible mechanism for reduction of water to H_2, but a clear example was not established up to now. Detailed DFT calculations now reveal that this process is energetically favorable on an Mo^I site (see picture). Formation of H_2 by this mechanism is also feasible, albeit less favorable, on an Mo^{II} site.

Enzyme Inhibitors

A. Ahrens-Botzong, K. Janthawornpong, J. A. Wolny, E. N. Tambou, M. Rohmer, S. Krasutsky, C. D. Poulter, V. Schünemann, M. Seemann* ______ **11976 – 11979**

Biosynthesis of Isoprene Units: Mössbauer Spectroscopy of Substrate and Inhibitor Binding to the [4Fe-4S] Cluster of the LytB/IspH Enzyme

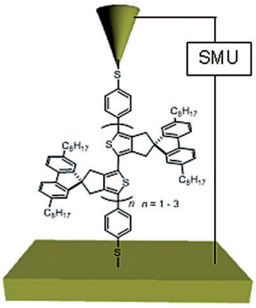


A fascinating cube: LytB, an enzyme containing a [4Fe-4S] cluster, catalyzes the last step of the methylerythritol phosphate pathway, a target for antibacterial and antiparasitic drugs. Field-dependent Mössbauer spectroscopy showed that the unique fourth iron atom of the [4Fe-4S] cluster coordinates to the hydroxy group of the substrate (see picture) and to the amino and thiol moieties of two potent inhibitor substrate analogues.

Molecular Wires

Y. Ie, M. Endou, S. K. Lee, R. Yamada, H. Tada,* Y. Aso* ______ **11980 – 11984**

Completely Encapsulated Oligothiophenes: Synthesis, Properties, and Single-Molecule Conductance

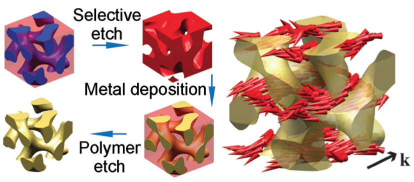


Proper shielding: Encapsulated oligothiophenes for the investigation of single-molecule conductance are described. UV/Vis/NIR measurements of the oxidized species show the absence of intermolecular interactions between the conjugated backbones. The conductance of a single-molecule junction was measured by modified STM techniques (see picture), and the decay constant β was determined to be 1.9 nm^{-1}. SMU = source meter unit.

Metamaterials

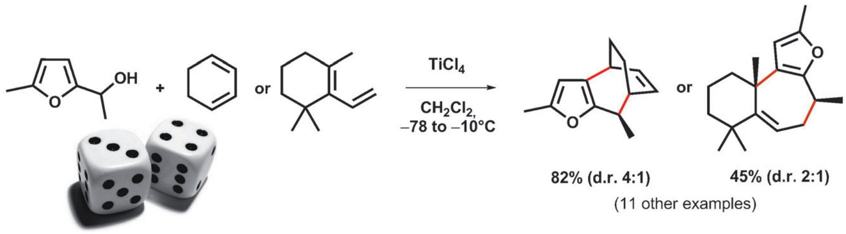
K. Hur, Y. Francescato, V. Giannini, S. A. Maier, R. G. Hennig, U. Wiesner* ______ **11985 – 11989**

Three-Dimensionally Isotropic Negative Refractive Index Materials from Block Copolymer Self-Assembled Chiral Gyroid Networks



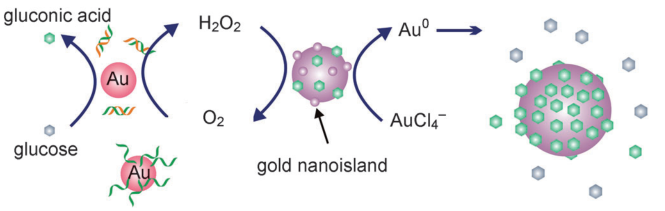
Metamaterials are engineered artificial materials that offer new functionalities such as super-resolution imaging and cloaking. Calculations of the photonic properties of three-dimensionally isotropic metamaterials with cubic double gyroid and alternating gyroid morphologies from block copolymer self-assembly are presented.

Synthetic Methods



It all adds up: Furfuryl alcohols are revealed as direct reaction partners for a wide range of conjugated dienes in a (4+3) cycloaddition motif (see scheme). This novel Lewis acid promoted process gives straightforward access to various polycyclic skeletons containing a seven-membered ring. A plausible cationic stepwise mechanism was confirmed by DFT calculations.

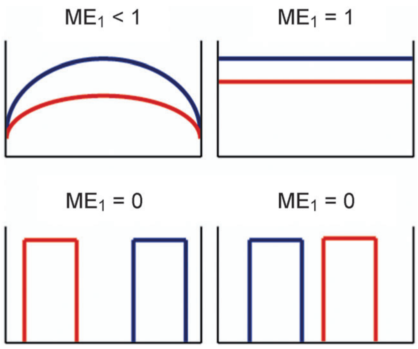
Nanoplasmonics



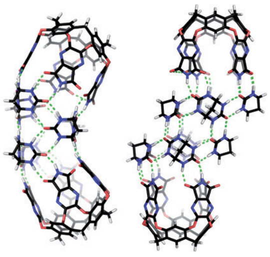
DNA hybridization can finely regulate the intrinsic glucose oxidase like catalytic activity of AuNPs owing to the marked difference in adsorption of single- and double-stranded DNA on its surface. A sensing strategy for DNA and microRNA is presented; in a different approach, this DNA-regulated AuNP catalysis was coupled with AuNP-mediated seed growth, which was monitored in real time and at a single-nanoparticle level.

Micromixing

Mix it up: The micromixing extent (ME) quantifies the quality of molecular mixing in microreactors based on uniformity of reactant distribution through the reactor and spatial overlap of the reactants (see picture). ME depends solely on the distribution of reactants in the reactor and is a general attribute that can be applied to all types of micromixtures for which distributions of the mixed solutes can be calculated.



Molecular Capsules



Curved hosts: The first examples of bent molecular capsules are described: They feature banana or S shapes (see picture) and are capable of selectively binding complementary shaped guests.

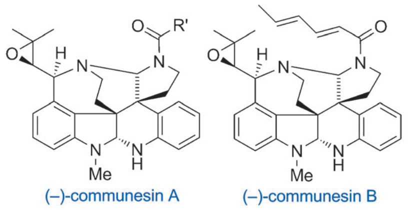
Contents

Natural Product Synthesis

Z. Zuo, D. Ma* ———— **12008 – 12011**

Enantioselective Total Syntheses of Communesins A and B

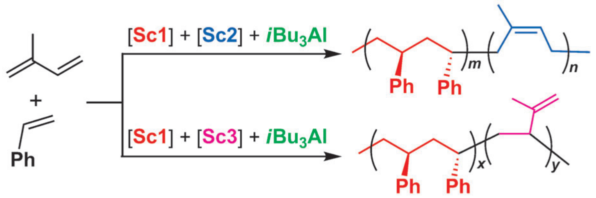
As easy as A, B: The first total syntheses of (−)-communesins A and B (see picture) were achieved, which featured the formation of their spiro-fused indoline part through an intramolecular oxidative coupling and of their A ring through a cascade reaction.



Block Copolymerization

L. Pan, K. Zhang, M. Nishiura,
Z. Hou* ———— **12012 – 12015**

Chain-Shuttling Polymerization at Two Different Scandium Sites: Regio- and Stereospecific "One-Pot" Block Copolymerization of Styrene, Isoprene, and Butadiene

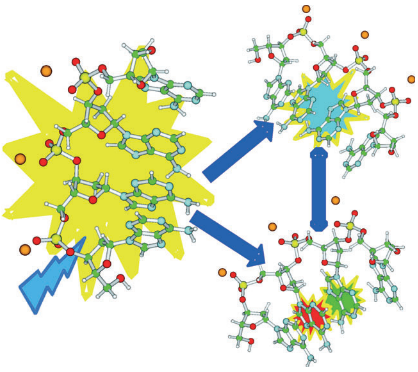


To each his own: Copolymerization of styrene and isoprene by catalysts **Sc1** (syndiospecific for styrene) and **Sc2** (*cis*-1,4-specific for isoprene) with a chain-shuttling agent $i\mathrm{Bu_3Al}$ gives block copolymers of syndiotactic polystyrene (sPS) and *cis*-1,4-polyisoprene (PIP). Replacement of **Sc2** with **Sc3** (high 3,4-selectivity for isoprene polymerization) gives selectively copolymers having sPS and 3,4-PIP blocks.

Oligonucleotides

R. Improta,* V. Barone — **12016 – 12019**

Interplay between "Neutral" and "Charge-Transfer" Excimers Rules the Excited State Decay in Adenine-Rich Polynucleotides



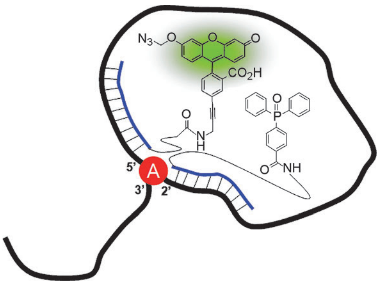
The excited states of $(\mathrm{dA})_4$ oligonucleotides (A = adenine), including the phosphoribose backbone, were studied in water at a fully quantum mechanical level, providing an atomistic description of the main decay paths and a comprehensive interpretation of the experimental data (see picture). After absorption to exciton states delocalized over multiple A bases, the behavior of the excited state is ruled by the interplay of a number of species responsible for different spectral features.

RNA Detection

K. Furukawa, H. Abe,* Y. Tamura,
R. Yoshimoto, M. Yoshida, S. Tsuneda,
Y. Ito* ———— **12020 – 12023**

Fluorescence Detection of Intron Lariat RNA with Reduction-Triggered Fluorescent Probes

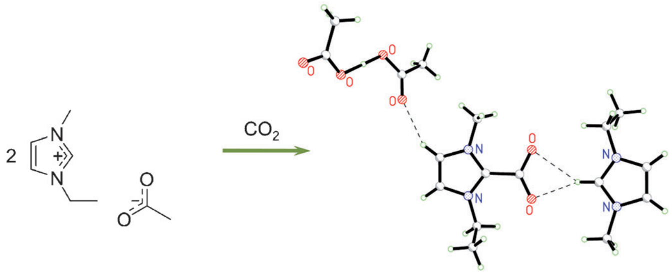
Fluorescence through proximity: Reduction-triggered fluorescent probes bearing either a fluorescein derivative or triphenylphosphine bind sequence-specifically at the branch site of lariat RNA. The chemical reaction between the two substrates leads to the formation of unquenched fluorescein and the emission of a fluorescence signal (see picture). Prelariat and lariat structures can be distinguished by using this method.



Ionic Liquids

G. Gurau, H. Rodríguez, S. P. Kelley, P. Janiczek, R. S. Kalb, R. D. Rogers* ________ **12024 – 12026**

Demonstration of Chemisorption of Carbon Dioxide in 1,3-Dialkylimidazolium Acetate Ionic Liquids

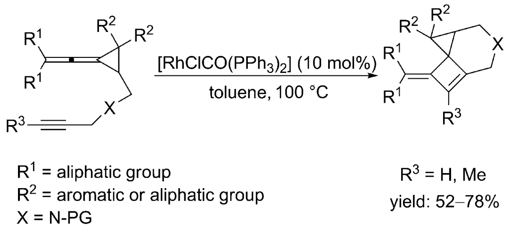


Real chemistry: Spectroscopic and crystallographic analyses confirm the chemical reaction of CO_2 with carbene present in 1,3-dialkylimidazolium acetate ionic liquids and the supporting role of the acetate ion. When CO_2 was bubbled through [C_2mim][OAc], formation of the corresponding imidazolium carboxylate, [C_2mim^+-COO^-], could be observed.

Synthetic Methods

B.-L. Lu, M. Shi* ________ **12027 – 12031**

Synthesis of Functionalized Polycyclic Compounds: Rhodium(I)-Catalyzed Intramolecular Cycloaddition of Yne and Ene Vinylidenecyclopropanes

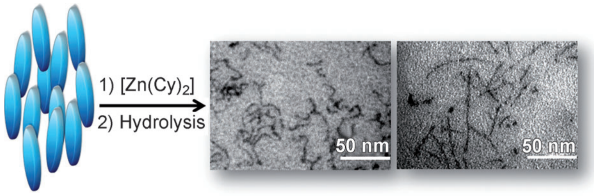


Three ring circus: The title reaction can efficiently provide functionalized polycyclic compounds containing cyclobutene (see scheme; PG = protecting group) or aza-cyclooctene moieties in a highly regio- and diastereoselective manner with moderate to good yields under mild reaction conditions. The scope and limitations are disclosed and plausible reaction mechanisms are discussed.

Nanoparticles

S. Saliba, Y. Coppel, M.-F. Achard, C. Mingotaud, J.-D. Marty,* M. L. Kahn* ________ **12032 – 12035**

Thermotropic Liquid Crystals as Templates for Anisotropic Growth of Nanoparticles



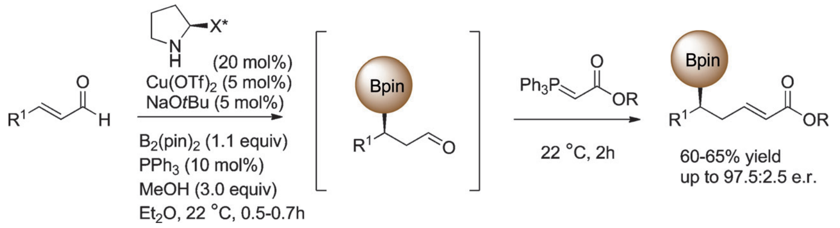
In control: The organization of a thermotropic liquid crystal can be used to control the growth of inorganic nano-objects (like ZnO). When the systems are in their nematic phase state, anisotropic nanoparticles are formed, while in isotropic conditions, isotropic nanoparticles are obtained. Playing with the exact nature of the liquid crystal enables control of the size and the aspect ratio of the nanoparticles (see picture).

Contents

Synthetic Methods

I. Ibrahem,* P. Breistein,
A. Córdova* **12036 – 12041**

One-Pot Three-Component Catalytic Enantioselective Synthesis of Homoallylboronates

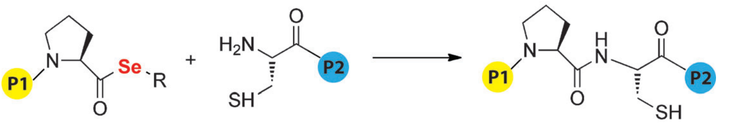


No longer a simple bor(ation): The title reaction between bis(pinacolato)diboron, enals, and 2-(triphenylphosphoranylidene)acetates employing bench-stable copper salts and a simple chiral amine co-catalyst is presented (see scheme). The reaction proceeds through a catalytic asymmetric conjugate borane addition/ Wittig sequence wherein the β-boration step is 1,4-selective and gives the corresponding homoallylboronate products with high enantiomeric ratios.

Peptides

T. Durek,* P. F. Alewood **12042 – 12045**

Preformed Selenoesters Enable Rapid Native Chemical Ligation at Intractable Sites

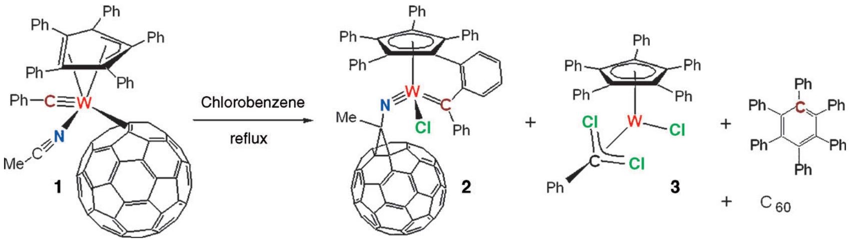


Going pro: The first facile Pro–Cys ligation using a preformed prolyl selenoester is reported (see scheme; P = peptide). In a comparative study of peptide selenoesters in native chemical ligation peptide α-selenoesters are shown to be superior acyl donors and result in rate enhancements of at least two orders of magnitude when compared to the well-established peptide α-thioesters. This method permits rapid chemical ligation even at previously intractable sites, such as Pro-Cys.

Structure Elucidation

W.-Y. Yeh* **12046 – 12049**

Unusual Thermal Reactivity of $[W(\equiv CPh)(NCMe)(\eta^2\text{-}C_{60})(\eta^5\text{-}C_5Ph_5)]$ in Chlorobenzene Involving Activation of All Ligands

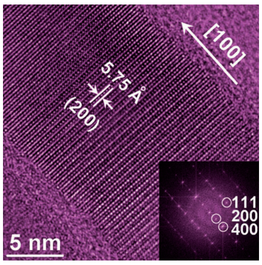


A tung(sten) twister: Heating **1** in chlorobenzene affords **2**, **3**, C_6Ph_6, and C_{60}, and involves C–H bond activation and C–C bond formation of the ligands, as well as chlorine atom abstraction from the solvent. C_6Ph_6 is presumably generated from insertion of the benzylidyne ligand into the C_5Ph_5 ring. Compound **3** is an air-stable, 17-electron species, with the phenyldichloromethyl ligand having a unique η^3-allyl-type bonding motif.

Nanowires

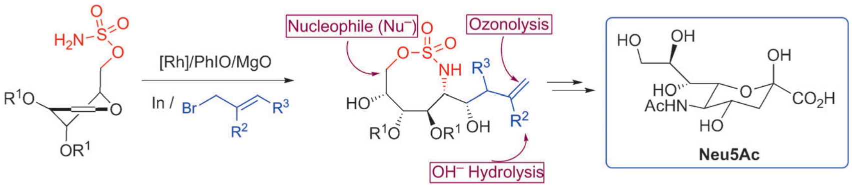
S. Liu, X. Y. Guo, M. R. Li, W.-H. Zhang,*
X. Y. Liu,* C. Li* **12050 – 12053**

Solution-Phase Synthesis and Characterization of Single-Crystalline SnSe Nanowires



Wiry solar cells: A solution-phase synthetic approach gave monocrystalline SnSe nanowires with a mean diameter of approximately 20.8 nm and a lattice distance of 0.575 nm (see HRTEM image). Hybrid solar cells based on a blend of these SnSe nanowires and poly(3-hexylthiophene) (P3HT) were fabricated.

Total Synthesis



Acid test: Sialic acid Neu5Ac was synthesized in a regio and stereoselective manner from a glycal (see scheme) via a [1,2,3]-oxathiazocane-2,2-dioxide intermediate. The sequential rhodium-catalyzed aziridination/indium-mediated Barbier allylation approach adopted offers a potentially flexible route to other sialic acid derivatives, since the oxathiazocane intermediate was compatible with a variety of nucleophiles.

R. Lorpitthaya, S. B. Suryawanshi, S. Wang, K. K. Pasunooti, S. Cai, J. Ma, X.-W. Liu* ______ **12054 – 12057**

Total Synthesis of Sialic Acid by a Sequential Rhodium-Catalyzed Aziridination and Barbier Allylation of D-Glycal

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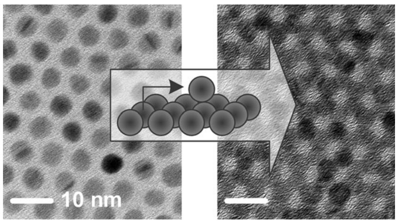
Quantum Dots

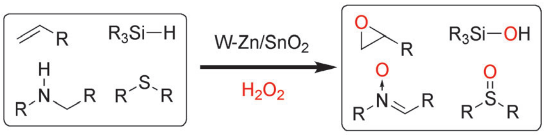


Crowd-surfing quantum dots: Quantum-dot Langmuir layers (see picture) were compressed beyond their collapse pressure, resulting in phase transitions where particles are promoted from a monolayer into a bi- or even a trilayer depending on the applied pressure. The procedure works for different quantum dot types and can be rationalized from thermodynamic considerations.

K. Lambert, Y. Justo, J. S. Kamal, Z. Hens* ______ **12058 – 12061**

Phase Transitions in Quantum-Dot Langmuir Films

Heterogeneous Catalysis



Oxidation optimization: A combination of tungsten and zinc oxides on a SnO_2 support (W–Zn/SnO_2) is a heterogeneous and reusable solid catalyst for selective oxidation with aqueous H_2O_2. With it, various substrates, such as alkenes, amines, silanes, and sulfides, were oxidized into the corresponding products in high yields (see scheme). The catalyst can be reused several times without an appreciable loss in catalytic performance.

K. Kamata, K. Yonehara, Y. Sumida, K. Hirata, S. Nojima, N. Mizuno* ______ **12062 – 12066**

Efficient Heterogeneous Epoxidation of Alkenes by a Supported Tungsten Oxide Catalyst

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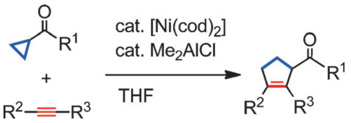
Cycloaddition



Nick and Al join forces: The nickel-catalyzed [3+2] cycloaddition between the title compounds gives cyclopentene derivatives in the presence of Me_2AlCl. The organoaluminum reagent activates the carbonyl group of the cyclopropyl ketone through coordination of the oxygen atom to the aluminum, and stabilizes the reaction intermediate by the coordination of the chloride to nickel. cod = 1,5-cyclooctadiene, THF = tetrahydrofuran.

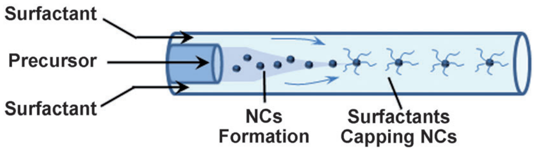
T. Tamaki, M. Ohashi, S. Ogoshi* ______ **12067 – 12070**

[3+2] Cycloaddition Reaction of Cyclopropyl Ketones with Alkynes Catalyzed by Nickel/Dimethylaluminum Chloride

ZnO Nanocrystals

Y. Roig, S. Marre, T. Cardinal,
C. Aymonier* **12071 – 12074**

Synthesis of Exciton Luminescent ZnO Nanocrystals Using Continuous Supercritical Microfluidics

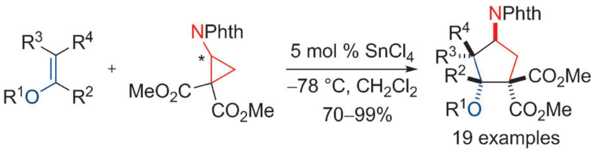


ZnO nanocrystals of high quality with pure UV-emitting properties were synthesized through a new microfluidic approach based on supercritical fluids and separation of nucleation/growth and functionalization steps (see picture). The as-synthesized ZnO nanocrystals (NCs) show exciton luminescence without classical defect-state luminescence.

Synthetic Methods

F. de Nanteuil, J. Waser* **12075 – 12079**

Catalytic [3+2] Annulation of Aminocyclopropanes for the Enantiospecific Synthesis of Cyclopentylamines



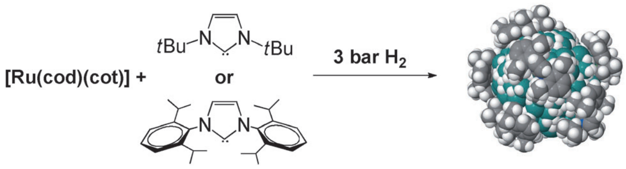
With nitrogen too: The first catalytic [3+2] annulation of aminocyclopropanes with enol ethers is reported (see scheme; Phth = phthaloyl). The reaction worked with easily accessible phthalimidocyclopropanes using 5 mol % of $SnCl_4$ in nearly quantitative yields. Polysubstituted cyclopentylamines, which are often present in bioactive compounds, were obtained with high diastereoselectivity and enantiospecificity.

VIP

Surface Reactivity

P. Lara, O. Rivada-Wheelaghan,
S. Conejero, R. Poteau, K. Philippot,
B. Chaudret* **12080 – 12084**

Ruthenium Nanoparticles Stabilized by N-Heterocyclic Carbenes: Ligand Location and Influence on Reactivity

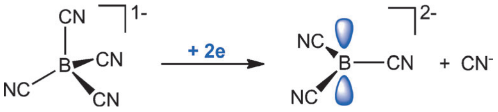


NHCs go nano: Ruthenium nanoparticles were formed from (cyclooctadiene)(cyclooctatriene)ruthenium(0) and stabilized by N-heterocyclic carbenes (NHCs). Solid-state NMR spectroscopy revealed both the coordination of the NHC ligands on the surface of the particles and their surface reactivity.

Cyanoborates

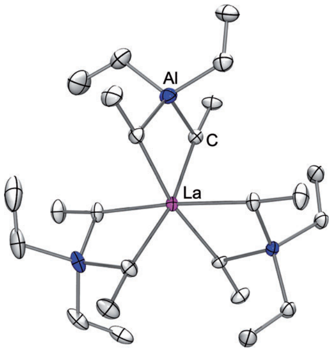
E. Bernhardt,* V. Bernhardt-Pitchougina,
H. Willner,* N. Ignatiev **12085 – 12088**

"Umpolung" at Boron by Reduction of $[B(CN)_4]^-$ and Formation of the Dianion $[B(CN)_3]^{2-}$



A homoleptic cyanoborate with nucleophilic boron atom: An unprecedented dianion in the salts $M_2[B(CN)_3]$ (M = Li, Na, K) with nucleophilic boron in the formal oxidation state +1 was obtained by reductive B–C bond cleavage in the $[B(CN)_4]^-$ anion and characterized by NMR (^{11}B, ^{13}C), vibrational spectroscopy and single crystal X-ray diffraction.

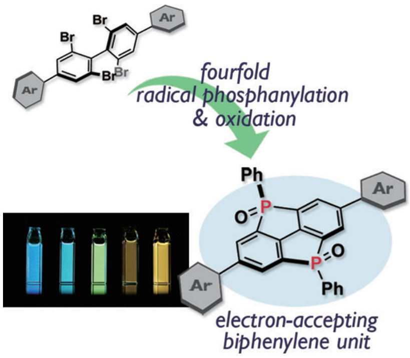
They do exist after all: Molecular [La($AlEt_4$)$_3$] of high purity can be obtained from the reaction of [La(NMe_2)$_3$(LiCl)$_3$] with excess triethylaluminum. Although kinetically labile—the title complex decomposes gradually through β-H abstraction and release of ethane—alkane elimination reactions are feasible, as shown for the synthesis of metallocene complex [(C_5Me_5)$_2$La($AlEt_4$)].



Rare-Earth-Metal Alkyl Complexes

H. M. Dietrich, K. W. Törnroos,
R. Anwander* ______ 12089–12093

LaAl$_3$Et$_{12}$: A Homoleptic Ethyllanthanum Complex



The efficient fourfold radical phosphanylation of 2,2,2′,2′-tetrabromobiphenyl with a bis(stannyl)phosphane followed by oxidation produces a highly strained biphenyl with two phosphoryl bridges (see picture). Extended π-conjugated compounds consisting of this core unit can be also synthesized by using the same approach. The two phosphoryl bridges significantly alter the electronic structure, making this biphenyl a unique electron-accepting scaffold.

π-Conjugated Compounds

A. Bruch, A. Fukazawa, E. Yamaguchi,
S. Yamaguchi,*
A. Studer* ______ 12094–12098

Bis(phosphoryl)-Bridged Biphenyls by Radical Phosphanylation: Synthesis and Photophysical and Electrochemical Properties

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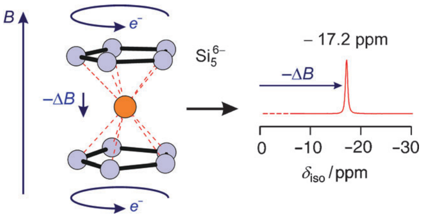
An aromatic relation: The upfield-shifted NMR signal of the Li ions sandwiched between two Si_5^{6-} rings in $Li_{12}Si_7$ points to carbon-like aromaticity of a ring formed exclusively from silicon atoms (see structure (left; Si blue, Li orange) and NMR signal (right)).



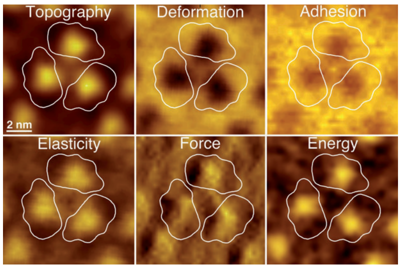
Aromaticity

A. Kuhn,* P. Sreeraj, R. Pöttgen,
H.-D. Wiemhöfer, M. Wilkening,*
P. Heitjans* ______ 12099–12102

Li NMR Spectroscopy on Crystalline $Li_{12}Si_7$: Experimental Evidence for the Aromaticity of the Planar Cyclopentadienyl-Analogous Si_5^{6-} Rings

---

Use the force: Force–volume atomic force microscopy (AFM) can image native membrane proteins and quantify and map their chemical and physical properties at molecular resolution (see images). For the light-driven proton pump bacteriorhodopsin (BR), the data shows that lipids form a flexible framework embedding a mechanically anisotropic proton pump, and that the BR adopts different structurally stable conformations that are important for proton pumping.



Molecular Imaging

I. Medalsy, U. Hensen,
D. J. Muller* ______ 12103–12108

Imaging and Quantifying Chemical and Physical Properties of Native Proteins at Molecular Resolution by Force–Volume AFM

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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Corrigendum

Smart Foams: Switching Reversibly between Ultrastable and Unstable Foams

———— **8264–8269**

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In this Communication, Prof. Janine Emile (Institut Physique de Rennes, Université Rennes 1) must be added as an additional author. The corrected authors list reads as follows:
Dr. Anne-Laure Fameau,[a] *Dr. Arnaud Saint-Jalmes,*[b] *Dr. Fabrice Cousin,*[c] *Bérénice Houinsou Houssou,*[a] *Dr. Bruno Novales,*[a] *Dr. Laurence Navailles,*[d] *Prof. Janine Emile,*[b] *Prof. Frédéric Nallet,*[d] *Dr. Cédric Gaillard,*[a] *Dr. François Boué,*[c] *Dr. Jean-Paul Douliez**[a]

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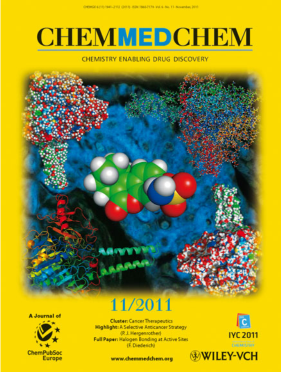

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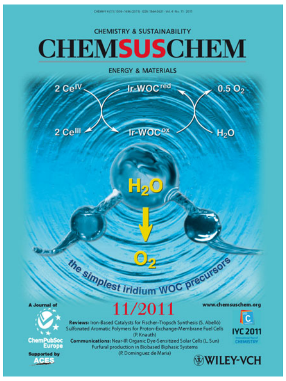

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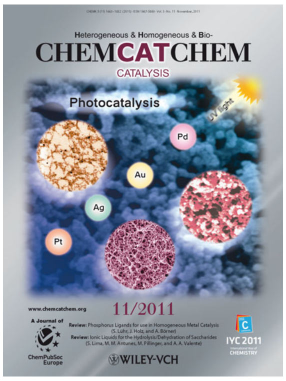

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