Editorial

"… In judging researchers early in their career, the h-index seems to be a poor measure. It is more a trailing, rather than a leading, indicator of professional success …"
Read more in the Editorial by Richard N. Zare.

Author Profile

"The word "scientist" means to be creative and innovative. My secret/not-so-secret passion is art in the form of modern paintings, graphics, and rock music. …"
This and more about Karl Anker Jørgensen can be found on page 7364.

News

D. A. Evans

O. Ozerov

P. T. Anastas

Obituaries

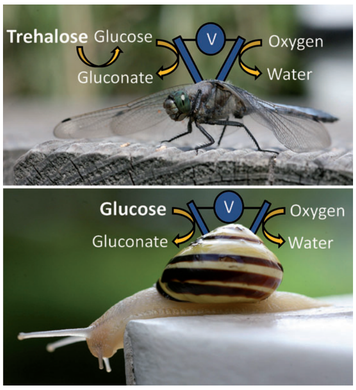
Arnim Henglein, who died on January 5, 2012, was a pioneer in numerous fields of research. He laid foundations for nanoscience when he reduced silver ions in solution with pulsed electron beams, forming homogenously distributed silver atoms that grew into silver clusters and nanoparticles.

Books

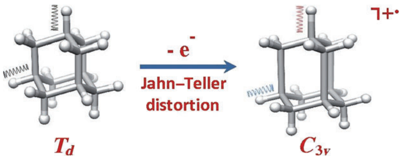
Highlights

Biofuel Cells

Insects and molluscs as future biological drones for military purposes or environmental monitoring systems (see picture)? Two research groups have demonstrated the successful implantation and operation of biofuel cells in snails, clams, and cockroaches. Owing to their simple circulatory systems, these invertebrates could be used in implantation studies without serious physical damage.



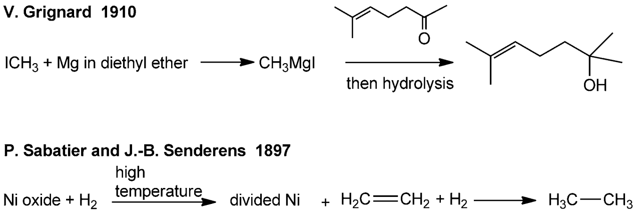
Vibrational Spectroscopy



Frozen distortion or fluxional system? The IR spectrum of ionized adamantane probes the distorted geometry predicted by the Jahn–Teller theorem, testifying the potential of infrared photon dissociation action spectroscopy in revealing fundamental vibrational and electronic features of isolated charged molecules (see picture).

Essays

History of Science



Looking back one hundred years: The two 1912 Nobel Laureates of Chemistry are featured within the context of the academic world in France. Grignard discovered the preparation and use of organomagnesium reagents (see scheme). Sabatier established the addition of hydrogen to unsaturated compounds in the presence of catalytic amounts of nickel.

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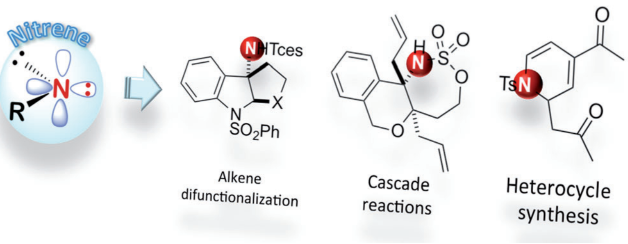
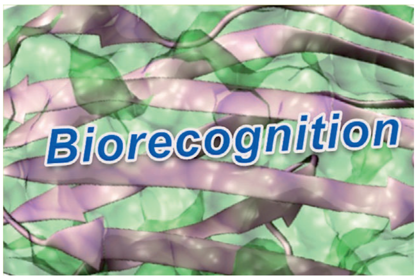
Minireviews



Long regarded as highly reactive but poorly selective species, nitrenes have recently emerged as useful tools for C–N bond-forming reactions. Their capacity to insert into various bonds has led to the development of efficient catalytic C–H amination and alkene aziridination reactions. In recent work several click-type reactions using nitrenes have been developed.

Nitrenes

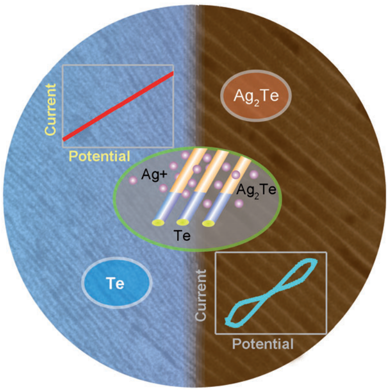
Reviews



Hybrid biomaterials: The self-assembly of macromolecules composed of two or more distinct classes of molecules by biorecognition results in new materials with high degree of organization. This Review focuses on synthetic macromolecules and peptide motifs. Approaches to the design of hybrid systems are evaluated, followed by a discussion on similarity of designs of biomaterials and nanomedicines.

Biorecognition

Communications



Films to order: Macroscale ordered ultrathin telluride nanowire films and tellurium/telluride hetero-nanowire films can be rapidly fabricated using more reactive nanowire patterns as a template. This method provides a new route to nanowire films with tailored properties.

Nanotechnology

Frontispiece

The German Chemical Society (GDCh) invites you to:

Angewandte Anniversary Symposium

125 JAHRE

GDCh

Eine Zeitschrift der Gesellschaft Deutscher Chemiker

Tuesday, March 12, 2013

Henry Ford Building / FU Berlin

Speakers

Carolyn R. Bertozzi

François Diederich

Alois Fürstner

Roald Hoffmann (Nobel Prize 1981)

Susumu Kitagawa

Jean-Marie Lehn (Nobel Prize 1987)

E.W. “Bert” Meijer

Frank Schirrmacher (Publisher, *FAZ*)

Robert Schlögl

George M. Whitesides

Ahmed Zewail (Nobel Prize 1999)

More information:

angewandte.org/symposium

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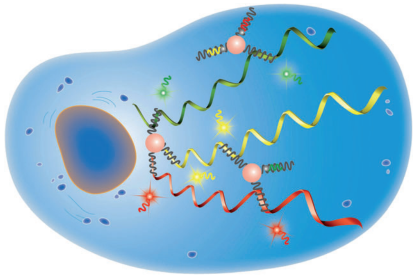
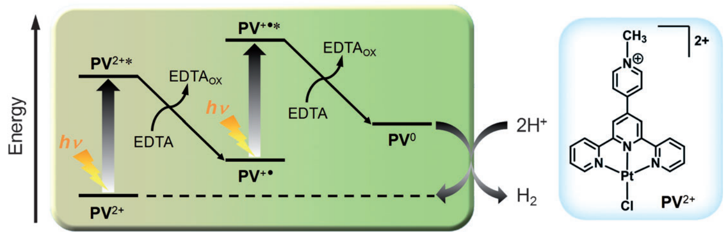
Multidetector: A novel nanoprobe, based on multicolor nanoflares, for the simultaneous detection and imaging of three tumor-related mRNAs in living cells has been developed. The nanoprobe possesses high specificity, nuclease stability, and good biocompatibility. It can also effectively distinguish cancer cells from normal cells and identify changes in the levels of mRNA expression.



Cancer Cell Detection

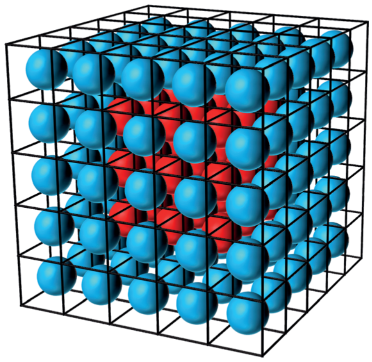
Inside Back Cover



Mimicking nature: The photochemical H_2 evolution from water catalyzed by a platinum(II)-based metalloviologen (PV^{2+}) proceeds via the photoexcited state of the one-electron-reduced species ($PV^{+\bullet}$; see picture, EDTA = ethylenediaminetetraacetic acid). This artificial photosynthesis is reminiscent of the "Z-scheme photosynthesis" in green plants.

Photocatalysis

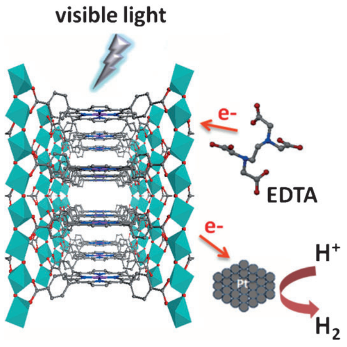
Location, location, location: The combination of reaction and diffusion has been used to deposit nanoparticles (red and blue) inside of cyclodextrin MOFs (black), either uniformly or in a core/shell manner. Such processes can also be combined with galvanic exchange reactions to provide a flexible route to the location-specific post-processing of MOFs. When dissolved, the core/shell MOFs liberate nanoparticles of different types sequentially.



Nanoparticles in MOFs

Inside Cover

Light-harvesting MOFs: A new porous porphyrinic metal–organic framework (MOF; see picture) was obtained by hydrothermal synthesis. The chemical and thermal stability of the material allows a postsynthetic insertion of zinc in the center of the porphyrin. The visible-light photocatalytic activity of this porphyrin-based material is shown for the sacrificial hydrogen evolution from water.



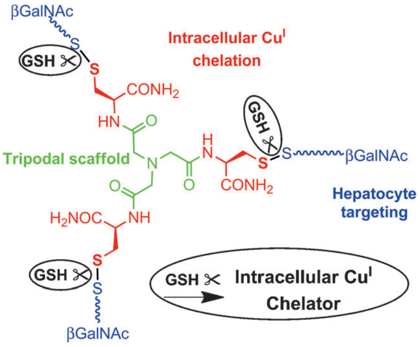
Metal–Organic Frameworks

Bioinorganic Chemistry

A. M. Pujol, M. Cuillel, A.-S. Jullien,
C. Lebrun, D. Cassio, E. Mintz,*
C. Gateau, P. Delangle* ____ **7445 – 7448**

A Sulfur Tripod Glycoconjugate that Releases a High-Affinity Copper Chelator in Hepatocytes

Released in the cell: Three *N*-acetylgalactosamine units, which recognize the asialoglycoprotein receptor, were tethered through disulfide bonds to the three coordinating thiol functions of a sulfur tripod ligand that has a high affinity for Cu^I (see scheme). The resulting glycoconjugate can be considered as a prodrug, because after uptake by hepatic cells the intracellular reducing glutathione (GSH) releases the high-affinity intracellular Cu^I chelator.

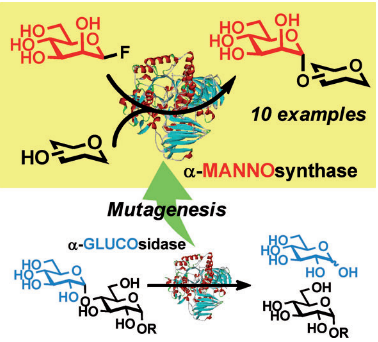


Biocatalysts

K. Yamamoto, B. G. Davis* **7449 – 7453**

Creation of an α-Mannosynthase from a Broad Glycosidase Scaffold

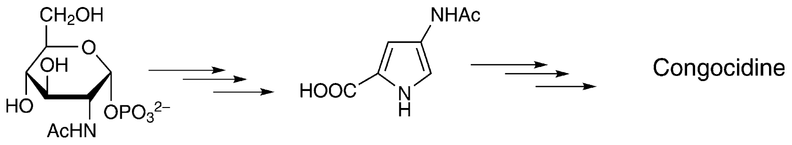
α-Mannosides made easy: Mutation of a family-GH31 α-glucosidase that displays plasticity to alterations at the 2-OH position of donor substrates created an efficient α-mannoside-synthesizing biocatalyst. A simple fluoride donor reagent was used for the synthesis of a range of mono-α-mannosylated conjugates using the α-mannosynthase displaying low (unwanted) oligomerization activity.



Biosynthetic Pathways

S. Lautru,* L. Song, L. Demange,
T. Lombès, H. Galons, G. L. Challis,
J.-L. Pernodet ____ **7454 – 7458**

A Sweet Origin for the Key Congocidine Precursor 4-Acetamidopyrrole-2-carboxylate



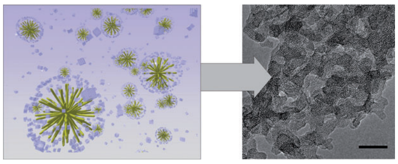
Feeding (*Streptomyces*) frenzy: Natural products belonging to the pyrrolamide family are defined by their pyrrole-2-carboxamide moiety. 4-acetamidopyrrole-2-carboxylate is identified as the key pyrrolamide congocidine precursor (see scheme) through feeding studies using *Streptomyces ambofaciens*. The biosynthetic pathway of congocidine starts with the carbohydrate *N*-acetylglucosamine and involves carbohydrate-processing enzymes.

Ultrafast Lithium Insertion

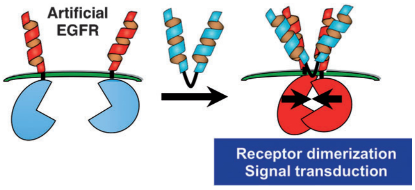
J. M. Feckl, K. Fominykh, M. Döblinger,
D. Fattakhova-Rohlfing,*
T. Bein* ____ **7459 – 7463**

Nanoscale Porous Framework of Lithium Titanate for Ultrafast Lithium Insertion

Mesoporous lithium titanate has been prepared with a titanate morphology that leads to the fastest insertion of lithium. It features a gravimetric capacity of about 175 mA h g^{-1} and delivers up to 73 % of the maximum capacity at up to 800 C (4.5 s) without deterioration over 1000 cycles. A key feature is a fully crystalline interconnected porous framework composed of spinel nanocrystals of only a few nanometers in size. Scale bar: 10 nm.



Examine your zipper: An artificial receptor system composed of an extracellular leucine-zipper domain (red helices) fused to the transmembrane and cytoplasmic domains of the epidermal growth factor receptor (EGFR) is shown (see scheme). Dimerization and activation of the receptor is induced by a bivalent leucine-zipper ligand (blue helices), leading to phosphorylation of the cytoplasmic domain of the receptor, and eliciting a signaling cascade.

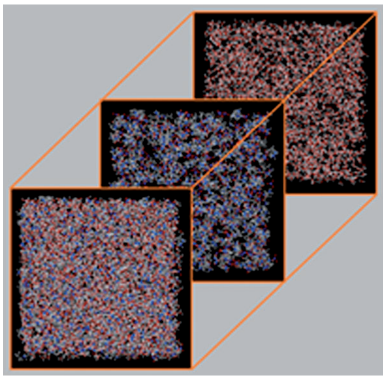


Artificial Receptors

I. Nakase, S. Okumura, G. Tanaka, K. Osaki, M. Imanishi, S. Futaki* ——— 7464 – 7467

Signal Transduction Using an Artificial Receptor System that Undergoes Dimerization Upon Addition of a Bivalent Leucine-Zipper Ligand

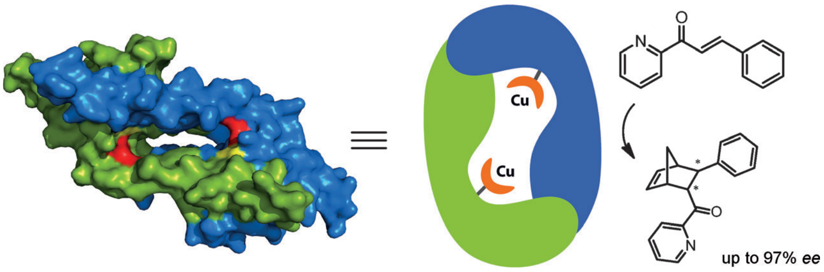
Water in ionic liquids: When equal masses of water and the protic ionic liquid ethylammonium nitrate are mixed a bicontinuous nanostructure results. This nanostructure resembles aqueous surfactant mesophases but has length scales at least an order of magnitude smaller. The local structure of both the water and the ionic liquid are strikingly similar to that found in the pure liquids (see picture).



Nanostructures

R. Hayes, S. Imberti, G. G. Warr, R. Atkin* ——— 7468 – 7471

How Water Dissolves in Protic Ionic Liquids



A game of two halves: Artificial metalloenzymes are generated by forming a novel active site on the dimer interface of the transcription factor LmrR. Two copper centers are incorporated by binding to ligands in each half of the dimer. With this system up to 97% *ee* was obtained in the benchmark Cu^{II} catalyzed Diels–Alder reaction (see scheme).

Artificial Metalloenzymes

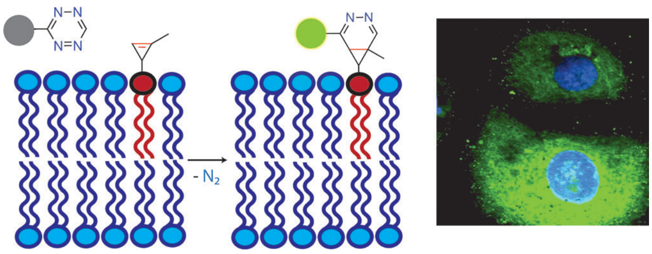
J. Bos, F. Fusetti, A. J. M. Driessen, G. Roelfes* ——— 7472 – 7475

Enantioselective Artificial Metalloenzymes by Creation of a Novel Active Site at the Protein Dimer Interface

Fluorogenic Mini-Tags

J. Yang, J. Šečkutė, C. M. Cole,
N. K. Devaraj* ____________ 7476 – 7479

Live-Cell Imaging of Cyclopropene Tags with Fluorogenic Tetrazine Cycloadditions

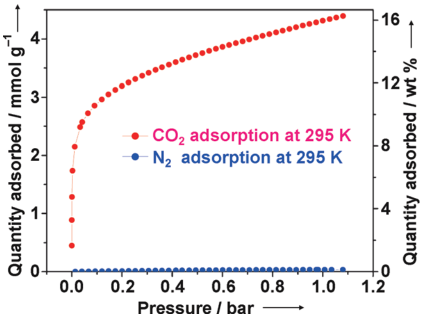


Spotlight on lipids: One of the major limitations of tetrazine bioorthogonal cycloadditions is the requirement of bulky dienophile reaction partners. Methylcyclopropene tags were designed capable of reacting rapidly with tetrazines while maintaining stability in aqueous solution. The suitability of these probes for bioconjugation is shown by imaging cyclopropene-modified phospholipids in live human cancer cells (see picture).

CO_2 Capture

W. Lu, J. P. Sculley, D. Yuan, R. Krishna,
Z. Wei H.-C. Zhou* ________ 7480 – 7484

Polyamine-Tethered Porous Polymer Networks for Carbon Dioxide Capture from Flue Gas



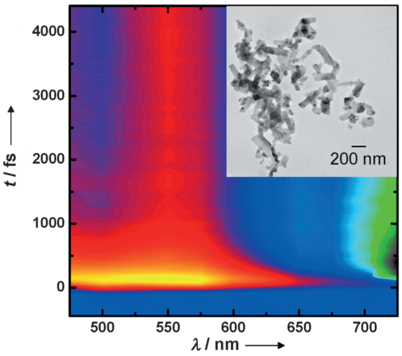
Gas guzzler: The introduction of polyamines in porous polymer networks results in significant enhancement of CO_2-uptake capacities at low pressures. The best substituted network was found to exhibit high adsorption enthalpies for CO_2 and the largest selectivity (see graph) of any porous material reported to date. It also had outstanding physicochemical stability and could be regenerated under mild conditions.

Ultrafast Photoswitching

R. Bertoni, M. Lorenc,* A. Tissot,
M. Servol, M.-L. Boillot,
E. Collet* ________________ 7485 – 7489

Femtosecond Spin-State Photoswitching of Molecular Nanocrystals Evidenced by Optical Spectroscopy

Quick change: Femtosecond optical pump–probe spectroscopy is used to study the photoswitching dynamics of Fe^{III} spin-crossover nanocrystals. Results indicate that up to 10% of the molecules can be photoswitched from low-spin to high-spin states within less than one picosecond.

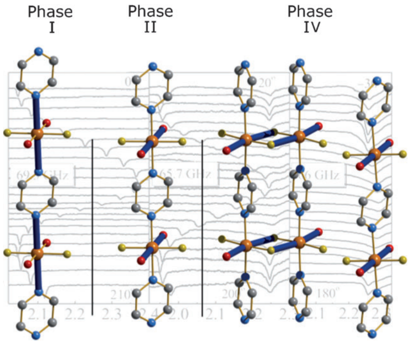


Controlled Under Pressure

A. Prescimone, C. Morien, D. Allan,
J. A. Schlueter, S. W. Tozer, J. L. Manson,
S. Parsons,* E. K. Brechin,*
S. Hill* ________________ 7490 – 7494

Pressure-Driven Orbital Reorientations and Coordination-Sphere Reconstructions in $[CuF_2(H_2O)_2(pyz)]$

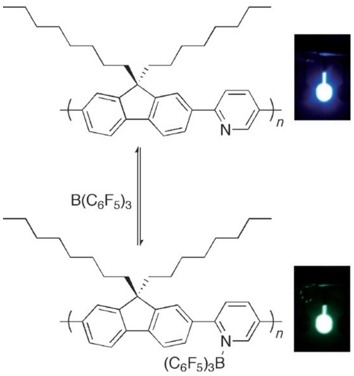
Successive reorientations of the Jahn–Teller axes associated with the Cu^{II} ions accompany a series of pronounced structural transitions in the title compound, as is shown by X-ray crystallography and high-frequency EPR measurements. The second transition forces a dimerization involving two thirds of the Cu^{II} sites due to ejection of one of the water molecules from the coordination sphere.



Conjugated Polymers

P. Zalar, Z. B. Henson, G. C. Welch,
G. C. Bazan,*
T.-Q. Nguyen* ———— **7495 – 7498**

Color Tuning in Polymer Light-Emitting Diodes with Lewis Acids

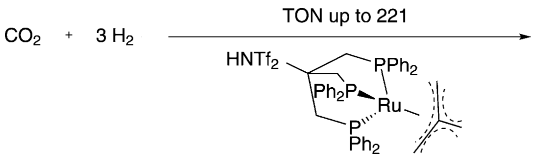


The right mix: By mixing a Lewis basic polymer with a Lewis acid, the optical properties of the polymer can be tuned. The formation of an adduct results in red-shifted absorbance and photoluminescence spectra, increase in the emission yield, and a longer excited-state lifetime. This strategy was successfully implemented to modulate the electroluminescence of a polymer light-emitting diode.

Hydrogenation of CO_2

S. Wesselbaum, T. vom Stein,
J. Klankermayer,*
W. Leitner* ———— **7499 – 7502**

Hydrogenation of Carbon Dioxide to Methanol by Using a Homogeneous Ruthenium–Phosphine Catalyst

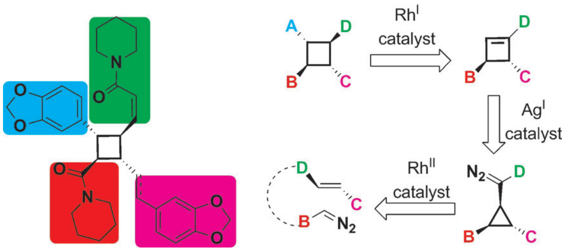


Simply efficient: The homogenously catalyzed hydrogenation of CO_2 to methanol is achieved by using a ruthenium phosphine complex under relatively mild conditions (see scheme; $HNTf_2$ = bis(trifluoromethane)sulfonimide). This is the first example of CO_2 hydrogenation to methanol by using a single molecularly defined catalyst.

Cyclobutanes

R. Liu, M. Zhang, T. P. Wyche,
G. N. Winston-McPherson, T. S. Bugni,
W. Tang* ———— **7503 – 7506**

Stereoselective Preparation of Cyclobutanes with Four Different Substituents: Total Synthesis and Structural Revision of Pipercyclobutanamide A and Piperchabamide G

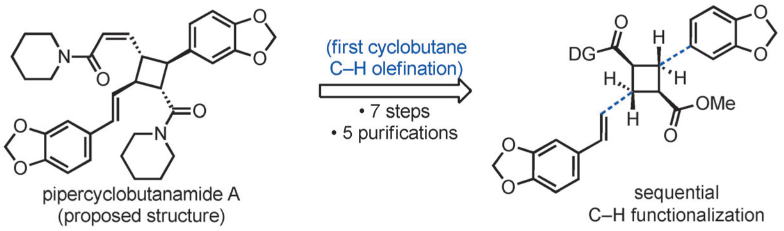


Squared away: A general strategy was developed for the diastereo- and enantioselective synthesis of cyclobutanes having four different substituents (see scheme). The strategy involves a Rh^{II}-catalyzed cyclopropanation, a Ag^{I}-catalyzed regioselective and stereospecific ring expansion, and a Rh^{I}-catalyzed addition reaction. The structures of pipercyclobutanamide A and piperchabamide G were synthesized and revised.

Natural Products

W. R. Gutekunst, R. Gianatassio,
P. S. Baran* ———— **7507 – 7510**

Sequential C_{sp^3}–H Arylation and Olefination: Total Synthesis of the Proposed Structure of Pipercyclobutanamide A



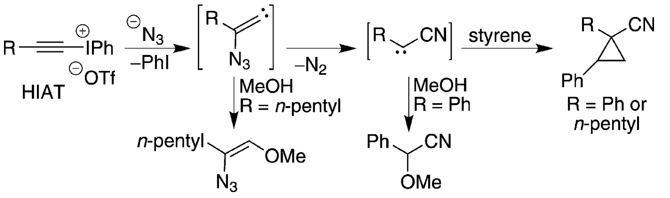
Hip to be square: A strategy for assembling tetrasubstituted cyclobutanes is reported in the context of a short, protecting-group-free synthesis of the proposed structure of pipercyclobutanamide A. The route features sequential C–H functionalizations on an unactivated cyclobutane wherein C–C bonds to aryl and styryl groups are made one by one in a stereocontrolled fashion. DG = directing group.

Synthetic Methods

I. F. D. Hyatt, M. P. Croatt* 7511 – 7514

Reactions of Hypervalent Iodonium Alkynyl Triflates with Azides: Generation of Cyanocarbenes

Front Cover



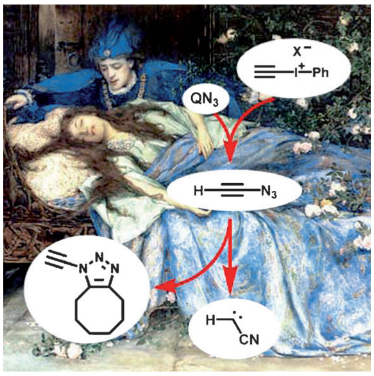
HIAT me, baby, one more time: Cyanocarbenes have been formed by the reaction of azides with hypervalent iodonium alkynyl triflates (HIATs). Experimental evidence supports the potential intermediacy of an azide-substituted vinylidene or alkynyl azide, both of which could form a cyanocarbene. Trapping of the vinylidene and cyanocarbene includes O−H insertion, dimethyl sulfoxide coordination, and cyclopropanation reactions.

Ethynyl Azides

K. Banert,* R. Arnold, M. Hagedorn, P. Thoss, A. A. Auer* 7515 – 7518

1-Azido-1-Alkynes: Synthesis and Spectroscopic Characterization of Azidoacetylene

Front Cover

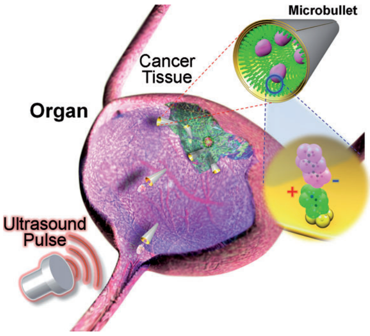


Sleeping Beauty awakes: After 102 years of unsuccessful attempts to synthesize azidoacetylene, spectroscopic evidence for this compound has been shown. This highly explosive compound was synthesized by the treatment of ethynyliodonium salts with azide ($QN_3 = n\text{-}C_{16}H_{33}Bu_3PN_3$). Azidoacetylene can be trapped by a cycloaddition reaction to yield a stable triazole, otherwise cleavage to generate cyanocarbene dominates.

Micromachines

D. Kagan, M. J. Benchimol, J. C. Claussen, E. Chuluun-Erdene, S. Esener,* J. Wang* 7519 – 7522

Acoustic Droplet Vaporization and Propulsion of Perfluorocarbon-Loaded Microbullets for Targeted Tissue Penetration and Deformation

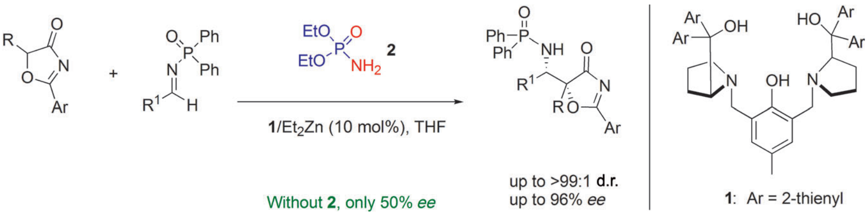


Bullets and rockets: Ultrasound-triggered vaporization of a perfluorocarbon compound loaded into microbullets provides the necessary force for the microbullets to penetrate, cleave, and deform cellular tissue for potential targeted drug delivery and precision nanosurgery. The microbullets have an inner Au layer that allows conjugation of a monolayer of thiolated cysteamine (green in picture) for electrostatic attachment of perfluorocarbon droplets (purple droplets).

Asymmetric Catalysis

D. Zhao, L. Wang, D. Yang, Y. Zhang, R. Wang* 7523 – 7527

Highly Diastereo- and Enantioselective Synthesis of α-Alkyl Norstatine Derivatives: Catalytic Asymmetric Mannich Reactions of 5*H*-Oxazol-4-ones

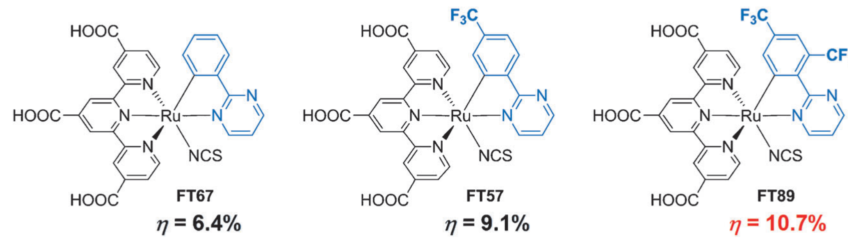


Going Mannich: The title reaction results in the first catalytic asymmetric synthesis of *syn*-α-alkyl norstatine derivatives. Excellent enantioselectivities and diastereoselectivities were achieved with a series of *N*-diphenylphosphinoyl-protected imines and 5*H*-oxazol-4-ones by using the catalyst **1**/Zn. Importantly, the involvement of the diethyl phosphoramidate **2** was critical to achieve good enantioselectivities in the present Mannich reaction.

Dye-Sensitized Solar Cells

T. Funaki,* H. Funakoshi, O. Kitao,
N. Onozawa-Komatsuzaki, K. Kasuga,
K. Sayama, H. Sugihara* ___ **7528 – 7531**

Cyclometalated Ruthenium(II) Complexes as Near-IR Sensitizers for High-Efficiency Dye-Sensitized Solar Cells



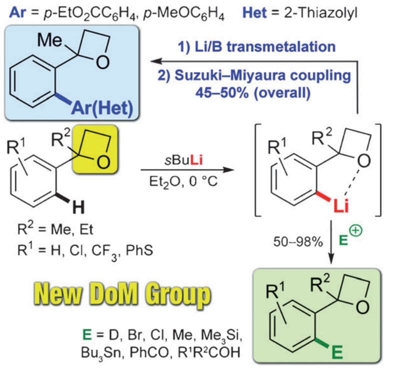
Efficient light harvesting: Cyclometalated ruthenium complexes were synthesized and evaluated in a dye-sensitized solar cell as near-IR sensitizers. Tuning of the HOMO energy level by structural modifications of the ligand improved the conversion efficiency of the cells based on these complexes to up to 10.7%.

Lithiation Chemistry

D. I. Coppi, A. Salomone, F. M. Perna,
V. Capriati* ___ **7532 – 7536**

Exploiting the Lithiation-Directing Ability of Oxetane for the Regioselective Preparation of Functionalized 2-Aryloxetane Scaffolds under Mild Conditions

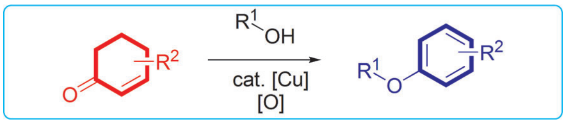
Oxetane nudges in the DoM direction! Regioselective *ortho*-lithiation induced by an oxetane ring has been achieved. The reaction provides easy access to *ortho*-functionalized 2-aryloxetanes also through a lithiation/borylation Suzuki–Miyaura cross-coupling. The lithiation-directing ability of oxetane and the proton transfer mechanism have been investigated by competitive metalation and kinetic isotope effect studies.



Aryl Ether Formation

M.-O. Simon, S. A. Girard,
C.-J. Li* ___ **7537 – 7540**

Catalytic Aerobic Synthesis of Aromatic Ethers from Non-Aromatic Precursors

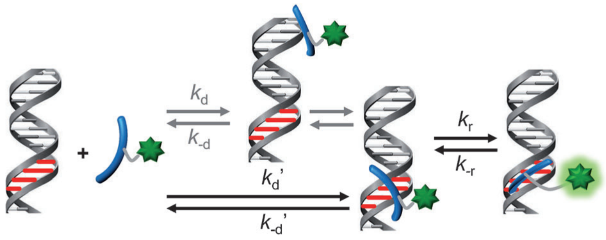


Only little waste: Aryl ether formation is accomplished by oxidative condensation of alcohols and 2-cyclohexenones. The reaction complements the existing methods used by synthetic chemists to obtain aryl ethers, and allows a straightforward access to a wide range of functionalized products. In addition, the catalytic reaction with O_2 as the oxidant generates water as the only by-product and provides a "greener" approach to aryl ethers.

DNA Binding Dynamics

J. Bordello, M. I. Sánchez, M. E. Vázquez,
J. L. Mascareñas, W. Al-Soufi,
M. Novo* ___ **7541 – 7544**

Single-Molecule Approach to DNA Minor-Groove Association Dynamics

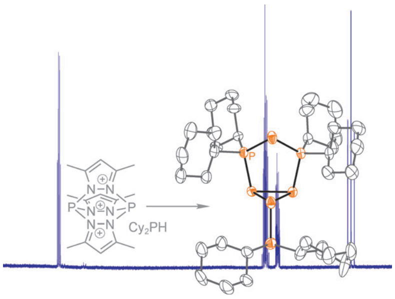


Getting in the groove: Fluorescence correlation spectroscopy reveals that the dynamics of the association process of the bisbenzamidine minor-groove binder BBA-OG (blue with green star, see scheme) to dsDNA is not controlled by diffusion, but by the insertion of the binder into the groove at the specific site (red), as shown by the rate constants for each step of the binding event.

Phosphorus Compounds

K.-O. Feldmann,
J. J. Weigand* ———— 7545–7549

One-Pot Syntheses of Cationic Polyphosphorus Frameworks with Two-, Three-, and Four-Coordinate Phosphorus Atoms by One-Pot Multiple P—P Bond Formations from a P_1 Source

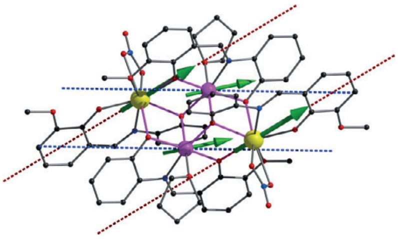


Accessible complexity: Polyphosphorus frameworks $[R_4P_4pyr]^+$ and $[R_6P_7]^+$ (R = Cy, Ph; pyr = 3,5-dimethylpyrazolyl) were prepared from a P_1 source, R_2PH. In a one-pot reaction, eight P—P bonds are formed via a unique combination of substitution and base-induced reductive P—P coupling.

Single-Molecule Magnets

K. C. Mondal, A. Sundt, Y. Lan,
G. E. Kostakis, O. Waldmann,* L. Ungur,
L. F. Chibotaru,* C. E. Anson,
A. K. Powell* ———— 7550–7554

Coexistence of Distinct Single-Ion and Exchange-Based Mechanisms for Blocking of Magnetization in a $Co^{II}_2Dy^{III}_2$ Single-Molecule Magnet

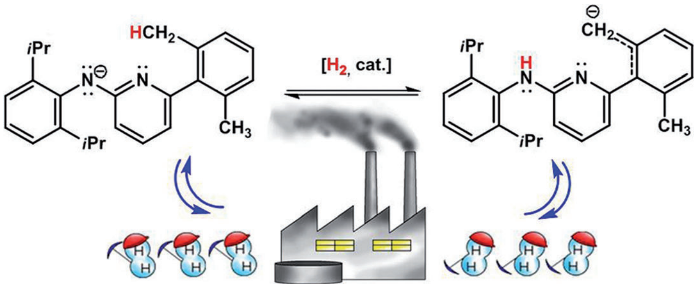


Two ways to relax: A defect-dicubane Co_2Dy_2 single-molecule magnet (SMM) displays slow relaxation of magnetization with a blocking temperature of 22 K (at 1500 Hz), the highest reported for a 3d–4f-based SMM. Analysis of the relaxation reveals two distinct blocking regimes, one of which is intraionic, localized on the Dy^{III} ions, while the other is exchange-based.

Dihydrogen Catalysis

J. E. V. Valpuesta, N. Rendón,
J. López-Serrano, M. L. Poveda,
L. Sánchez, E. Álvarez,
E. Carmona* ———— 7555–7557

Dihydrogen-Catalyzed Reversible Carbon–Hydrogen and Nitrogen–Hydrogen Bond Formation in Organometallic Iridium Complexes

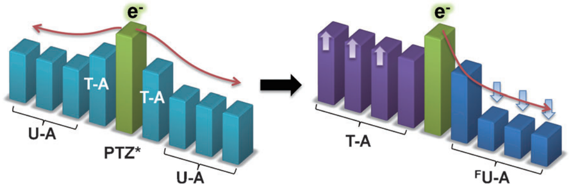


Dihydrogen at work! H_2 catalyzes with high efficiency a prototropic rearrangement of aminopyridinate ligands bound to a $\{(\eta^5\text{-}C_5Me_5)Ir^{III}\}$ unit. The catalytic isomerization implies reversible formation and cleavage of H—H, C—H, and N—H bonds.

Electron Transport in DNA

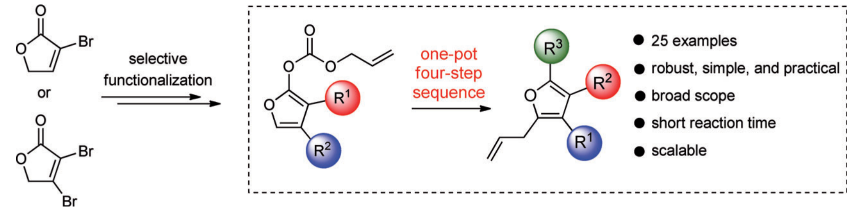
T. Ito,* Y. Hamaguchi, K. Tanabe,
H. Yamada, S. Nishimoto* 7558–7561

Transporting Excess Electrons along Potential Energy Gradients Provided by 2′-Deoxyuridine Derivatives in DNA



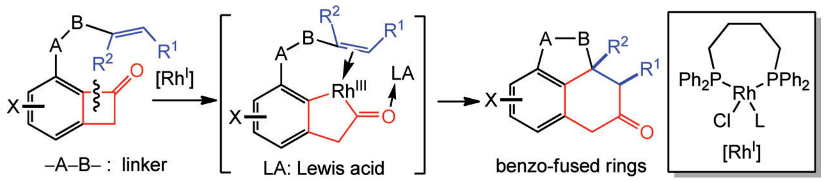
LUMO-level dependent: Chemically modified DNA molecules containing 2′-deoxyuridine (dU) derivatives with various LUMO energy levels have been synthesized to manipulate electron-transfer efficiencies. By arranging thymidine, the dU derivatives, and 5-fluoro-2′-deoxyuridine in order of their LUMO levels, the efficiency and the directionality of photoinduced electron transport in DNA could be regulated.

Furan Synthesis



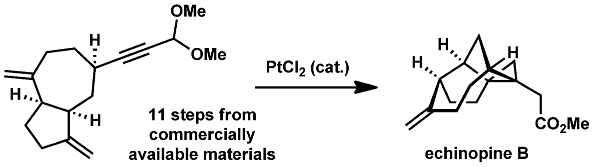
One four all: Allyl dienol carbonates can be readily converted into diversely substituted furans by a one-pot four-step sequence featuring a palladium-catalyzed decarboxylative allylic alkylation, a microwave-mediated Cope rearrangement, a nucleophilic addition, and a dehydration reaction (see scheme). The protocol is operationally simple, highly flexible, and provides di-, tri-, and tetrasubstituted furans starting from readily available materials.

C–C Activation



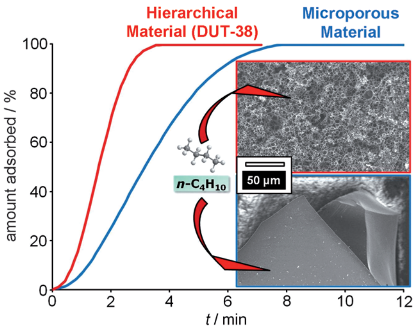
Cut and sew: A rhodium-catalyzed regioselective carboacylation reaction of benzocyclobutenones was developed (see scheme). Directed by the pendant olefins, the C1–C2 bond is selectively cleaved rather than the C1–C8 bond. Subsequent alkene insertion leads to complex fused-ring systems. This reaction provides facile access to natural-product-like polycyclic structures in a chemoselective and atom-economic fashion.

Natural Product Synthesis



In a short synthesis of echinopine B, a guaiane-like intermediate was generated through a methylenecyclopentane annulation onto a substituted cycloheptenone. The resulting bicyclic compound was converted into the natural product by a $PtCl_2$-catalyzed enyne cycloisomerization (see scheme). Several late-stage polycyclic rearrangement products were isolated and characterized.

Porous Materials



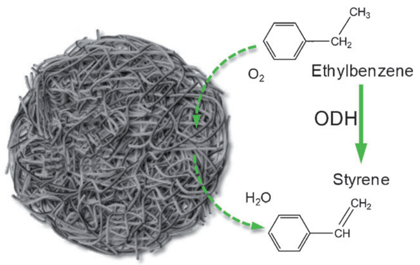
Sierpinski carbon: Macroporous carbide-derived carbon monoliths (DUT-38) were synthesized starting from SiC-PolyHIPEs, resulting in a hierarchical micro-, meso-, and macroporous structure. The high specific surface area and high macropore volume renders PolyHIPE-CDC an excellent adsorbent combining high storage capacity with excellent adsorption rates in gas storage and air filtration.

Nanocarbon Synthesis

J. Zhang, R. Wang, E. Z. Liu, X. F. Gao,
Z. H. Sun, F. S. Xiao,* F. Girgsdies,
D. S. Su* ______________ 7581 – 7585

Spherical Structures Composed of Multiwalled Carbon Nanotubes: Formation Mechanism and Catalytic Performance

Structured catalyst: A new strategy was used to produce carbon nanotube monoliths by a solid-phase process that was well characterized by in situ techniques. The synthesized spherical nanoparticles display extremely high selectivity in the oxidative dehydrogenation (ODH) of ethylbenzene (see scheme).

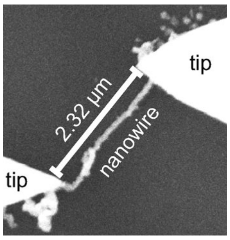


DNA Nanowires

J. Timper, K. Gutsmiedl, C. T. Wirges,
J. Broda, M. Noyong, J. Mayer, T. Carell,
U. Simon* ______________ 7586 – 7588

Surface "Click" Reaction of DNA followed by Directed Metalization for the Construction of Contactable Conducting Nanostructures

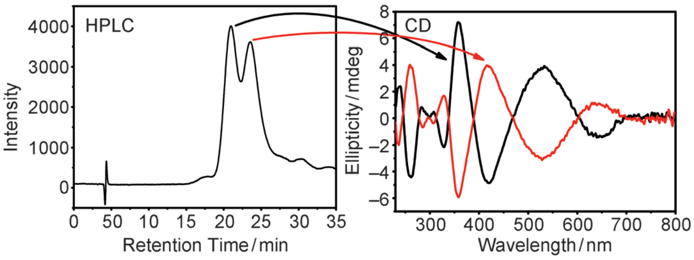
Investment in copper, silver, and gold: A difunctional DNA template is first immobilized on a functionalized substrate by a copper-catalyzed reaction, modified with silver nucleation centers, and then metalized by gold deposition. The diameter of the resulting metallically conductive nanowires can be adjusted.



Gold Clusters

S. Knoppe, I. Dolamic, A. Dass,
T. Bürgi* ______________ 7589 – 7591

Separation of Enantiomers and CD Spectra of $Au_{40}(SCH_2CH_2Ph)_{24}$: Spectroscopic Evidence for Intrinsic Chirality

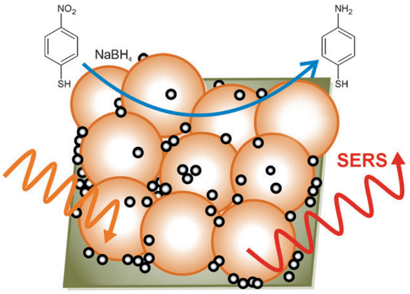


Chirality unveiled: Thiolate-protected $Au_{40}(SR)_{24}$ clusters were enantioenriched using an HPLC approach. CD spectra show strong mirror-image responses, indicating the intrinsic chirality of a cluster of unknown structure protected with achiral ligands.

Reaction Kinetics

V. Joseph, C. Engelbrekt, J. Zhang,
U. Gernert, J. Ulstrup,
J. Kneipp* ______________ 7592 – 7596

Studying the Kinetics of Nanoparticle-Catalyzed Reactions by Surface-Enhanced Raman Scattering



Separate gold and platinum nanoparticles simultaneously immobilized on a glass surface were used to study the kinetics of a catalytic reaction directly. Owing to the proximity of the platinum and gold nanoparticles, the analyte molecules can interact with the platinum nanoparticles whilst they reside in the local optical fields of the gold nanoparticles.

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