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:

*T. J. Hebden, A. J. S. John, D. G. Gusev, W. Kaminsky, K. I. Goldberg, D. M. Heinekey**
Preparation of a Dihydrogen Complex of Cobalt

K. Breuker, S. Brüschweiler, M. Tollinger*
Electrostatic Stabilization of Native Protein Structure in the Gas Phase

M. Mastalerz, M. W. Schneider, I. M. Oppel, O. Presly*
A Salicylbisimine Cage Compound with a High Surface Area and Selective CO_2/CH_4 Adsorption

*F. Lockyear, M. A. Parkes, S. D. Price**
Fast and efficient fluorination of small molecules by SF_4^{2+}

X. Zeng, H. Beckers, H. Willner,* J. F. Stanton*
Elusive Diazirinone, N_2CO

*J. H. Schrittwieser, V. Resch, J. Sattler, W.-D. Lienhart, K. Durchschein, A. Winkler, K. Gruber, P. Macheroux, W. Kroutil**
Biocatalytic Enantioselective Oxidative C–C Coupling by Aerobic C–H Activation

*D. V. Gutsulyak, A. van der Est, G. I. Nikonov**
Facile Catalytic Hydrosilylation of Pyridines

*D. T. Cohen, B. Cardinal-David, K. A. Scheidt**
Lewis Acid Activated Synthesis of Highly Substituted Cyclopentanes by the N-Heterocyclic-Carbene-Catalyzed Addition of Homoenolate Equivalents to Unsaturated Ketoesters

*T. Reiner, E. J. Keliher, S. Earley, B. Marinelli, R. Weissleder**
Synthesis and In Vivo Imaging of an ^{18}F-Labeled PARP1 Inhibitor by a Chemically Orthogonal Scavenger-Assisted High-Performance Method

Z. Zhao, E. L. Jacovetty, Y. Liu, H. Yan**
Encapsulation of Gold Nanoparticles in a DNA-Origami Cage

M. Barsukova-Stuckart, N. V. Izarova, G. B. Jameson, V. Ramachandran, Z. Wang, J. v. Tol, N. S. Dalal, R. N. Biboum, B. Keita, L. Nadjo, U. Kortz**
The Dicopper(II)-Containing 22-Palladate(II) $[Cu^{II}_2Pd^{II}_{22}P^{V}_{12}O_{60}(OH)_8]^{20-}$

Author Profile

"When I wake up I think of molecules I dreamt of. My greatest achievement has been finding a wife, who is not a scientist …"
This and more about Axel Schulz can be found on page 575.

News

R. Hoffmann

K. Gademann

J.-Q. Yu

Books

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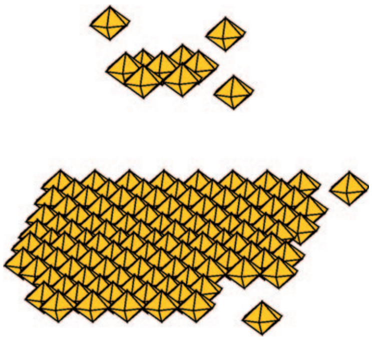
Highlights

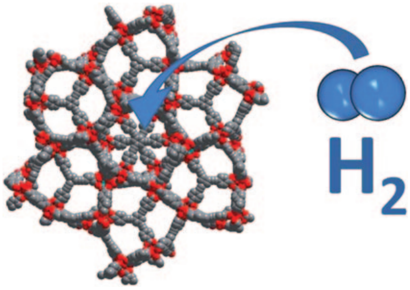
Crystal Growth



Self-assembly with self-control: Fe_2O_3 nanocrystals underwent self-assembly in a disciplined manner to form one-, two-, and three-dimensional ordered structures by the mechanism of oriented attachment (see picture). Thus, the formation of the organized superstructures did not require external control, for example, by temperature and pressure, but was intrinsic to the nanocrystal system.

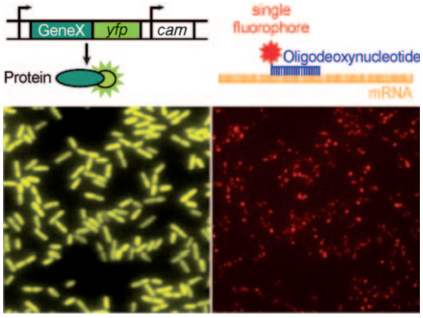
Hydrogen Storage

Take it to the limit: Ultrahigh-porosity metal–organic frameworks (MOFs) with extremely high specific surface areas show very high hydrogen uptake by physisorption at low temperatures. The total hydrogen storage capacity of MOF-210 through cryoadsorption exceeds even that of complex hydrides.



Protein and mRNA Quantitation

FISHing for complements: The proteome and the transcriptome in single *E. coli* cells were determined simultaneously through the use of a YFP fusion library (left, yellow) and an Atto-594-labeled complementary probe to the same YFP by fluorescence in situ hybridization (FISH; right, red), respectively. Interestingly, for the 129 highly expressed genes studied, no correlation between transcription and translation was found.



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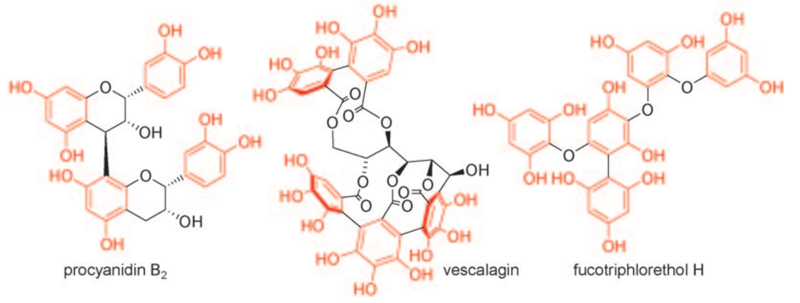
Reviews



To be or not to be polyphenolic! The flavanol-derived procyanidin B_2, the polygalloylglucose-derived vescalagin, and the phloroglucinol-derived fucotriphlorethol H are typical examples of condensed tannins, hydrolyzable tannins, and phlorotannins. These, and many other polyphenols, constitute a formidable chemical arsenal used by plants for defence and adaptative evolution, and a rich source of inspiration for the development of novel drugs.

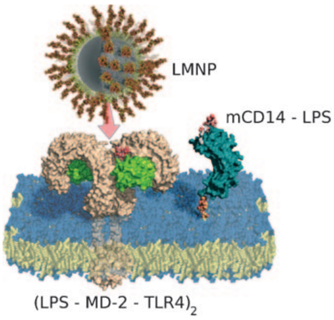
Natural Products

S. Quideau,* D. Deffieux,
C. Douat-Casassus,
L. Pouységu ______ **586 – 621**

Plant Polyphenols: Chemical Properties, Biological Activities, and Synthesis

Communications

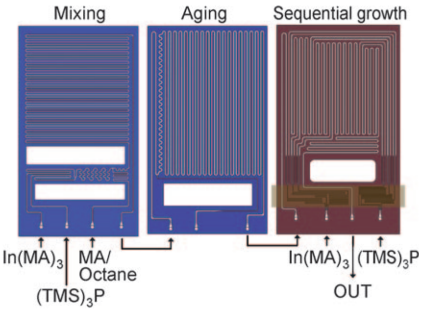
Taking its toll: LPS-coated magnetic nanoparticles (LMNPs) are synthesized by noncovalently linking LPS to oleylamine-coated iron oxide nanoparticles. LMNPs are stable, water-soluble, have homogeneous size and shape, and load an average of 130 LPS molecules. LMNPs induce mild CD14-dependent Toll-like receptor 4 (TLR4) activation in innate immune cells (see picture).



Lipopolysaccharides

M. Piazza, M. Colombo, I. Zanoni,
F. Granucci, P. Tortora, J. Weiss,
T. Gioannini, D. Prosperi,*
F. Peri* ______ **622 – 626**

Uniform Lipopolysaccharide (LPS)-Loaded Magnetic Nanoparticles for the Investigation of LPS–TLR4 Signaling

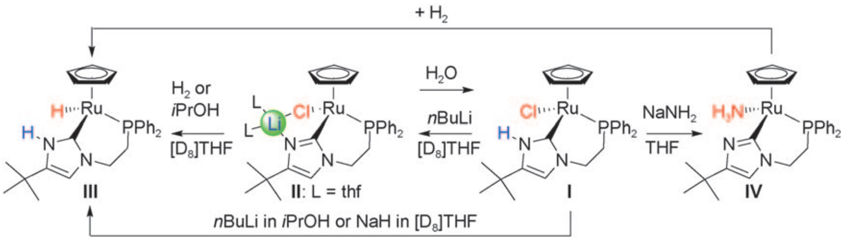


The important parameters for the synthesis of indium phosphide nanocrystals (InP NCs) are examined in a continuous three-stage microfluidic system (see figure). InP NC growth is largely independent of the experimental parameters that are significant in CdSe NC syntheses, such as mixing temperature and reagent concentrations. However, the concentration of myristic acid (MA) is important role for the growth of InP NCs.

Nanocrystal Growth

J. Baek, P. M. Allen, M. G. Bawendi,*
K. F. Jensen* ______ **627 – 630**

Investigation of Indium Phosphide Nanocrystal Synthesis Using a High-Temperature and High-Pressure Continuous Flow Microreactor



More than an innocent bystander: Deprotonation of the N–H group in **I** with nBuLi/[D$_8$]THF gave a highly reactive {(thf)$_2$LiCl} adduct **II** of an imidazol-2-yl species. Compounds **II** and **IV** readily heterolyze H_2 to form **III**, whereas *i*PrOH acts as a hydrogen source to generate **III** from **II**.

N-Heterocyclic Carbenes

V. Miranda-Soto, D. B. Grotjahn,*
A. L. Cooksy, J. A. Golen, C. E. Moore,
A. L. Rheingold ______ **631 – 635**

A Labile and Catalytically Active Imidazol-2-yl Fragment System

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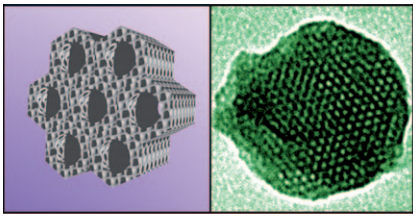
Contents

Metal–Organic Frameworks

Y. Zhao, J. Zhang,* B. Han,* J. Song, J. Li,
Q. Wang ______ **636–639**

Metal–Organic Framework Nanospheres with Well-Ordered Mesopores Synthesized in an Ionic Liquid/CO_2/Surfactant System



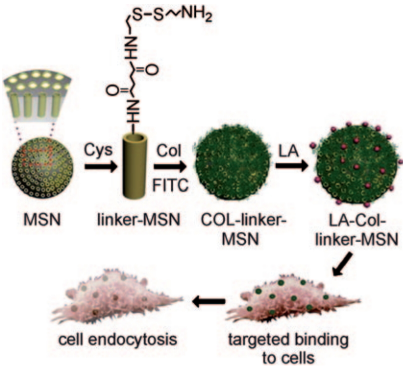
Pores and pores: Metal–organic framework (MOF) nanospheres with long-range ordered mesopores, the walls of which are composed of microporous structure units, were synthesized in binary solvent systems of ionic liquid and supercritical CO_2. The MOF nanostructure has many potential applications and its preparation could easily be applied to MOFs with other metal ions and ligands.

Drug Delivery

Z. Luo, K. Cai,* Y. Hu, L. Zhao, P. Liu,
L. Duan, W. Yang ______ **640–643**

Mesoporous Silica Nanoparticles End-Capped with Collagen: Redox-Responsive Nanoreservoirs for Targeted Drug Delivery

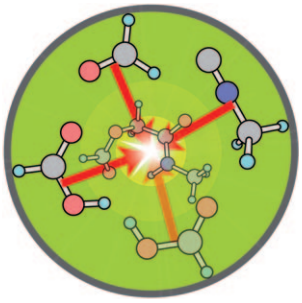
If the cap fits: Attachment of collagen (Col) to silica nanoparticles (MSN) by a disulfide linker, followed by introduction of lactobionic acid (LA, a cell-specific targeting moiety), results in a redox-responsive system for cell-specific intracellular drug delivery and efficient endocytosis (see picture). Controlled release of a model drug (fluorescein isothiocyanate, FITC) was achieved by cleavage of the disufide bonds.



Multicomponent Reactions

S. Maeda,* S. Komagawa, M. Uchiyama,*
K. Morokuma* ______ **644–649**

Finding Reaction Pathways for Multicomponent Reactions: The Passerini Reaction is a Four-Component Reaction

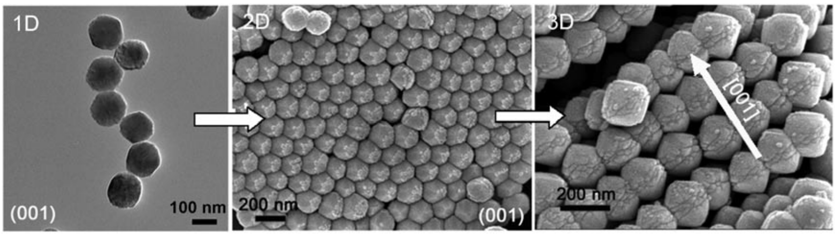


Route finder: The Passerini three-component reaction of a carboxylic acid, an aldehyde (or ketone), and an isocyanide to give an α-acyloxycarboxamide actually follows a four-component mechanism involving an additional molecule of carboxylic acid (see scheme). The discovery was made by applying a new “reaction route explorer” to the simplest Passerini reaction ($HCOOH + HCHO + CH_3NC$).

Nanostructure Assembly

J. S. Chen, T. Zhu, C. M. Li,
X. W. Lou* ______ **650–653**

Building Hematite Nanostructures by Oriented Attachment



Getting bigger: Oriented attachment takes place among large hematite nanocrystals with a size over 100 nm to form 2D assemblies that further assemble into 3D superstructures through dipole–dipole interactions. Based on shape selectivity, 1D nanorods can be assembled into 3D quasi nanocubes by oriented attachment.

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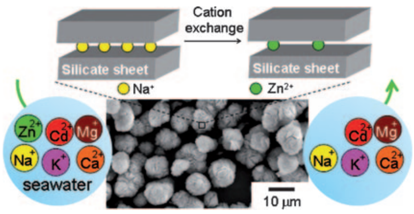


Metal exchange: A layered alkali silicate, magadiite, effectively concentrates Zn^{2+} from seawater by ion exchange even in the presence of Cd^{2+}. The interlayer Na^{+} of magadiite is almost quantitatively exchanged with Zn^{2+} in mixed-electrolyte solutions (see picture).

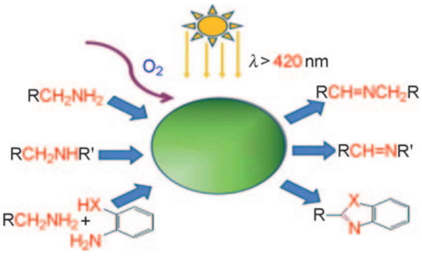
Adsorption

Y. Ide, N. Ochi, M. Ogawa* **654 – 656**

Effective and Selective Adsorption of Zn^{2+} from Seawater on a Layered Silicate

---

Coupling on sunshine: A simple and efficient synthesis of benzoxazoles, benzimidazoles, and benzothiazoles is realized through a one-pot preparation driven by a photocatalytic cascade reaction. Carbon nitride and visible light are employed to achieve this metal-free aerobic oxidation of amines to imines (see scheme; mpg-C_3N_4 = mesoporous graphite carbon nitride).



Photocatalysis

F. Su, S. C. Mathew, L. Möhlmann,
M. Antonietti, X. Wang,*
S. Blechert* **657 – 660**

Aerobic Oxidative Coupling of Amines by Carbon Nitride Photocatalysis with Visible Light

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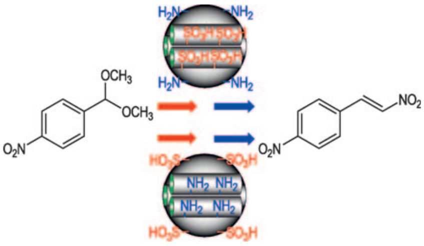

Peaceful coexistence: Brønsted acids and bases were attached to different surfaces of a mesoporous silica nanoparticle. The internal surface was functionalized by using co-condensation, and postsynthesis grafting was used to functionalize the external surface. A two-step reaction sequence that cannot proceed with an acid and base in the same pot was accomplished using the bifunctionalized nanoparticle (see scheme).

Mesoporous Materials

Y. Huang,* S. Xu, V. S.-Y. Lin **661 – 664**

Bifunctionalized Mesoporous Materials with Site-Separated Brønsted Acids and Bases: Catalyst for a Two-Step Reaction Sequence

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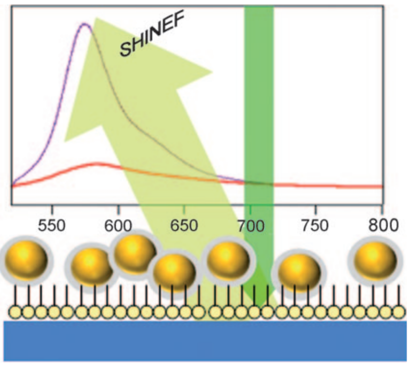

Heart of gold: Surface-enhanced fluorescence (SEF) is demonstrated with silica-coated gold nanoparticles (SHINEF) that act as “smart dust” on the surface of a Langmuir–Blodgett monolayer. Coating gold nanoparticles of different sizes and shapes opens a wide range of applications for SEF, where the shape of the core with an appropriate thickness of the coating can be tuned for specific tasks.

Nanoparticles

A. R. Guerrero, R. F. Aroca* **665 – 668**

Surface-Enhanced Fluorescence with Shell-Isolated Nanoparticles (SHINEF)

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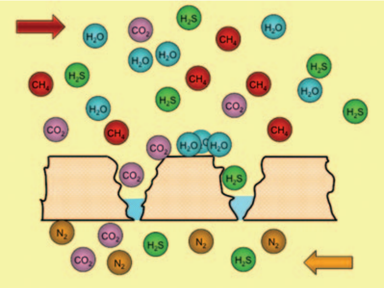
Biogas Purification

M. Poloncarzova, J. Vejrazka, V. Vesely, P. Izak* **669 – 671**

Effective Purification of Biogas by a Condensing-Liquid Membrane

Coming clean: Impurities and carbon dioxide in raw biogas are separated by a "condensing-liquid membrane", based on the different solubility of components in a very thin continuously refreshed water layer in a hydrophilic porous membrane (see picture; blue areas: thin water layer in the porous membrane).

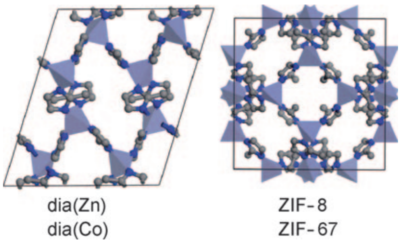


Metal–Organic Frameworks

Q. Shi, Z. F. Chen, Z. W. Song, J. P. Li, J. X. Dong* **672 – 675**

Synthesis of ZIF-8 and ZIF-67 by Steam-Assisted Conversion and an Investigation of Their Tribological Behaviors

Water difference: Using H_2O as the reaction medium in a conventional hydrothermal synthesis gives two nonporous materials with dense dia frameworks, dia(Zn) and dia(Co), from 2-methylimidazole and $M(OAc)_2$ ($M = Zn$, Co; see structures, left). However, separation of the H_2O and a solid mixture of the same starting materials in a steam-assisted conversion gives open-framework porous materials, ZIF-8 and ZIF-67 (right).

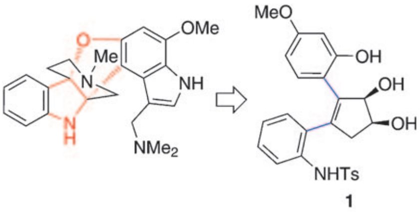


Natural Products

H. Ding, D. Y.-K. Chen* **676 – 679**

Formal Syntheses of (−)- and (+)-Phalarine

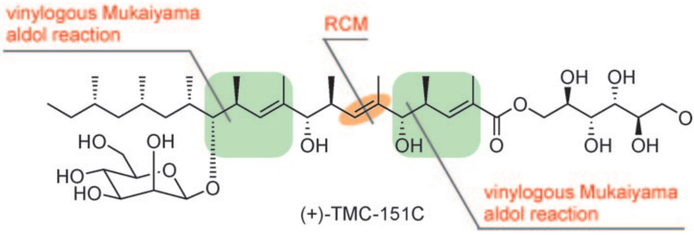
A core challenge: The asymmetric formal syntheses of the title compounds have been accomplished. By using a modular approach, phenolic tosylamide **1** was synthesized through palladium cross-couplings (blue bonds), and its participation in a hypervalent iodine mediated oxidative coupling reaction (red bonds) enabled the construction of the challenging heterocyclic core of (−)-phalarine.



Natural Products Synthesis

R. Matsui, K. Seto, Y. Sato, T. Suzuki, A. Nakazaki, S. Kobayashi* **680 – 683**

Convergent Total Synthesis of (+)-TMC-151C by a Vinylogous Mukaiyama Aldol Reaction and Ring-Closing Metathesis



Two key reaction types were used for the total synthesis of the antibiotic agent (+)-TMC-151C: the vinylogous Mukaiyama aldol reaction and silicon-tethered ring-closing metathesis (RCM; see scheme). This strategy should provide efficient access to a range of related natural polyketides containing pent-2-ene-1,5-diol units.

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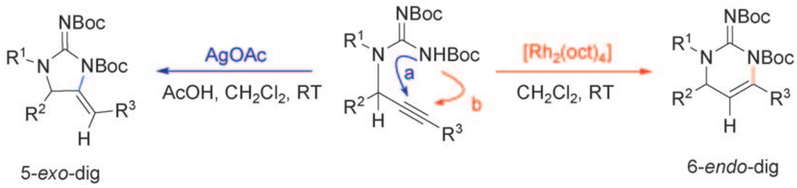
Rhodium Catalysis

M. J. Gainer, N. R. Bennett, Y. Takahashi, R. E. Looper* ______ **684–687**

Regioselective Rhodium(II)-Catalyzed Hydroaminations of Propargylguanidines

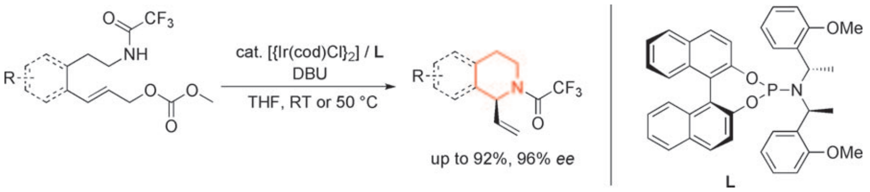


Different than others: Dimeric rhodium(II) carboxylates uniquely catalyze the 6-*endo*-dig selective hydroamination of propargylguanidines while tranditional π-Lewis acids are typically 5-*exo*-dig selective (see scheme, oct = octanoate). Furthermore, this represents a new role for Rh^{II} to activate alkynes for addition chemistry.

Asymmetric Catalysis

J. F. Teichert, M. Fañanás-Mastral, B. L. Feringa* ______ **688–691**

Iridium-Catalyzed Asymmetric Intramolecular Allylic Amidation: Enantioselective Synthesis of Chiral Tetrahydroisoquinolines and Saturated Nitrogen Heterocycles

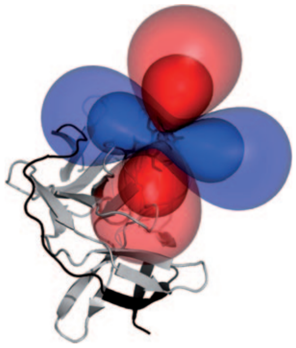


For the first time iridium catalysis has been used for the synthesis of chiral tetrahydroisoquinolines with excellent yields and high enantioselectivities (see scheme; cod = 1,5-cyclooctadiene, DBU = 1,8-diazabicyclo[5.4.0]undec-7-ene). These products are important chiral building blocks for the synthesis of biologically active compounds, in particular alkaloids.

Protein Labeling

T. H. D. Nguyen, K. Ozawa, M. Stanton-Cook, R. Barrow, T. Huber, G. Otting* ______ **692–694**

Generation of Pseudocontact Shifts in Protein NMR Spectra with a Genetically Encoded Cobalt(II)-Binding Amino Acid

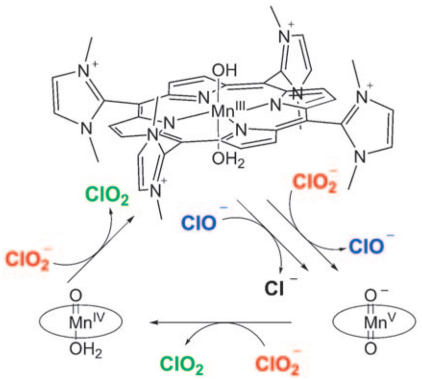


Playing tag: Incorporation of the genetically encoded amino acid bipyridylalanine into a protein creates a site-specific binding site for Co^{II}. Pronounced pseudocontact shifts generated by the Co^{II} ion in the NMR spectra delivers powerful long-range structure information for the facile analysis of proteins as well as protein–protein and protein–ligand complexes (see picture for a representation of the pseudocontact shift in the protein).

Chlorine Compounds

T. P. Umile, J. T. Groves* ______ **695–698**

Catalytic Generation of Chlorine Dioxide from Chlorite Using a Water-Soluble Manganese Porphyrin



The cationic, water soluble manganese imidazolium porphyrin [Mn(TDMImP)] efficiently catalyzes the dismutation of chlorite ion (ClO_2^-) to chlorine dioxide. The gaseous product ClO_2 could be isolated in 60% yield (500 turnovers at 0.5 turnovers s^{-1}) and the catalyst was completely recovered. Oxo-transfer from chlorite to the Mn^{III} catalyst is proposed to be the rate limiting step. An immobilized form of the catalyst was also active.

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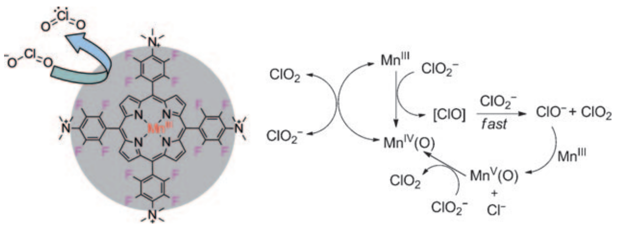
Chlorine Compounds

S. D. Hicks, J. L. Petersen, C. J. Bougher,
M. M. Abu-Omar* ______ **699 – 702**

Chlorite Dismutation to Chlorine Dioxide Catalyzed by a Water-Soluble Manganese Porphyrin



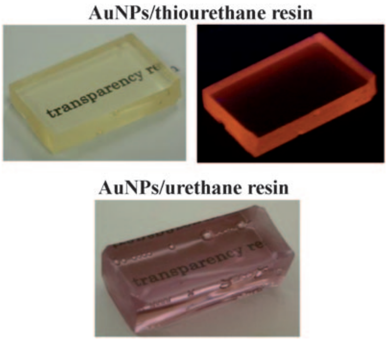
Chloride oxyanions are of interest because of their use as disinfectants and concerns over their accumulation in the environment. A water-soluble manganese porphyrin catalyzes the dismutation of chlorite (ClO_2^-) to chlorine dioxide (ClO_2) through a series of electron- and atom-transfer reactions. A high-valent manganese(IV) oxo species is observed and the ClO_2 product inhibits the reaction.

Gold Nanoparticles

Y. Shishino, T. Yonezawa,* S. Udagawa,
K. Hase, H. Nishihara* ______ **703 – 705**

Preparation of Optical Resins Containing Dispersed Gold Nanoparticles by the Matrix Sputtering Method

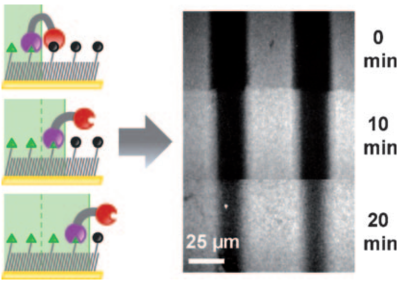
Transparent examples: Optical resins containing dispersed gold nanoparticles (AuNPs) can be prepared by the title method. The obtained light-yellow AuNPs/thiourethane resins contain nanoparticles less than 1 nm in diameter and show good transparency and fluorescence at 690 nm (see picture). The analogous urethane resins are transparent with a red color arising from the surface plasmon absorption of the AuNPs.



Spatial Reactivity

X. Liao, R. T. Petty,
M. Mrksich* ______ **706 – 708**

A Spatially Propagating Biochemical Reaction

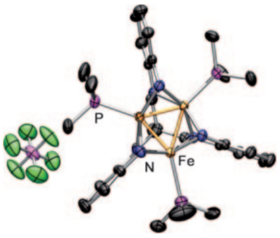


Surfing with the kinase: A soluble kinase phosphorylates an immobilized peptide substrate most rapidly at the boundary between product and substrate, and gives rise to a “wave” of propagating product. Such systems offer an approach to engineering reactions to give spatio-temporal control over progression of reactions.

Polynuclear Complexes

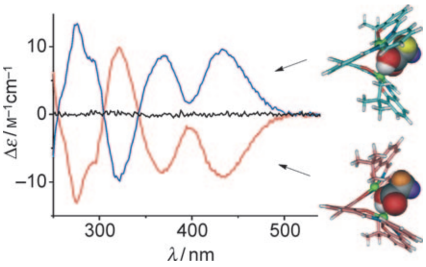
Q. Zhao, T. A. Betley* ______ **709 – 712**

Synthesis and Redox Properties of Triiron Complexes Featuring Strong Fe–Fe Interactions



A modular hexadentate polyamide ligand directs the assembly of triiron complexes (see structure). Crystallographic studies reveal significant metal–metal bonding interactions, which are enhanced upon oxidation.

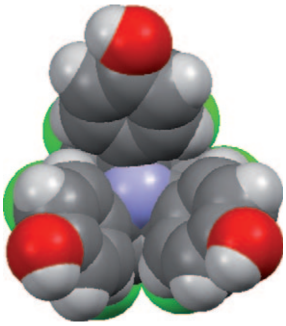
Picking Cotton: Strong host–guest complexation of chiral carboxylic acids results in the amplification of one of the chiral conformers of a bis[Zn^{2+}(salphen)] complex, which can racemize by axis rotation (see picture). The complexation leads to a CD signal for which the sign of the first Cotton effect directly relates to the absolute configuration of the substrate and the amplitude depends on the size and nature of the substituents.



Chirality Transfer

S. J. Wezenberg, G. Salassa,
E. C. Escudero-Adán, J. Benet-Buchholz,
A. W. Kleij* ______ **713 – 716**

Effective Chirogenesis in a Bis(metallosalphen) Complex through Host–Guest Binding with Carboxylic Acids



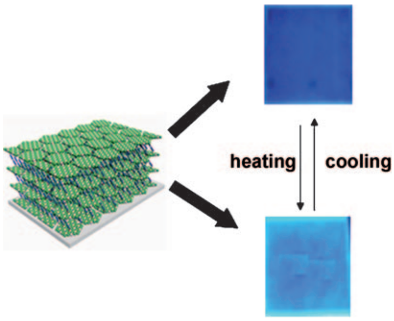
A puckered platform: Azatriquinanes and azatriquinacenes are convex, rigid molecular scaffolds for constructing tripodal ligands and calix-like structures with a basic nitrogen site at the bottom of the cavity (see space-filling structure; blue N, green Cl, red O, gray C, light gray H)

Ligand Design

M. Jevric, T. Zheng, N. K. Meher,
J. C. Fettinger, M. Mascal* ______ **717 – 719**

Azatriquinane as a Platform for Tripodal Metal Complexes and Calixiform Scaffolds

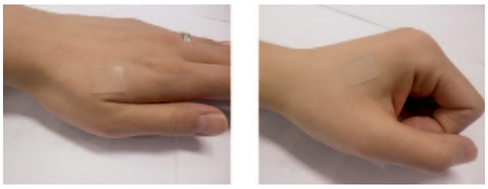
Thermochromic luminescence is characteristic of the title system, which is fabricated by layer-by-layer assembly of anionic bis(2-sulfonatostyryl)biphenyl (BSB) and positively charged layered double hydroxide (LDH) nanosheets on quartz glass. The BSB/LDH films show fast luminescent response and switching properties, including changes in color (see picture), fluorescence lifetime, and anisotropy in the range 20–100 °C.



Luminescent Thin Films

D. P. Yan, J. Lu,* J. Ma, M. Wei,*
D. G. Evans, X. Duan ______ **720 – 723**

Reversibly Thermochromic, Fluorescent Ultrathin Films with a Supramolecular Architecture



Performing under strain: Microcapsules arrayed on an elastomer substrate pumped out preloaded molecules upon mechanical stretching of the substrate as a result of a decrease in microcapsule volume. This technology could be applied to drug release, for example, from a flexible patch containing the drug through mechanical stimulation by opening and closing of the hand (see picture).

Drug Release

D. C. Hyun, G. D. Moon, C. J. Park,
B. S. Kim, Y. Xia, U. Jeong* ______ **724 – 727**

Strain-Controlled Release of Molecules from Arrayed Microcapsules Supported on an Elastomer Substrate

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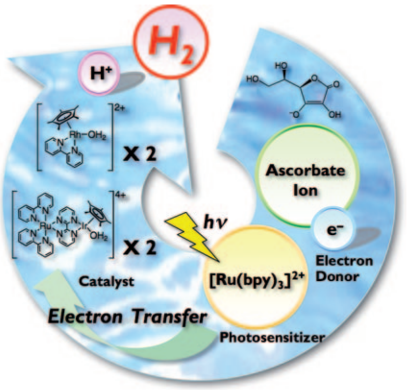
Hydrogen Production

S. Fukuzumi,* T. Kobayashi,
T. Suenobu ________ **728 – 731**

Photocatalytic Production of Hydrogen by Disproportionation of One-Electron-Reduced Rhodium and Iridium–Ruthenium Complexes in Water

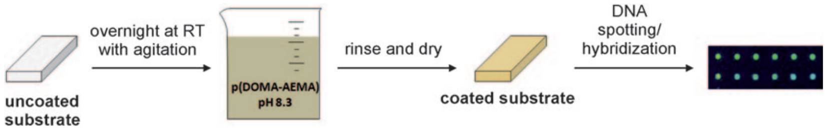


One at a time: A rhodium aqua complex and a heterodinuclear iridium–ruthenium complex (see picture) act as effective catalysts for the photocatalytic two-electron reduction of protons. Hydrogen is produced with the aid of a photosensitizer and an electron donor by disproportionation of the corresponding one-electron-reduced metal complexes.

DNA Immobilization

H. O. Ham, Z. Liu, K. H. A. Lau, H. Lee,
P. B. Messersmith* ________ **732 – 736**

Facile DNA Immobilization on Surfaces through a Catecholamine Polymer

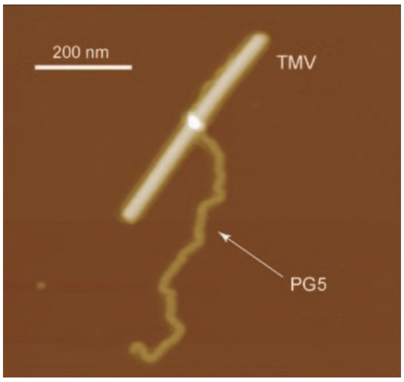


Simple immersion of noble metals, oxides, semiconductors, and synthetic polymer substrates in a mussel-mimetic catecholamine polymer solution p(DOMA-AEMA) leads to formation of a thin film on the substrate. The resulting coated substrates can bind DNA without further surface treatment. This approach provides a new entrance to DNA microarray fabrication.

Molecular Objects

B. Zhang, R. Wepf, K. Fischer, M. Schmidt,
S. Besse, P. Lindner, B. T. King, R. Sigel,
P. Schurtenberger, Y. Talmon, Y. Ding,
M. Kröger, A. Halperin,
A. D. Schlüter* ________ **737 – 740**

The Largest Synthetic Structure with Molecular Precision: Towards a Molecular Object

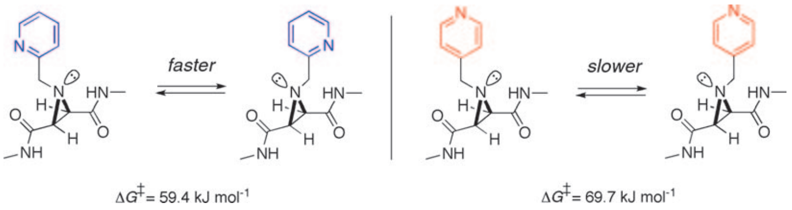


Pushing the limits: A 200 × 10^6 Da structurally defined, linear macromolecule (PG5) has a molar mass, cross-section dimension, and cylindrical shape that are comparable to some naturally occurring objects, such as amyloid fibrils or certain plant viruses. The macromolecule is resistant against flattening out on a surface; the picture shows PG5 embracing the tobacco mosaic virus (TMV).

Supramolecular Interactions

L. Giordano, C. T. Hoang, M. Shipman,*
J. H. R. Tucker,* T. R. Walsh* _ **741 – 744**

Aziridine Scaffolds for the Detection and Quantification of Hydrogen-Bonding Interactions through Transition-State Stabilization



The rate of N inversion in aziridine derivatives is found to depend upon intramolecular interactions between the aziridine N and attached functional groups, thus allowing specific noncovalent interactions to be studied. The *ortho*-substituted pyridine undergoes faster inversion as a result of the formation of an intramolecular amide–pyridine (NH···N) hydrogen bond in its transition state (see scheme).

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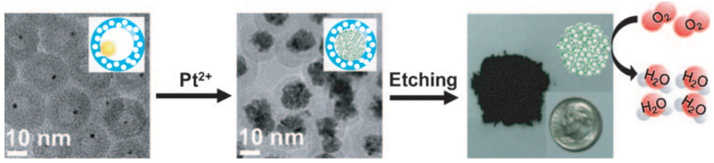
Functional Nanocrystals

K. M. Yeo, S. Choi, R. M. Anisur, J. Kim,*
I. S. Lee* ______ **745 – 748**

Surfactant-Free Platinum-on-Gold Nanodendrites with Enhanced Catalytic Performance for Oxygen Reduction

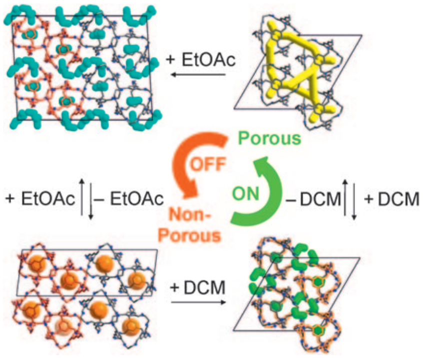


Inner value: A new high-concentration synthesis of Pt nanodendrite employs Au-seed-mediated growth inside a hollow silica nanosphere (see picture). The resulting material is substantially more active than commercial Pt black in the oxygen reduction reaction. Pt nanodendrite colloid with tunable dispersity as well as hybrid nanocrystals of various metals were also fabricated by the procedure.

Porous Molecules

J. T. A. Jones, D. Holden, T. Mitra,
T. Hasell, D. J. Adams, K. E. Jelfs,
A. Trewin, D. J. Willock, G. M. Day,
J. Bacsa, A. Steiner,
A. I. Cooper* ______ **749 – 753**

On–Off Porosity Switching in a Molecular Organic Solid

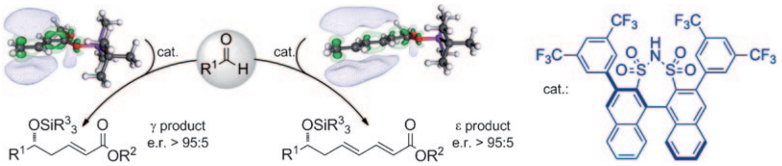


Pulling the old switcheroo: Microporosity can be switched "on" and "off" in a crystalline molecular organic solid composed of cage molecules (see scheme). The switch is facilitated by conformational flexibility in the soft organic crystal state.

Vinylogous Aldol Reaction

L. Ratjen, P. García-García, F. Lay,
M. E. Beck, B. List* ______ **754 – 758**

Disulfonimide-Catalyzed Asymmetric Vinylogous and Bisvinylogous Mukaiyama Aldol Reactions



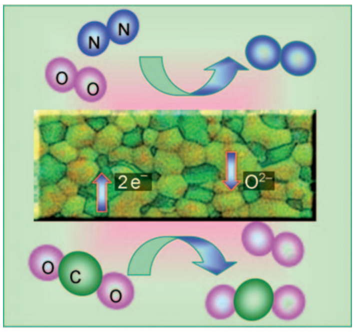
Let's talk about six! A new chiral disulfonimide catalyzed vinylogous Mukaiyama aldol addition of crotonic acid derived nucleophiles to aldehydes has been developed and the concept of vinylogy was further expanded to double vinylogous, sorbic acid derived nucleophiles. This reaction is an example of a previously unknown ε-selective bisvinylogous Mukaiyama Aldol addition that extends the substrate by six carbon atoms (see scheme).

Gas Separation

H. Luo, K. Efimov, H. Jiang, A. Feldhoff,
H. Wang,* J. Caro* ______ **759 – 763**

CO_2-Stable and Cobalt-Free Dual-Phase Membrane for Oxygen Separation

Cleaning up their act: A novel CO_2-stable and cobalt-free dual-phase membrane for oxygen separation from air has been developed that consists of 40 wt% $NiFe_2O_4$ and 60 wt% $Ce_{0.9}Gd_{0.1}O_{2-\delta}$. This membrane shows a steady oxygen permeation flux over 100 h using CO_2 as sweep gas at 1000°C.



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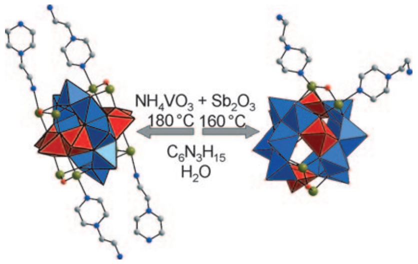
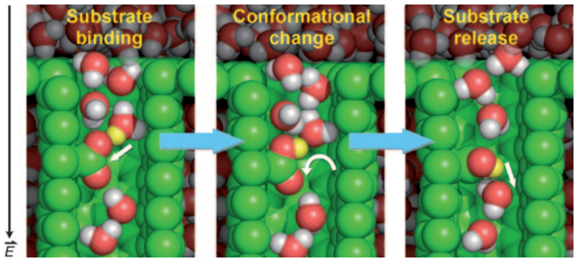
Polyoxometalates

New docking sites: Sb–N bonds formed under hydrothermal conditions enable the attachment of primary and secondary organic amines (see structures, C gray, N blue) to antimonato polyoxovanadate cluster anions (polyhedral representations; O red, Sb yellow), whose charge can be compensated by protonated amines.

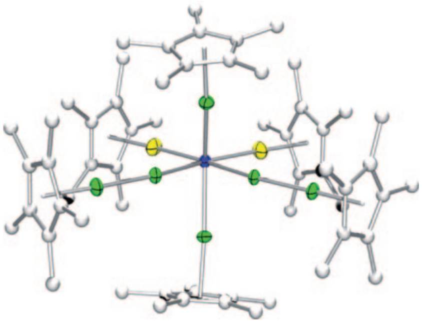


Molecular Channels



A molecular revolving door: A gated molecular proton channel that can efficiently transport protons under electric fields was designed and tested in molecular dynamics simulations. In this proton channel a rotatable chemical group, which is attached to the inner wall of the nanopore, serves as the gate and the external electric field as energy source. The binding and release of a proton leads to the opening and closing of the gate, respectively.

Main-Group Chemistry



Inseparable zinc pair: The reaction of homoleptic {GaCp*}-containing compounds [$M(GaCp^*)_4$] (M = Pd, Pt; $Cp^* = Me_5C_5$) with [$Zn_2Cp^*_2$] leads to the formation of [$M(GaCp^*)_2(ZnCp^*)_2(ZnZnCp^*)_2$] (see picture: C gray, Ga yellow, Zn green, Pd blue) and [$M(ZnCp^*)_4(ZnZnCp^*)_4$]. Both molecules involve the novel zinc ligand system {ZnZnCp*}, which contains an intact Zn–Zn bond.

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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