VIP *The following Communications have been judged by at least two referees to be "very important papers" and will be published online at www.angewandte.org soon:*

*I. Garcia-Bosch, A. Company, C. W. Cady, S. Styring, W. R. Browne, X. Ribas, M. Costas**
Evidence for a Precursor Complex in C–H Hydrogen-Atom-Transfer Reactions Mediated by a Manganese(IV) Oxo Complex

*G. N. Newton, S. Yamashita, K. Hasumi, J. Matsuno, N. Yoshida, M. Nihei, T. Shiga, M. Nakano, H. Nojiri, W. Wernsdorfer, H. Oshio**
Redox-Controlled Optimization of the Magnetic Properties of Keggin-Type {Mn_{13}} Clusters

J. J. Murphy, A. Quintard, P. McArdle, A. Alexakis, J. C. Stephens**
Asymmetric Organocatalytic 1,6-Conjugate Addition of Aldehydes to Dienic Sulfones

*S. Zhou, S. Fleischer, K. Junge, M. Beller**
Cooperative Transition-Metal and Chiral Brønsted Acid Catalysis: Enantioselective Hydrogenation of Imines to Amines

*J. M Lee, W. Shim, J.-S. Noh, W. Lee**
Highly Mobile Thin Films on an Elastomeric Substrate as Gas Sensors: Palladium-Based Nanogap Hydrogen-Gas Sensors

Editorial

Author Profile

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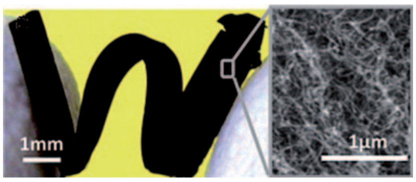
Contents

Highlights

Nanotechnology

L. Dai* ______________ **4744 – 4746**

Carbon Nanotube Rubber Stays Rubbery in Extreme Temperatures



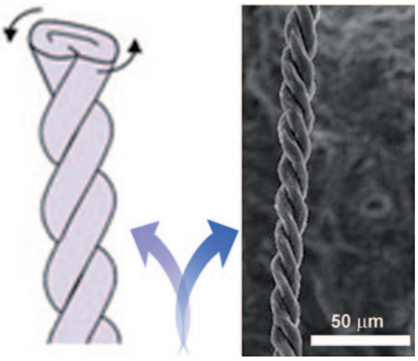
Extreme elastic: A new viscoelastic material has recently been developed from carbon nanotubes (CNT rubber; see picture). This material is similar to silicone rubber but maintains its viscoelasticity from −196 to 1000 °C in an oxygen-free environment. CNT rubber is promising for a wide range of applications, including use in high-vacuum furnaces and even aerospace vehicles that travel to the cold interstellar space.

Inorganic Double Helices

D. S. Su* ______________ **4747 – 4750**

Inorganic Materials with Double-Helix Structures

Two different methods recently yielded inorganic materials with double-helix structures: Silicon microtubes (see picture) formed when high inner pressure forced NaSi melt through an opening in the surface of a disc, and carbon nanotubes were prepared when plates of layered double hydroxide coated with active catalyst particles were used as substrate. These reports open the door for the application of double-helical inorganic materials in chemistry and biology.



Essays

History of Chemistry

C. Friedrich,* H. Remane* _ **4752 – 4758**

Marie Curie: Recipient of the 1911 Nobel Prize in Chemistry and Discoverer of the Chemical Elements Polonium and Radium

Déjà vu all over again: When the Polish-born scientist Marie Skłodowska-Curie traveled from Paris to Stockholm in December 1911 to receive the Nobel Prize in Chemistry, it was the second time that she had been recognized with the sciences' top honor; she had already received the Nobel Prize in Physics in 1903. Madame Curie's contributions included her pioneering investigations of radioactivity and the discovery of the radioactive elements radium and polonium.

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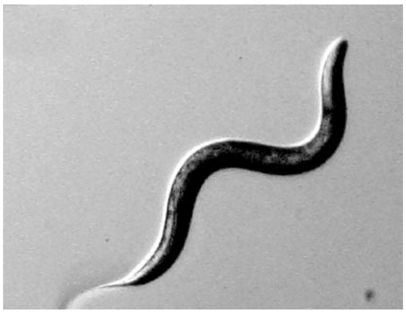
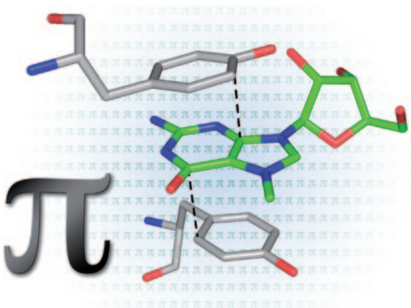
Minireviews

Give me an H: The sophisticated synergism of the two concepts of asymmetric catalysis and atom economy offers a truly efficient synthetic strategy for the production of requisite chemical entities with high enantiomeric purity. Recent advances in this field are highlighted, with a particular emphasis on catalytic asymmetric reactions that proceeds under proton-transfer conditions.

Reviews



What makes a living thing alive? *Caenorhabditis elegans* is a popular model organism for genetic research. Although the worm (see picture) is a simple organism, it still exhibits many of the complex phenomena found in higher organisms, including aging, behavior, cognition, and susceptibility to disease. This review provides an introduction to worm biology and argues that *C. elegans* is a useful system for the examination of complex biological phenomena from a chemical perspective.



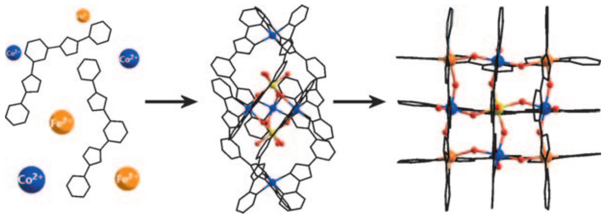
The role of aromatic rings in chemical and biological recognition is explored with a multidimensional approach, which includes synthetic host–guest studies, small-molecule crystallography, investigations with biological receptors and biostructural analysis, and database mining in the Cambridge Structural Database (CSD) and the Protein Data Bank (PDB). Topics covered are arene–arene, perfluoroarene–arene, S⋯aromatic, cation–π, and anion–π interactions, as well as hydrogen bonding to π surfaces. Shown here is the complexation of a cationic 7-methylguanosine ring in the human nuclear cap-binding complex.

Communications

Self-Assembly

G. N. Newton, T. Onuki, T. Shiga,
M. Noguchi, T. Matsumoto,
J. S. Mathieson, M. Nihei, M. Nakano,
L. Cronin,* H. Oshio* ______ **4844 – 4848**

Mapping the Sequential Self-Assembly of Heterometallic Clusters: From a Helix to a Grid

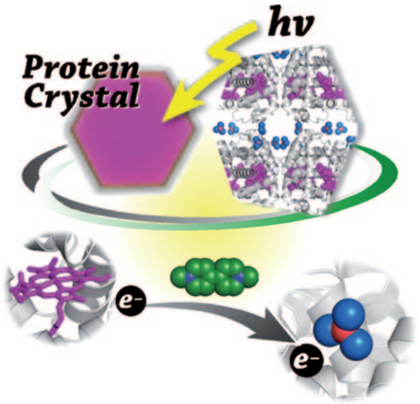


Two iron/cobalt mixed-valence clusters were synthesized using multidentate polypyridyl ligands (see picture: Fe^{II} orange, Fe^{III} yellow, Co^{II} blue, O red). A heptanuclear helix and a [3 × 3] grid complex form depending on the metal ion stoichiometry. ESI-MS measurements suggest that the helical cluster is an intermediate to the grid complex.

Protein Engineering

T. Koshiyama, M. Shirai, T. Hikage,
H. Tabe, K. Tanaka, S. Kitagawa,*
T. Ueno* ______ **4849 – 4852**

Post-Crystal Engineering of Zinc-Substituted Myoglobin to Construct a Long-Lived Photoinduced Charge-Separation System

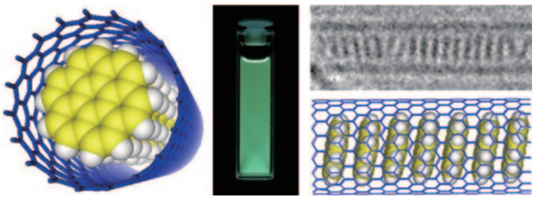


An artificial photoinduced electron-transfer system has been constructed by accumulating redox cofactors in a myoglobin crystal. The crystal space allowed the construction of a site-specific dense array, and the different redox cofactors had low reorganization energies, as observed in native photosynthesis. A charge-separated state with a half-life 2800 times longer than that of one previously reported in organic solution was achieved.

Carbon Nanotubes

T. Okazaki,* Y. Iizumi, S. Okubo,
H. Kataura, Z. Liu, K. Suenaga, Y. Tahara,
M. Yudasaka, S. Okada,
S. Iijima ______ **4853 – 4857**

Coaxially Stacked Coronene Columns inside Single-Walled Carbon Nanotubes



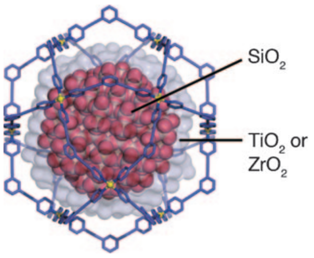
Pancakes in tubes: Coronenes, a class of planar π-conjugated molecules, organize in 1D structures when using single-walled carbon nanotubes (SWCNTs) as templates (see picture). Coronene columns with coaxial stacking in SWCNTs exhibit characteristic fluorescence spectra that significantly differ from those of isolated coronene molecules and three-dimensional crystals and that are related to their well-ordered 1D structure.

Core–Shell Nanoparticles

K. Suzuki, K. Takao, S. Sato,
M. Fujita* ______ **4858 – 4861**

The Precise Synthesis and Growth of Core–Shell Nanoparticles within a Self-Assembled Spherical Template

The synthesis within: Highly monodisperse core–shell nanoparticles (SiO_2/TiO_2, SiO_2/ZrO_2) with a polydispersity index of < 1.01 and a diameter of 3 nm were synthesized within structurally exact self-assembled spherical Pd complexes that act as three-dimensional templates (see picture; gray spheres: TiO_2 or ZrO_2, purple spheres: SiO_2, yellow spheres: Pd).



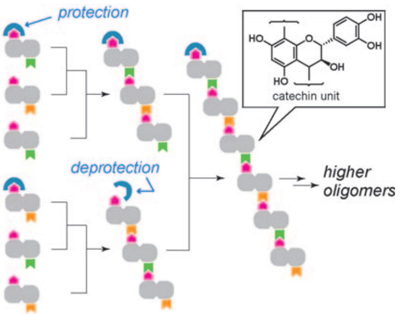

KNSK

Oligocatechins

K. Ohmori, T. Shono, Y. Hatakoshi, T. Yano, K. Suzuki* ———— **4862 – 4867**

Integrated Synthetic Strategy for Higher Catechin Oligomers

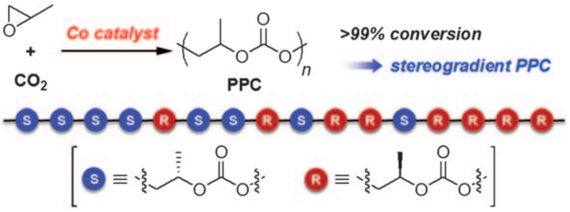
Chain linked: An integrated strategy for the rapid assembly of catechin oligomers has been developed, thus enabling access to higher oligomers ranging from 6- to 24-mers. The method exploits an orthogonal, block-type coupling strategy (see scheme).



Polycarbonate Synthesis

K. Nakano, S. Hashimoto, M. Nakamura, T. Kamada, K. Nozaki* ——— **4868 – 4871**

Stereocomplex of Poly(propylene carbonate): Synthesis of Stereogradient Poly(propylene carbonate) by Regio- and Enantioselective Copolymerization of Propylene Oxide with Carbon Dioxide

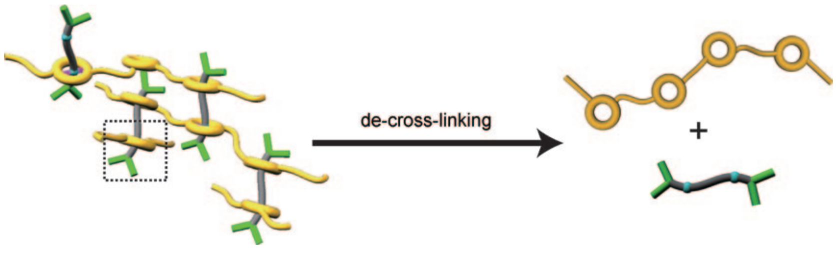


Cobalt(III)–salen complexes with ammonium arm(s) have been used to catalyze the title transformation. Higher thermal decomposition temperatures than those of typical poly(propylene carbonate)s (PPCs) were observed for the stereogradient and the stereoblock PPCs obtained by this method.

Supramolecular Gels

Y. Kohsaka, K. Nakazono, Y. Koyama, S. Asai, T. Takata* ———— **4872 – 4875**

Size-Complementary Rotaxane Cross-Linking for the Stabilization and Degradation of a Supramolecular Network



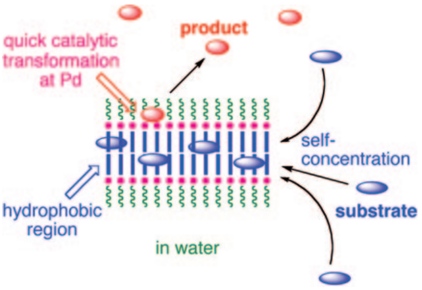
Break it down: Gels formed from rotaxane cross-linkers with end groups that are size-complementary to the macrocyclic cavity of wheel components (see picture) were prepared. The network structure was maintained in polar organic solvents or in the presence of a base to prevent hydrogen bonding. Anion exchange enabled the selective and efficient de-cross-linking of the gels.

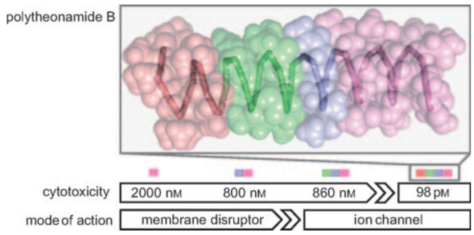
Vesicular Catalyst

G. Hamasaka, T. Muto, Y. Uozumi* ———— **4876 – 4878**

Molecular-Architecture-Based Administration of Catalysis in Water: Self-Assembly of an Amphiphilic Palladium Pincer Complex

Testing the waters: An architecture-based system for transition-metal catalysis consisting of a self-assembled amphiphilic pincer palladium complex bearing hydrophilic and hydrophobic chains has been developed. Self-assembly of the bilayer vesicles of the complex, concentration of the organic substrates within the hydrophobic region of the bilayer membrane, and catalytic transformation of the substrate all occur sequentially in water (see scheme).





Longer is better: Polytheonamide B, the largest nonribosomal linear peptide identified to date, is a transmembrane channel-forming peptide. Nine of its substructures have now been chemically synthesized. The membrane-disrupting and ion-channel-forming sequences as well as the cytotoxicity-enhancing sequence have been identified.

Natural Products

S. Matsuoka, N. Shinohara, T. Takahashi, M. Iida, M. Inoue* ——— **4879 – 4883**

Functional Analysis of Synthetic Substructures of Polytheonamide B: A Transmembrane Channel-Forming Peptide

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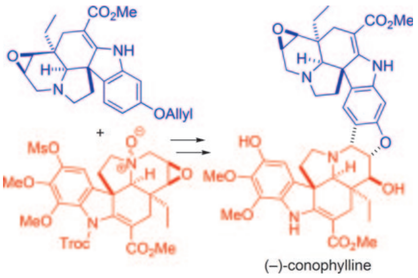
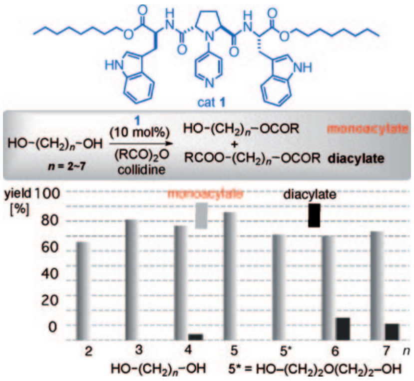
Double take: The total syntheses of the title compounds were accomplished in a highly convergent manner. The approach features the regio- and diastereoselective Polonovski–Potier-type reaction for the coupling of two aspidosperma skeletons and the formation of the dihydrofuran ring. Troc = 2,2,2-trichloroethoxycarbonyl.



Natural Products Synthesis

Y. Han-ya, H. Tokuyama, T. Fukuyama* ——— **4884 – 4887**

Total Synthesis of (−)-Conophylline and (−)-Conophyllidine



Matters of length: Exclusive or predominant monoacylation of 1,*n*-linear diols took place in the presence of **1** when the chain length of linear diols was equal to or shorter than five carbon atoms. The chemoselectivity of acylation between 1,5-pentanediol ($n = 5$) and 1,6-hexanediol ($n = 6$) was 5.2, and that between 1,5-pentanediol and its monoacylate was 113.

Chemoselective Catalysis

K. Yoshida, T. Furuta, T. Kawabata* ——— **4888 – 4892**

Organocatalytic Chemoselective Monoacylation of 1,*n*-Linear Diols

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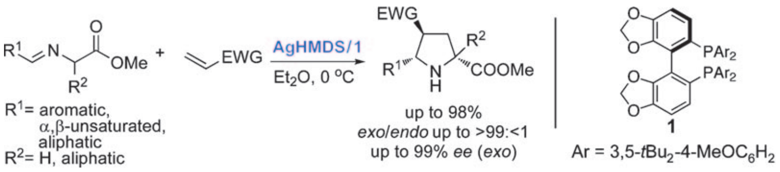


Silver lining: Highly *exo*-selective asymmetric [3+2] cycloaddition of α-amino ester Schiff bases with activated olefins proceeds in the presence of AgHMDS/**1**. The α-amino ester Schiff bases including those derived from aliphatic imines successfully reacted to afford the corresponding pyrrolidine derivatives in high yield with high *exo*- and enantioselectivities. EWG = electron-withdrawing group, HMDS = hexamethyldisilazide.

Asymmetric Catalysis

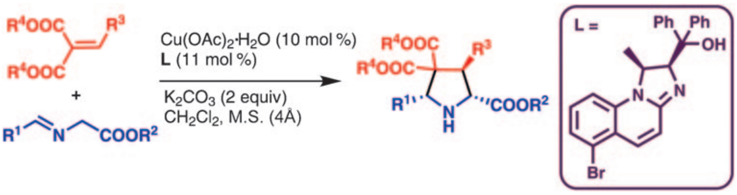
Y. Yamashita, T. Imaizumi, S. Kobayashi* ——— **4893 – 4896**

Chiral Silver Amide Catalyst for the [3+2] Cycloaddition of α-Amino Esters to Olefins

Copper Catalysis

M. Wang, Z. Wang, Y.-H. Shi, X.-X. Shi, J. S. Fossey, W.-P. Deng* ___ **4897 – 4900**

An *exo*- and Enantioselective 1,3-Dipolar Cycloaddition of Azomethine Ylides with Alkylidene Malonates Catalyzed by a N,O-Ligand/Cu(OAc)$_2$-Derived Chiral Complex

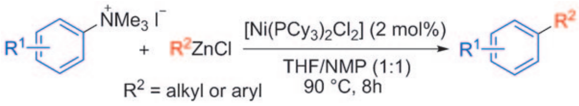


An *exo*-lent catalyst: An N,O-ligand/Cu-(OAc)$_2$ derived chiral complex is an excellent catalyst for inducing asymmetry in the catalytic enantioselective 1,3-dipolar cycloadditions of azomethine ylides with various alkylidene malonates. A series of highly functionalized *exo*-pyrrolidines were obtained in excellent yields (80–99 %) and enantioselectivities (91–99 % *ee*; see scheme; M.S.: molecular sieve).

C—N Activation

L.-G. Xie, Z.-X. Wang* ___ **4901 – 4904**

Nickel-Catalyzed Cross-Coupling of Aryltrimethylammonium Iodides with Organozinc Reagents

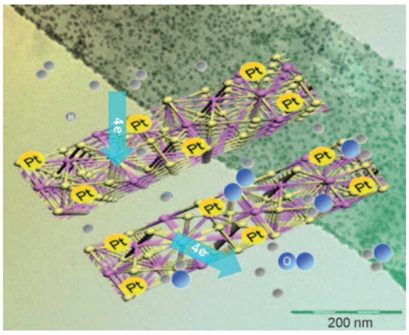


Broad scope and good tolerance: An efficient cross-coupling of aryltrimethylammonium iodide salts with aryl-, methyl-, and benzylzinc chlorides catalyzed by [Ni(PCy$_3$)$_2$Cl$_2$] has been achieved (see scheme). The reaction involves cleavage of the C—N bond and displays broad substrate scope and good functional group tolerance. NMP = *N*-methylpyrrolidine.

Fuel-Cell Catalysts

M.-R. Gao, Q. Gao, J. Jiang, C.-H. Cui, W.-T. Yao, S. H. Yu* ___ **4905 – 4908**

A Methanol-Tolerant Pt/CoSe$_2$ Nanobelt Cathode Catalyst for Direct Methanol Fuel Cells

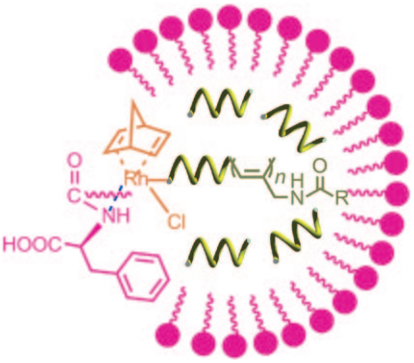


High alcohol tolerance: A Pt/CoSe$_2$ nanobelt cathode catalyst for direct methanol fuel cells was prepared by in situ loading of Pt nanoparticles on CoSe$_2$/diethylenetriamine nanobelts through a polyol reduction approach. The resulting functionalized nanobelts (see picture) exhibit high activity in the four-electron oxygen reduction reaction and are highly methanol tolerant.

Chirality

X. F. Luo, J. P. Deng,* W. T. Yang ___ **4909 – 4912**

Helix-Sense-Selective Polymerization of Achiral Substituted Acetylenes in Chiral Micelles

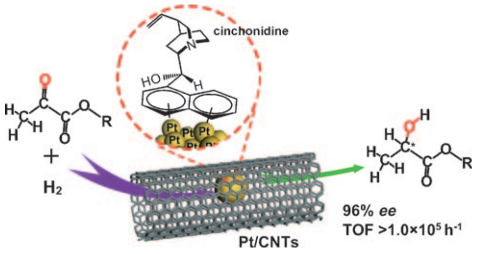


Hold that shape: An achiral acetylene underwent helix-sense-selective polymerization in chiral micelles consisting of [{(nbd)RhCl}$_2$] (nbd = 2,5-norbornadiene) and dodecylphenylalanine as a chiral emulsifier to produce optically active helical polymers and polymeric emulsions.

Asymmetric Hydrogenation

Z. J. Chen, Z. H. Guan, M. R. Li,
Q. H. Yang, C. Li* —— 4913 – 4917

Enhancement of the Performance of a Platinum Nanocatalyst Confined within Carbon Nanotubes for Asymmetric Hydrogenation



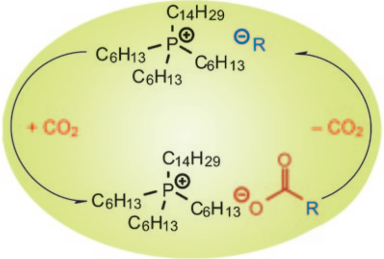
Going through the proper channels: A highly active and enantioselective heterogeneous asymmetric catalyst was fabricated by confining Pt nanoparticles that are modified with cinchonidine within the channels of carbon nanotubes. A high turnover frequency (TOF) and enantioselectivity are achieved when using this catalyst for the asymmetric hydrogenation of α-ketoesters.

Carbon Capture

C. Wang,* X. Luo, H. Luo, D. Jiang, H. Li,
S. Dai* —— 4918 – 4922

Tuning the Basicity of Ionic Liquids for Equimolar CO_2 Capture

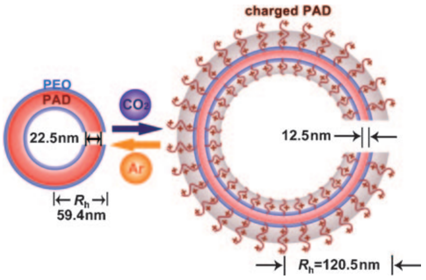
What a catch! Basic ionic liquids (ILs) based on a phosphonium hydroxide derivative can be tuned for CO_2 capture by varying the weak proton donors, which have different pK_a values. The stability, absorption capacity, and absorption enthalpy of the ILs could be easily tuned: the best IL for CO_2 capture has good stability (> 300 °C), energy saving (ca. 56 kJ mol^{-1}), and equimolar absorption capability.



Tunable Vesicles

Q. Yan, R. Zhou, C. K. Fu, H. J. Zhang,
Y. W. Yin, J. Y. Yuan* —— 4923 – 4927

CO_2-Responsive Polymeric Vesicles that Breathe

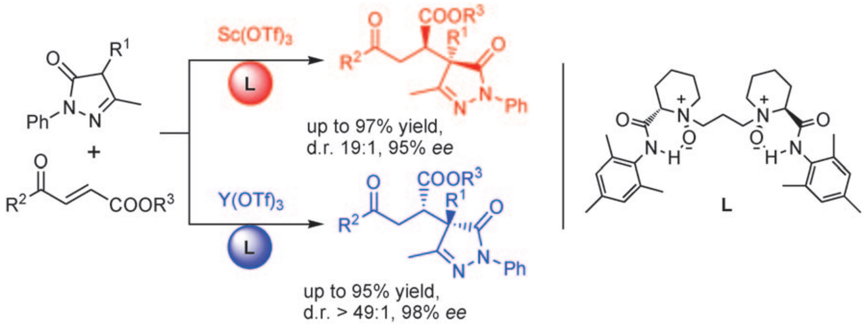


Vesicles breathe CO_2! A new type of vesicle that self-assembles from amidine-containing diblock copolymer displays “breathing” features. Treating the vesicles with CO_2 or Ar can reversibly tune the expansion and contraction of the vesicular volume, as if a bubble is breathing (see picture, PAD = poly((N-amidino)dodecyl acrylamide), PEO = poly(ethylene oxide), R_h = hydrodynamic radius).

Asymmetric Synthesis

Z. Wang, Z. G. Yang, D. H. Chen,
X. H. Liu, L. L. Lin,
X. M. Feng* —— 4928 – 4932

Highly Enantioselective Michael Addition of Pyrazolin-5-ones Catalyzed by Chiral Metal/*N*,*N*′-Dioxide Complexes: Metal-Directed Switch in Enantioselectivity

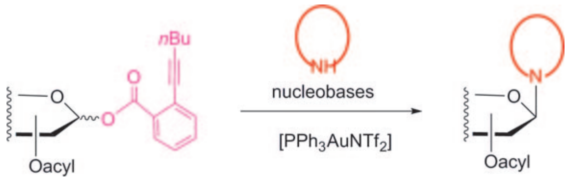


Make the switch: The first example of a switch in enantioselectivity in the asymmetric Michael addition of pyrazolin-5-ones to 4-oxo-4-arylbutenoates that is controlled by the metal center of the catalyst is reported. By using the same *N*,*N*′-dioxide ligand **L** with different metals the respective enantiomers of various 4-substituted 5-pyrazolone derivatives were obtained. Tf = trifluoromethanesulfonyl.

Nucleoside Synthesis

Q. Zhang, J. Sun,* Y. Zhu, F. Zhang, B. Yu* ________ **4933 – 4936**

An Efficient Approach to the Synthesis of Nucleosides: Gold(I)-Catalyzed N-Glycosylation of Pyrimidines and Purines with Glycosyl *ortho*-Alkynyl Benzoates

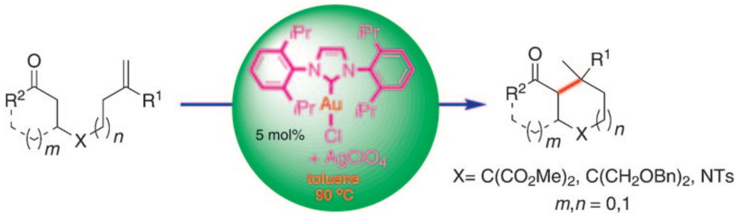


Persuaded with gold: The title reaction in the presence of [Ph$_3$PAuNTf$_2$] (Tf = trifluoromethanesulfonyl) led conveniently to the corresponding nucleosides with excellent regioselectivity (see scheme). Even purine derivatives underwent this transformation owing to the mild conditions, which enabled the use of protecting groups that would not usually be compatible with N-glycosylation conditions.

Gold Catalysis

Y.-P. Xiao, X.-Y. Liu, C.-M. Che* ________ **4937 – 4941**

Efficient Gold(I)-Catalyzed Direct Intramolecular Hydroalkylation of Unactivated Alkenes with α-Ketones

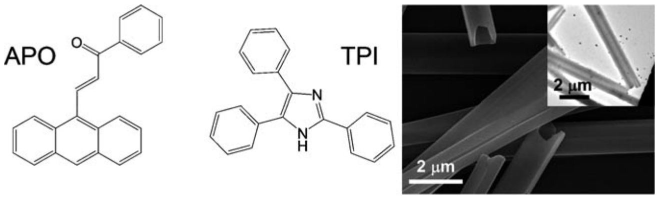


Easy access by gold: The Au^I-catalyzed title reaction provides simple and efficient access to highly substituted cyclic compounds with excellent yields and good diastereoselectivity. This transformation constitutes the first example of transition-metal-catalyzed direct hydroalkylation of unactivated alkenes with simple α-ketone groups in the absence of additive reagents. Bn = benzyl, Ts = tosyl.

Self-Assembly

Q. Liao, H. B. Fu,* C. Wang, J. N. Yao* ________ **4942 – 4946**

Cooperative Assembly of Binary Molecular Components into Tubular Structures for Multiple Photonic Applications



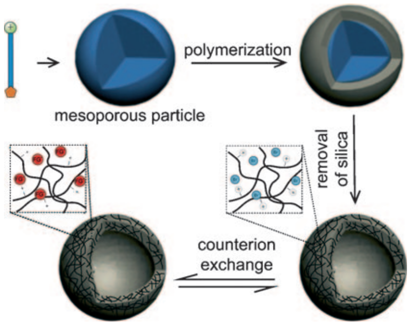
Take the tube: Tubular structures can be fabricated by the cooperative self-assembly of the binary molecular components TPI and APO (see picture). This method can also be used to make a single binary tube capable of performing multiple photonic functions, such as an annular microcavity waveguide, waveguide modulation, and a controllable waveguide switch.

Polymer Capsules

C. Lin, W. Zhu, H. Yang, Q. An, C. Tao, W. Li, J. Cui, Z. Li, G. Li* ___ **4947 – 4951**

Facile Fabrication of Stimuli-Responsive Polymer Capsules with Gated Pores and Tunable Shell Thickness and Composite

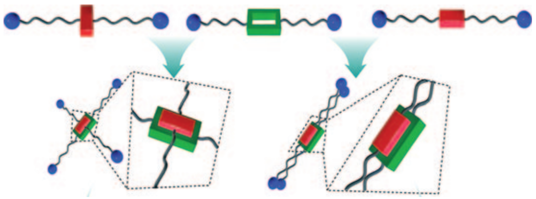
A hollow victory: A multifunctional polymerizable ionic liquid (IL)-based surfactant is used in the synthesis of silica spheres with tunable size. Hollow capsules with a mesoporous polymer-network shell and pendant IL moieties are then fabricated by template synthesis (see picture). The pore size of the shell is reversibly adjustable by exchange of counteranions (blue and red circles) of the pendant IL units.



Self-Assembly

K. Liu, C. Wang, Z. B. Li,
X. Zhang* ——— **4952 – 4956**

Superamphiphiles Based on Directional Charge-Transfer Interactions: From Supramolecular Engineering to Well-Defined Nanostructures

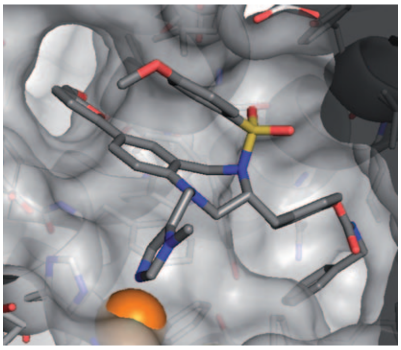


Give and take: X- or H-shape superamphiphiles form on the basis of directional charge-transfer complexes and lead to the formation of one-dimensional nanorods and two-dimensional nanosheets, respectively (see picture, blue: pyridinium ion, red: naphthalene derivatives, green: naphthalene diimide). The superstructures form after elaborate tuning of the building block structures.

Inhibitor Design

R. S. Bon, Z. Guo, E. A. Stigter, S. Wetzel,
S. Menninger, A. Wolf, A. Choidas,
K. Alexandrov, W. Blankenfeldt,
R. S. Goody, H. Waldmann* **4957 – 4961**

Structure-Guided Development of Selective RabGGTase Inhibitors

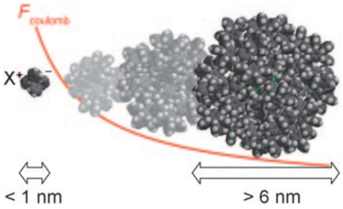


Designing for selectivity: A combination of protein crystal-structure analysis, virtual screening, and synthetic chemistry has been used to develop noncytotoxic inhibitors of RabGGTase (IC_{50}: 42 nM for the example shown; red O, blue N, yellow S) that are selective over FTase and GGTase I. Furthermore, the inhibitors display cellular activity and inhibit cancer cell proliferation.

Dendronized Anions

D. Türp, M. Wagner, V. Enkelmann,
K. Müllen* ——— **4962 – 4965**

Synthesis of Nanometer-Sized, Rigid, and Hydrophobic Anions



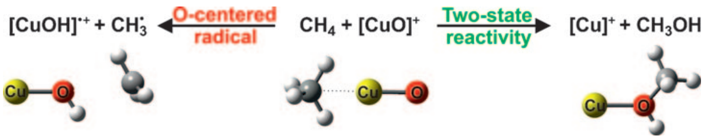
Size matters: The strategy of divergent dendronization allows for the synthesis of unprecedented large, rigid, and bulky anions (see picture). Their size, density, and chemical nature of surface can be tailored to obtain more hydrophobic, less nucleophilic, and more weakly coordinating anions.

Methane Activation

VIP

N. Dietl, C. van der Linde, M. Schlangen,
M. K. Beyer, H. Schwarz* — **4966 – 4969**

Diatomic $[CuO]^+$ and Its Role in the Spin-Selective Hydrogen- and Oxygen-Atom Transfers in the Thermal Activation of Methane

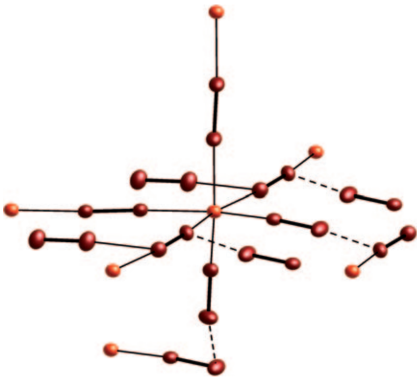


The final piece in an intriguing puzzle: More than ten years after its theoretical prediction to serve as a powerful converter of methane to methanol, the bare $[CuO]^+$ cation has been successfully generated in the gas phase. A combination of mass spectrometry and DFT calculations revealed the crucial role of two-state reactivity and oxygen-centered radicals in the selectivity in the oxidation of methane.

Polybromides

M. Wolff, J. Meyer, C. Feldmann* ———— 4970 – 4973

$[C_4MPyr]_2[Br_{20}]$: Ionic-Liquid-Based Synthesis of a Three-Dimensional Polybromide Network



A Br stunt: The first three-dimensional polybromide network is found in $[C_4MPyr]_2[Br_{20}]$ (see structure of the $[Br_{20}]^{2-}$ network). The compound was obtained in an ionic-liquid-based synthesis—and with 18:2 contains the highest Br^0:Br^- ratio ever observed.

Coordination Chemistry

X. Wurzenberger, H. Piotrowski, P. Klüfers* ———— 4974 – 4978

A Stable Molecular Entity Derived from Rare Iron(II) Minerals: The Square-Planar High-Spin-d^6 $Fe^{II}O_4$ Chromophore

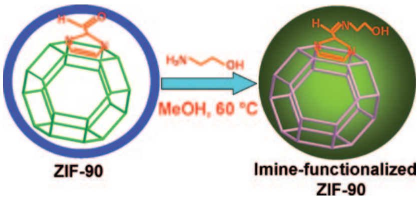
The odd couple: The red chromophore of both the rare silicate mineral gillespite ($BaFeSi_4O_{10}$; see picture, left, on sanbornite, $BaSi_2O_5$) and the bis(*meso*-oxolanediolato)ferrate(II) anion in its lithium salt (right) is the square-planar, high-spin-d^6 ferrous center. The unusual combination of structure and spin state for the FeO_4 moiety is not forced by a rigid environment of the central metal, but rather results from an intrinsically stable entity.

Selective Membranes

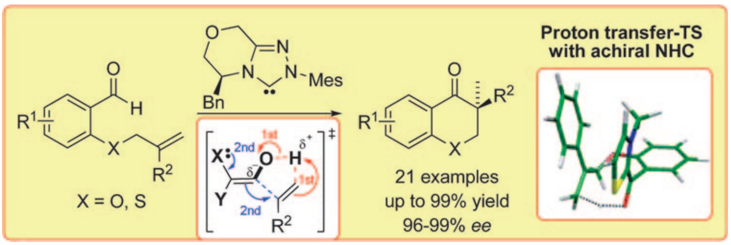
A. Huang,* J. Caro* ———— 4979 – 4982

Covalent Post-Functionalization of Zeolitic Imidazolate Framework ZIF-90 Membrane for Enhanced Hydrogen Selectivity

MOF constrictor: Covalent modification of a ZIF-90 membrane was achieved by imine condensation of the aldehyde groups of the metal–organic framework (MOF) linker by ethanolamine (see picture). The modification leads to constriction of the pore apertures and prevents unselective permeation through defect pores, thus improving gas separation performance. For a H_2/CO_2 mixture, selectivity can be increased from 7.3 to 62.5.



Asymmetric Organocatalysis



NHC-catalysis proto(n)type: The title reaction produces 21 different chroman-4-one-type products in good yields and excellent enantioselectivities, in each case building up a new all-carbon quaternary stereocenter (see scheme). Based on DFT calculations a mechanistic scenario involving proton transfer, possible transition states, and a mode of enantioinduction is presented.

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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