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:

*K. W. Eberhardt, C. L. Degen, A. Hunkeler, B. H. Meier**
One- and Two-Dimensional NMR Spectroscopy with a Magnetic-Resonance Force Microscope

*S. Wan, J. Guo, J. Kim, H. Ihee, D. Jiang**
A Belt-Shaped, Blue-Luminescent, and Semiconducting Covalent Organic Framework

*R. E. Jilek, M. Jang, E. D. Smolensky, J. D. Britton, J. E. Ellis**
Structurally Distinct Homoleptic Anthracene Complexes $[M(C_{14}H_{10})_3]^{2-}$, M=Ti, Zr, Hf: Tris(arene) Complexes for a Triad of Transition Metals

M. Inoue, N. Lee, K. Miyazaki, T. Usuki, S. Matsuoka, M. Hirama**
Critical Importance of the Nine-Membered F Ring of Ciguatoxin for Potent Bioactivity: Total Synthesis and Biological Evaluation of F-Ring-Modified Analogues

*J. Steill, J. Zhao, C.-K. Siu, Y. Ke, U. H. Verkerk, J. Oomens, R. C. Dunbar, A. C. Hopkinson, K. M. Siu**
Structure of the Observable Histidine Radical Cation in the Gas Phase: a Captodative α Radical Ion

*Z. Deng, I. Bald, E. Illenberger, M. A. Huels**
Bond- and Energy-Selective Carbon Abstraction from D-Ribose by Hyperthermal Nitrogen Ions

*J. Spielmann, F. Buch, S. Harder**
Early Main-Group Metal Catalysts for the Hydrogenation of Alkenes with Hydrogen

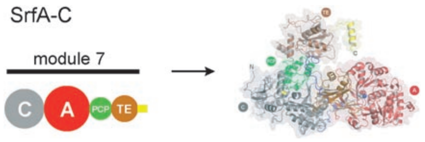
C. Schäffer, A. Merca, H. Bögge, A. M. Todea, M. L. Kistler, T. Liu, R. Thouvenot, P. Gouzerh, A. Müller**
Unprecedented and Differently Applicable Pentagonal Units in a Dynamic Library: A Keplerate of the Type $\{(W)W_5\}_{12}\{Mo_2\}_{30}$

Books

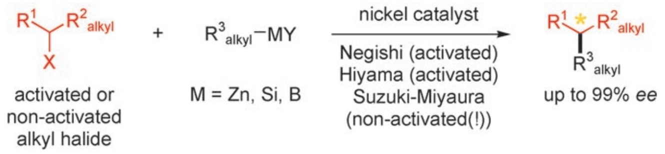
Highlights

Biosynthesis

Domain event: Non-ribosomal peptide synthetases (NRPSs) are gigantic molecular machines which assemble natural products of high structural complexity in bacteria and fungi. A team of researchers has recently solved the first crystal structure of an entire module of domains from an NRPS system, a breakthrough achievement for the field.



Asymmetric Catalysis



A new star is born: First reports on asymmetric cross-coupling reactions of racemic activated and non-activated secondary alkyl halides highlight the particular suitability of nickel catalysts for these reactions. Impressively high enantioselectivities were observed for Negishi, Hiyama, and Suzuki–Miyaura cross-coupling reactions (see scheme). The results can be expected to change retrosynthetic thinking.

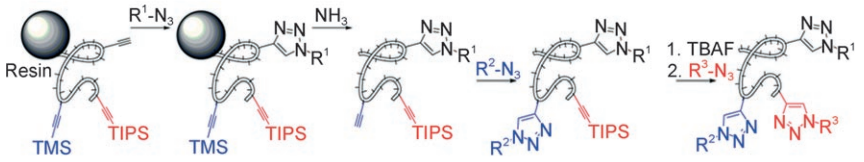
Contents

Minireviews

DNA Click Chemistry

P. M. E. Gramlich, C. T. Wirges,
A. Manetto, T. Carell* ——— **8350 – 8358**

Postsynthetic DNA Modification through the Copper-Catalyzed Azide–Alkyne Cycloaddition Reaction



Labeling of oligonucleotides is of paramount importance for DNA-based nanotechnology and diagnostic applications. The copper-catalyzed reaction of azides with alkynes is currently revolutionizing the way in which these labeled oligonucleotides are synthesized. TBAF = tetrabutylammoniumfluoride, TIPS = triisopropylsilyl, TMS = trimethylsilyl.

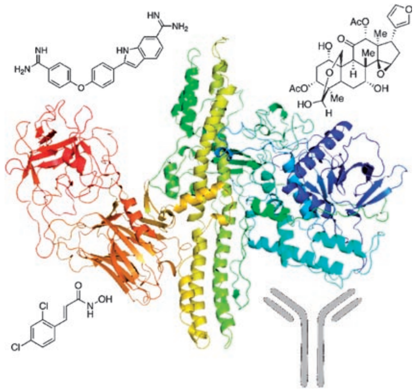
Reviews

Medicinal Chemistry

B. Willis, L. M. Eubanks, T. J. Dickerson,*
K. D. Janda* ——————— **8360 – 8379**

The Strange Case of the Botulinum Neurotoxin: Using Chemistry and Biology to Modulate the Most Deadly Poison

Two sides to the story: Botulinum neurotoxin is among the most lethal species known to man, yet has profound clinical utility. Through the combination of recent structural, biochemical, and biophysical studies, new insights into toxin action have been achieved, leading to a range of small molecules, peptides, and antibodies for treating botulism.

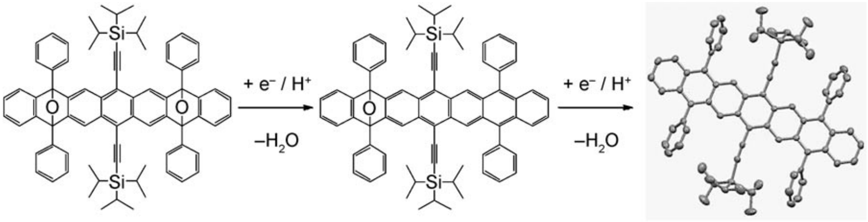


Communications

Oligoacenes

D. Chun, Y. Cheng, F. Wudl* **8380 – 8385**

The Most Stable and Fully Characterized Functionalized Heptacene



Lucky seven: Crystals of heptacene, which consists of seven linearly fused benzene rings, remain stable for at least 21 days in mineral oil and 24 h in degassed solution when the oligoacene is functionalized with phenyl and triisopropylsilylethynyl groups (see scheme). The right combination of functionalities makes this seven-ring system the most stable functionalized heptacene synthesized to date.

For the USA and Canada:
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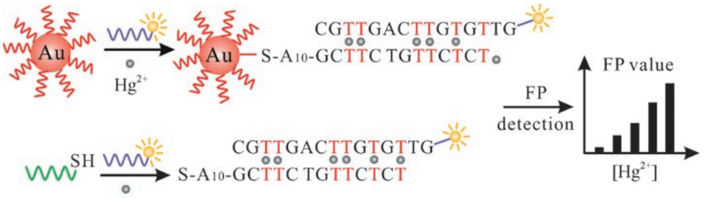
Sensors

B. C. Ye,* B. C. Yin ________ **8386 – 8389**

Highly Sensitive Detection of Mercury(II) Ions by Fluorescence Polarization Enhanced by Gold Nanoparticles

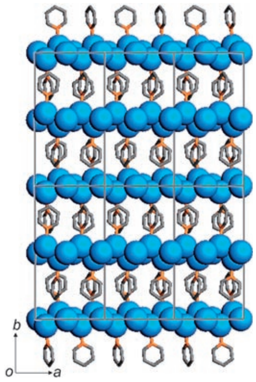


Going for gold! Thymine–Hg^{2+}–thymine coordination is used as the basis for a selective assay that detects Hg^{2+} ions with a limit of up to 0.2 parts per billion. The detection is based on the enhancement of fluorescence polarization (FP) by gold nanoparticles (see picture). The overall assay can be carried out at room temperature within only ten minutes, making it suitable for high-throughput routine applications in environment and food samples.

Metal–Metal Interactions

H. R. Moon, C. H. Choi,
M. P. Suh* ________ **8390 – 8393**

A Stair-Shaped Molecular Silver(0) Chain

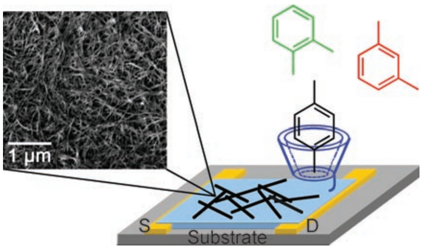


Bound in chains: The molecular Ag^0 chain $[Ag_4py_2]_n$ (py = C_5H_5N) is formed from two covalently linked infinite zigzag chains of Ag, in which Ag–Ag bonds alternate between long and short (see picture; blue Ag, gray C, orange N). Theoretical calculations indicate that partially positively (+0.35) and negatively (−0.30) charged Ag atoms are alternately located along the chain, which has a bandgap of 4.1 eV.

Sensors

F. Wang, Y. Yang,
T. M. Swager* ________ **8394 – 8396**

Molecular Recognition for High Selectivity in Carbon Nanotube/Polythiophene Chemiresistors

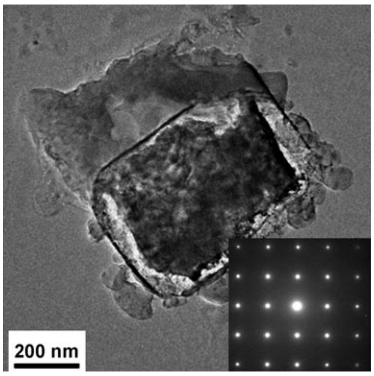


Nanotube detects isomers: A chemiresistive material based on carbon nanotubes wrapped with a calixarene-substituted polythiophene displays a selective and sensitive response to xylene isomers (see picture), as demonstrated by conductance changes, quartz crystal microbalance, and fluorescence studies. This demonstrates the promise of low-cost, real-time sensors utilizing host–guest chemistry.

Zeolite Crystallization

J. F. Yao, D. Li, X. Y. Zhang,
C. H. (Charlie) Kong, W. B. Yue,
W. Z. Zhou, H. T. Wang* ____ **8397 – 8399**

Cubes of Zeolite A with an Amorphous Core



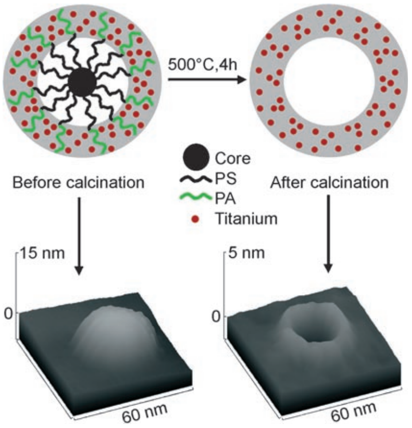
Zeolitic jelly-donuts: Micron-sized cubes of zeolite A having a monocrystalline shell and an amorphous core were synthesized by in situ crystallization of sodium aluminosilicate gel in uncrosslinked chitosan hydrogel. Formation of cubelike core–shell structures involves particle aggregation and surface-to-core crystallization induced by the hydrogel network, and provides a new model for zeolite nucleation and growth mechanisms.

Nanoporous Films

M. Yin, Y. Cheng, M. Liu, J. S. Gutmann,
K. Müllen* ______________ 8400 – 8403

Nanostructured TiO_2 Films Templated by Amphiphilic Dendritic Core–Double-Shell Macromolecules: From Isolated Nanorings to Continuous 2D Mesoporous Networks

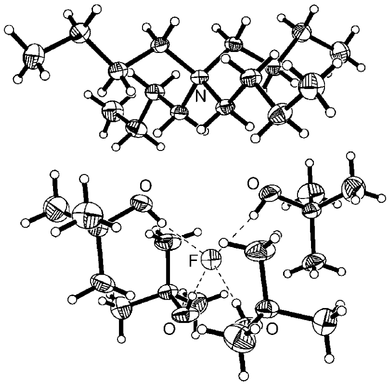
Pores for thought: The formation of nanostructured TiO_2 films is templated by dendritic amphiphilic core–double-shell macromolecules. The templates consist of a hydrophobic polystyrene (PS) interior and a hydrophilic poly(acrylic acid) (PA) exterior (see picture). The pore size of the films can be controlled by adjusting the length of the hydrophobic block in the inner shell of the macromolecules.



Fluoride Sources

D. W. Kim,* H.-J. Jeong, S. T. Lim,
M.-H. Sohn ______________ 8404 – 8406

Tetrabutylammonium Tetra(*tert*-Butyl Alcohol)-Coordinated Fluoride as a Facile Fluoride Source

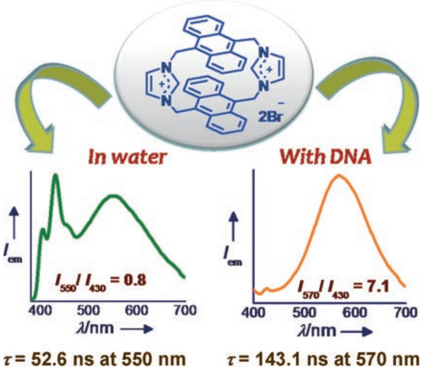


F^- on: The title compound TBAF(tBuOH)$_4$ can act as a highly effective fluoride source for nucleophilic fluorination thanks to its favorable properties, such as a stable structure (in which the fluoride ion is surrounded by four bulky nonpolar protic alcohol molecules), a dehydrated state, low hygroscopicity, good solubility in organic solvents, good nucleophilicity, and low basicity.

Biomolecular Recognition

P. P. Neelakandan,
D. Ramaiah* ______________ 8407 – 8411

DNA-Assisted Long-Lived Excimer Formation in a Cyclophane



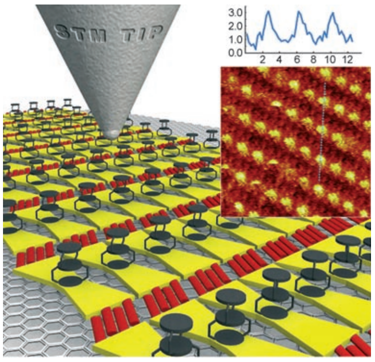
A color-changed sandwich: A novel water-soluble cyclophane containing anthracene and imidazolium moieties (see structure) exhibits dual emission in aqueous medium and undergoes sequence-selective interactions with DNA but not with proteins and micelles. In the presence of DNA, it forms a sandwich-type excimer, which exhibits an unusually long lifetime (τ) and red-shifted emission. This cyclophane can be used for DNA recognition through "turned on" excimer emission.

Nanopillar Arrays

D. Bléger, D. Kreher, F. Mathevet,
A.-J. Attias,* I. Arfaoui, G. Metgé,
L. Douillard, C. Fiorini-Debuisschert,
F. Charra* ______________ 8412 – 8415

Periodic Positioning of Multilayered [2.2]Paracyclophane-Based Nanopillars

Controlled patterning of highly oriented pyrolitic graphite with well-defined 3D nanostructures is realized by steered uniaxial alignment of multilayered [2.2]paracyclophane-based building blocks bearing functional clips (see picture). Their in-plane self-assembly allows exact positioning of vertical structural elements with precisely defined nanoscale spacing.



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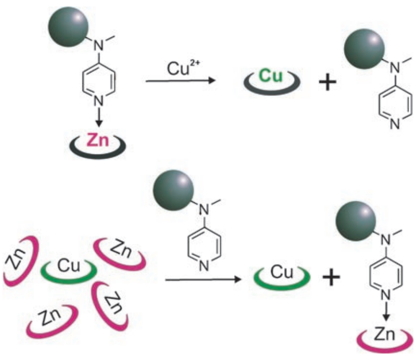
Radiochemical Synthesis

H. M. Betts, P. J. Barnard, S. R. Bayly,
J. R. Dilworth,* A. D. Gee,
J. P. Holland ________ **8416 – 8419**

Controlled Axial Coordination: Solid-Phase Synthesis and Purification of Metallo-Radiopharmaceuticals



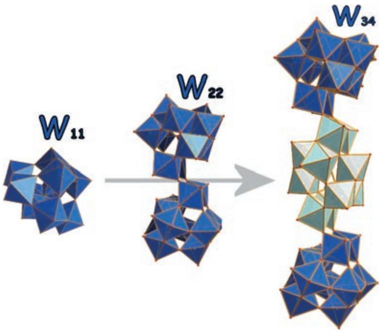
No sweat PET: Controlled axial coordination of pseudo-square-planar zinc(II) complexes to 4-(dimethylamino)pyridine-functionalized polystyrene resin facilitates the synthesis (by transmetalation) and purification (by selective ligation) of metallo-radiopharmaceuticals. These complexes have potential as positron emission tomography (PET) imaging agents.

Isopolyoxotungstates

H. N. Miras, J. Yan, D.-L. Long,*
L. Cronin* ________ **8420 – 8423**

Structural Evolution of "S"-Shaped $[H_4W_{22}O_{74}]^{12-}$ and "ʃ"-Shaped $[H_{10}W_{34}O_{116}]^{18-}$ Isopolyoxotungstate Clusters

Finding the missing species: Two isopolyoxotungstate clusters with unprecedented "S"-shaped $[H_4W_{22}O_{74}]^{12-}$ and "ʃ"-shaped $[H_{10}W_{34}O_{116}]^{18-}$ geometries are presented. The development of this structural complexity comes from the structural evolution based on the $\{W_{11}\}$ fragment and establishes a new building block principle in isopolyoxotungstate chemistry. The evolved clusters can only be isolated in the presence of sulfite ions.

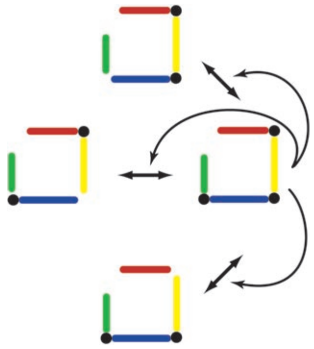


Autocatalysis

E. J. Hayden, G. von Kiedrowski,
N. Lehman* ________ **8424 – 8428**

Systems Chemistry on Ribozyme Self-Construction: Evidence for Anabolic Autocatalysis in a Recombination Network

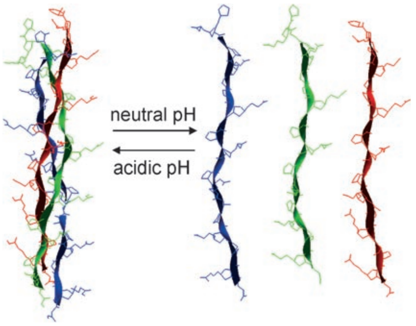
Humpty Dumpty, heal thyself: Four fragments of a catalytic RNA can autocatalytically self-assemble back into a covalently contiguous ribozyme. This reaction network (see picture) demonstrates anabolic autocatalysis in which positive feedback occurs at multiple points.



Helical Structures

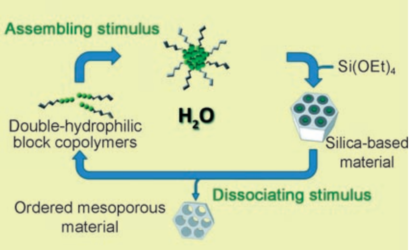
S.-G. Lee, J. Y. Lee,
J. Chmielewski* ________ **8429 – 8432**

Investigation of pH-Dependent Collagen Triple-Helix Formation



Helices on demand: Collagen peptides were engineered to form triple helices under environmental control. The replacement of the hydroxyproline (Hyp) residues in a collagen peptide with carboxylate-modified Hyp residues gave a petide that forms a collagen triple-helical structure at acidic pH values and low temperatures and adopts a monomeric, polyproline II helical conformation under neutral conditions (see scheme).

Reduce, reuse, recycle: A new methodology allows the synthesis of ordered mesoporous materials in water at room temperature, eliminating the need for organic solvents and reducing the amount of energy consumed. It relies on the reversible formation of micelles of water-soluble block copolymers as structure-directing agents (see picture). After recovery of the mesoporous material, the reaction solution can be used again.



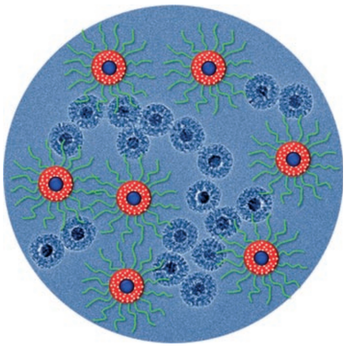
Mesoporous Materials

N. Baccile, J. Reboul, B. Blanc, B. Coq, P. Lacroix-Desmazes, M. In, C. Gérardin* **8433 – 8437**

Ecodesign of Ordered Mesoporous Materials Obtained with Switchable Micellar Assemblies

---

Magnetic, fluorescent core–shell nanoparticles consist of a single Fe_3O_4 nanocrystal core and a dye-doped mesoporous silica shell with a poly(ethylene glycol) coating (see picture of TEM images and schematic depictions). These nanoparticles can be used as magnetic resonance and fluorescence imaging agents, and as drug delivery vehicles, thus making them novel candidates for simultaneous cancer diagnosis and therapy.



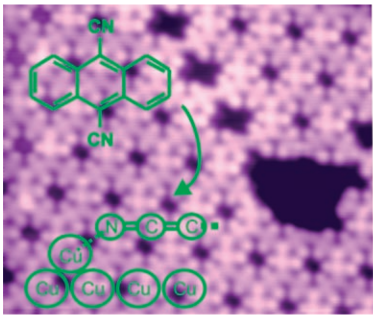
Imaging Agents

J. Kim, H. S. Kim, N. Lee, T. Kim, H. Kim, T. Yu, I. C. Song, W. K. Moon,* T. Hyeon* **8438 – 8441**

Multifunctional Uniform Nanoparticles Composed of a Magnetite Nanocrystal Core and a Mesoporous Silica Shell for Magnetic Resonance and Fluorescence Imaging and for Drug Delivery

---

Surface safari: 9,10-Anthracenedicarbonitrile (DCA) molecules adsorbed on a Cu(111) surface can be titrated by gradual annealing of the substrate to form trigonal planar $Cu(DCA)_3$ complexes and, ultimately, a hexagonal network (see picture) with a $Cu_2(DCA)_3$ stoichiometry. As a result of charge donation from the substrate, the coordinated Cu adatom remains electrically neutral despite donating approximately 1/3 charge to each Cu–N bond.



Coordination Networks

G. Pawin, K. L. Wong, D. Kim, D. Sun, L. Bartels,* S. Hong, T. S. Rahman, R. Carp, M. Marsella **8442 – 8445**

A Surface Coordination Network Based on Substrate-Derived Metal Adatoms with Local Charge Excess

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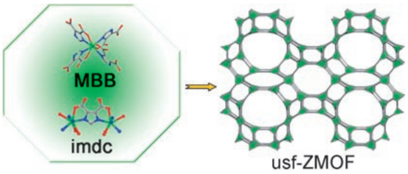


Better off med: The assembly of eight-coordinate indium molecular building blocks (MBBs) and 4,5-imidazoledicarboxylate (Himdc) ligands in the presence of a structure-directing agent results in the formation a novel 4-connected zeolite-like metal–organic framework (ZMOF) with an unprecedented zeolite topology (**med** topology, see picture; In green, C gray, N blue, O red; the framework topology of usf-ZMOF is shown in green tetrahedra).

Metal–Organic Frameworks

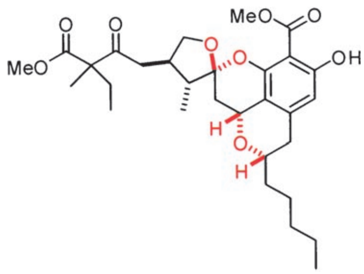
Y. Liu, V. C. Kravtsov, M. Eddaoudi* **8446 – 8449**

Template-Directed Assembly of Zeolite-like Metal–Organic Frameworks (ZMOFs): A usf-ZMOF with an Unprecedented Zeolite Topology

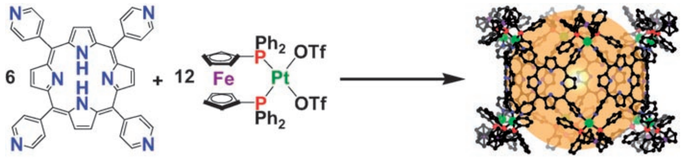
Contents

Natural Products

A subtle difference: A single step suffices to transform a linear precursor into the chromane spiroketal core of the metalloproteinase-3 inhibitor berkelic acid by an acid-catalyzed deprotection/Michael addition/acetalization cascade. This efficient route resulted from the realization that the originally proposed structure is neither thermodynamically nor kinetically favored and has led to revision of the structure (denoted in red).

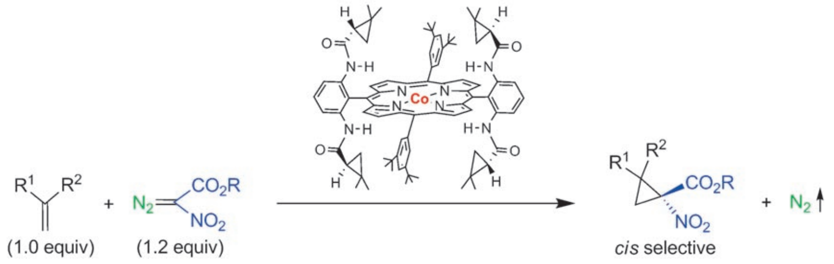


Self-Assembly



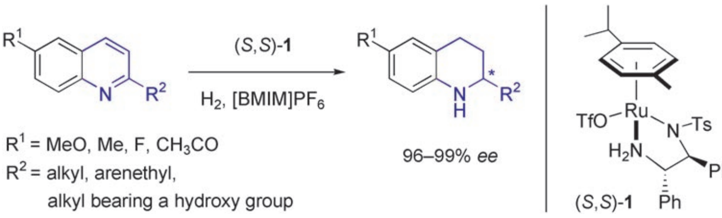
Box it up! Self-assembly of 5,10,15,20-tetrakis(4-pyridyl)porphyrin with two equivalents of *cis*-[(dppf)Pt(OTf)$_2$] (dppf = 1,1′-bis(diphenylphosphino)ferrocene; OTf = $CF_3SO_3^-$) yielded the first open molecular box containing six porphyrin walls (see scheme) and an internal open void volume of around 43 550 Å^3.

Asymmetric Cyclopropanation



Surprisingly *cis*-tematic! The cobalt(II) complex of a D_2-symmetric chiral porphyrin is an effective catalyst for asymmetric cyclopropanation with α-nitrodiazoacetates (see scheme). The catalytic system is general and suitable for electron-sufficient, -neutral, and -deficient alkenes, forming the corresponding cyclopropane nitroesters in high yields. In addition to high diastereo- and enantioselectivity, the catalytic process exhibits atypical *Z* selectivity.

Asymmetric Catalysis

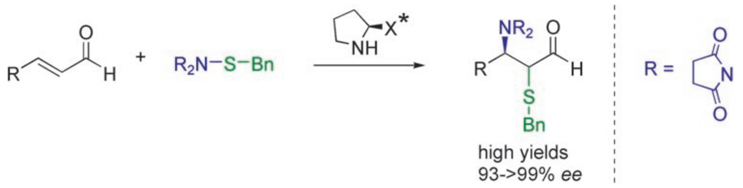


Liquid assets: The catalyst (*S*,*S*)-**1** exhibits an unprecedented reactivity and excellent enantioselectivity for the title reaction when it is carried out in neat ionic liquid (see scheme; BMIM = 1-*n*-butyl-3-methylimidazolium, Tf = trifluoromethanesulfonyl, Ts = 4-toluenesulfonyl). The ionic liquid facilitates the catalyst recycling and enhances its stability and selectivity.

Synthetic Methods

G.-L. Zhao, R. Rios, J. Vesely, L. Eriksson, A. Córdova* ———— **8468 – 8472**

Organocatalytic Enantioselective Aminosulfenylation of α,β-Unsaturated Aldehydes



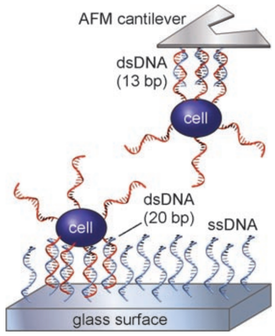
Domino theory: A simple, highly enantioselective organocatalytic aminosulfenylation of α,β-unsaturated aldehydes affords orthogonally protected β-amino-α-mercaptoaldehydes in high yields and 93 to > 99 % *ee* (see scheme, Bn = benzyl). Notably, the catalytic transformation shows that it is possible to efficiently employ all components of an electrophile, which includes a nucleofuge, in organocatalytic domino reactions of enals.

Cell Adhesion

S. C. Hsiao, A. K. Crow, W. A. Lam, C. R. Bertozzi, D. A. Fletcher, M. B. Francis* ———— **8473 – 8477**

DNA-Coated AFM Cantilevers for the Investigation of Cell Adhesion and the Patterning of Live Cells

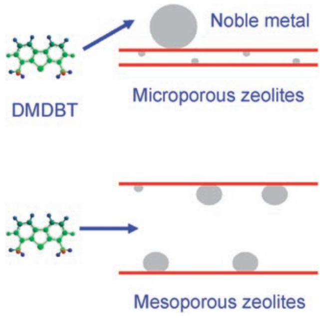
Get a grip: Measurement of receptor adhesion strength requires the precise manipulation of single cells on a contact surface. To attach live cells to a moveable probe, DNA sequences complementary to strands displayed on the plasma membrane are introduced onto AFM cantilevers (see picture, bp = base pairs). The strength of the resulting linkages can be tuned by varying the length of DNA strands, allowing for controlled transport of the cells.



Heterogeneous Catalysis

Y. Sun, R. Prins* ———— **8478 – 8481**

Hydrodesulfurization of 4,6-Dimethyldibenzothiophene over Noble Metals Supported on Mesoporous Zeolites

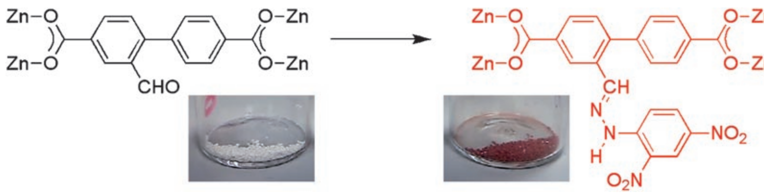


Pores for thought: Noble-metal catalysts supported on mesoporous zeolites have been found to be much more efficient than on microporous zeolites and γ-Al_2O_3 for the hydrodesulfurization of 4,6-dimethyldibenzothiophene (DMDBT, see picture). This increased efficiency arises because the relatively large DMBT molecules can fit into the relatively large pores of the mesoporous zeolites and so reach many active centers.

Metal–Organic Frameworks

A. D. Burrows,* C. G. Frost, M. F. Mahon, C. Richardson ———— **8482 – 8486**

Post-Synthetic Modification of Tagged Metal–Organic Frameworks



Playing tag with MOFs: Zinc metal–organic frameworks with pendant aldehyde and methoxy groups are prepared. The aldehyde-tagged MOF takes up 2,4-dinitrophenylhydrazine, reacting to form a hydrazone-functionalized MOF which is crystallographically characterized. Use of both aldehyde- and methoxy-functionalized dicarboxylates leads to MOFs containing both ligands, of which the aldehyde groups can be selectively reacted.

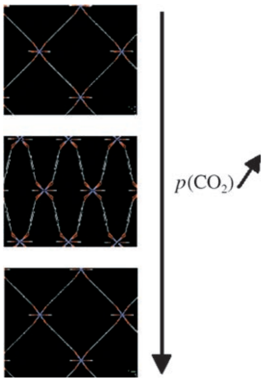
Contents

Molecular Dynamics

F. Salles, A. Ghoufi, G. Maurin,*
R. G. Bell, C. Mellot-Draznieks,
G. Férey ________ 8487 – 8491

Molecular Dynamics Simulations of Breathing MOFs: Structural Transformations of MIL-53(Cr) upon Thermal Activation and CO_2 Adsorption

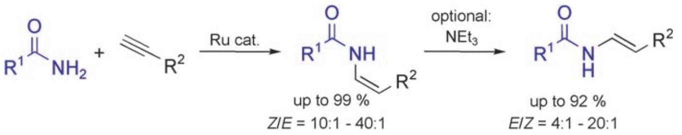
Use the Force: A force field for the MIL-53(Cr) framework was derived and validated by molecular dynamics simulations. This approach allows the "breathing" of the framework in the presence of CO_2 to be captured and gives insight into the structural switching mechanism from a narrow- to a large-pore form (see picture). This force field can be used directly in studies of many guest molecules and, with a minimum adjustment, for other MOF systems.



Hydroamidation

L. J. Gooßen,* K. S. M. Salih,
M. Blanchot ________ 8492 – 8495

Synthesis of Secondary Enamides by Ruthenium-Catalyzed Selective Addition of Amides to Terminal Alkynes

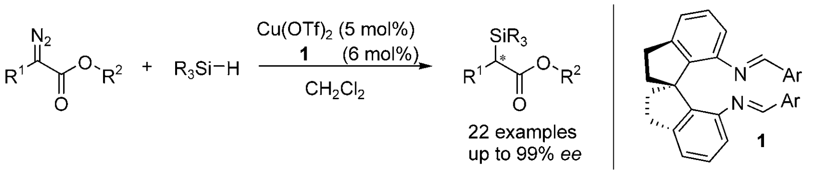


Enamides made easy: A catalyst system generated in situ using bis(2-methallyl)-(cycloocta-1,5-diene)ruthenium(II), 1,4-bis(dicyclohexylphosphino)butane, and ytterbium triflate efficiently catalyzes the addition of primary amides to terminal alkynes, selectively forming the *Z*-anti-Markovnikov enamides. The *E* isomers are also accessible by combining the hydroamidation with an in situ double-bond isomerization reaction.

Asymmetric Catalysis

Y.-Z. Zhang, S.-F. Zhu, L.-X. Wang,
Q.-L. Zhou* ________ 8496 – 8498

Copper-Catalyzed Highly Enantioselective Carbenoid Insertion into Si–H Bonds

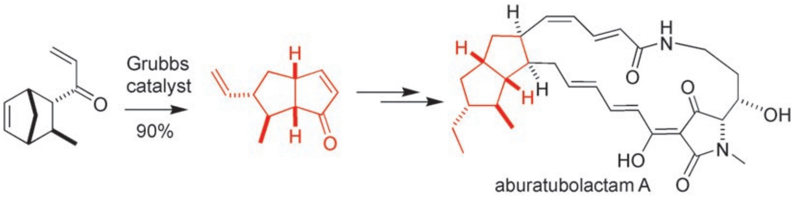


Complete control: A highly efficient, copper-catalyzed, asymmetric carbenoid insertion into Si–H bonds, using chiral spiro diimine (SIDIM) ligands (see scheme, Ar = 2,6-$Cl_2C_6H_3$, OTf = trifluoromethanesulfonate), produces a wide range of α-silylesters, in high yields with excellent enantiomeric excesses. This catalytic system offers unprecedented levels of enantiocontrol for the Si–H bond insertion reaction.

Natural Product Synthesis

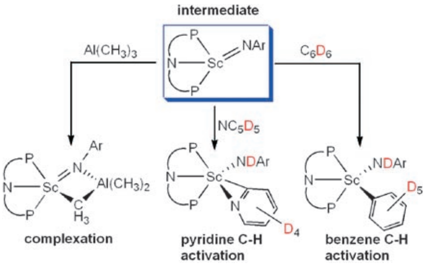
J. A. Henderson,
A. J. Phillips* ________ 8499 – 8501

Total Synthesis of Aburatubolactam A



An ocean of possibilities: Aburatubolactam A, a natural product isolated from the culture broth of a marine mollusk, was the target of a total synthesis (see scheme). Key transformations include tandem ring-opening/ring-closing metathesis, Lacey–Dieckmann cyclization, and macrolactamization.

Don’t blink or you’ll miss it: A transient imidoscandium complex (see scheme) can be generated by several routes. The imido ligand can activate the C–H bond in pyridine and benzene, and it can be complexed with $Al(CH_3)_3$ to yield an imide zwitterion. A combination of isotopic labeling, reactivity, and theoretical studies strongly endorse formation of a terminal imido ligand at scandium.



Group 3 Imides

J. Scott, F. Basuli, A. R. Fout,
J. C. Huffman,
D. J. Mindiola* ———— 8502–8505

Evidence for the Existence of a Terminal Imidoscandium Compound: Intermolecular C–H Activation and Complexation Reactions with the Transient Sc=NAr Species

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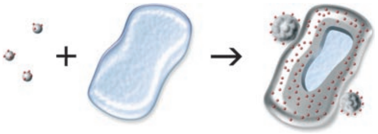
Living cells can be coated with continuous oxide shells prepared from modified titanium alkoxides (see picture). The shells efficiently isolate the encapsulated biomaterial from the surrounding medium. The resulting colloid media are highly biocompatible; subsequent release (biodelivery) of encapsulated cells or drugs is possible by dissolution of the titania nanoparticles.



Bioencapsulation

V. G. Kessler,* G. A. Seisenbaeva,
M. Unell, S. Håkansson —— 8506–8509

Chemically Triggered Biodelivery Using Metal–Organic Sol–Gel Synthesis

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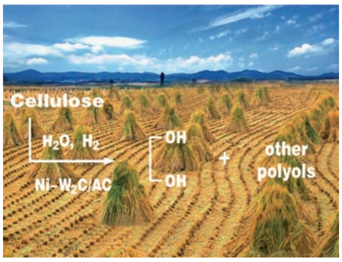
Nickel saves dimes: The expense of using precious-metal catalysts is avoided in the high-yielding conversion of cellulose to ethylene glycol (see picture; AC = activated carbon). This process occurs in up to 29 % yield over a tungsten carbide catalyst, and in up to 61 % yield when the catalyst is promoted with a small amount of nickel. An attractive feature of this reaction is the low yields of other polyols with respect to ethylene glycol.



Biomass Conversion

N. Ji, T. Zhang,* M. Zheng, A. Wang,
H. Wang, X. Wang,
J. G. Chen* ———— 8510–8513

Direct Catalytic Conversion of Cellulose into Ethylene Glycol Using Nickel-Promoted Tungsten Carbide Catalysts

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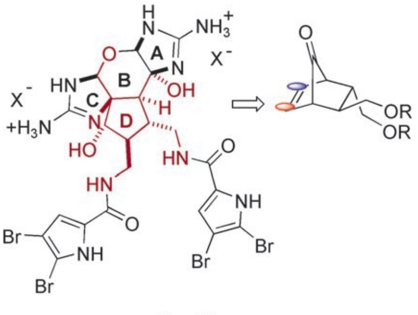


massadine (**1**)

Getting to the center of it: The strategy for an efficient asymmetric synthesis of the D-ring subunit embedded in massadine (**1**) includes: application of a cationic norbornyl rearrangement, ozonolytic cleavage displaying remarkable end-group differentiation, and a carboxy-inversion reaction for the installation of the hindered secondary alcohol.

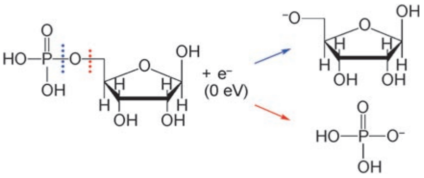
Natural Products

A. Breder, G. M. Chinigo, A. W. Waltman,
E. M. Carreira* ———— 8514–8517

Enantioselective Synthesis of the Carbocyclic D-Ring Subunit of Massadine

Contents

DNA Cleavage

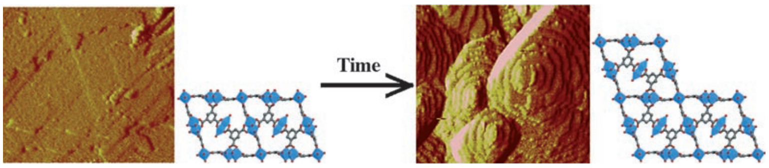


Making the cut: Electrons at energies close to 0 eV have been shown to be resonantly captured by gas-phase D-ribose-5-phosphate (a model compound for the DNA and RNA backbone) with subsequent cleavage of the sugar–phosphate linkage (see scheme). This supports the idea that breakage of DNA strands by electrons at very low energies are triggered by dissociative electron attachment directly to the DNA/RNA backbone.

Synthetic Methods

A Val-uable link: The title transformation is achieved by a two-step ligation, radical-based desulfurization strategy (see scheme; NCL = native chemical ligation). After S→N acyl transfer, in which the acyl acceptor is a γ-thiol valine derivative, and site-specific dethiolation, a valine residue appears at the site of ligation. This method accomplishes ligations at Thr-Val and Pro-Val sites, and allows successful ligation of glycopeptide fragments.

Real-Time Crystal Growth



Watching crystals grow: In situ atomic force microscopy has been used to observe the crystal growth of the nanoporous metal–organic framework HKUST-1. This real-time study provides evidence that the growth of HKUST-1 under the given supersaturation conditions is through a surface nucleation mechanism and presents insight into the units of attachment during the growth of the 1.5 nm high steps on the crystal surface (see picture).

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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Service