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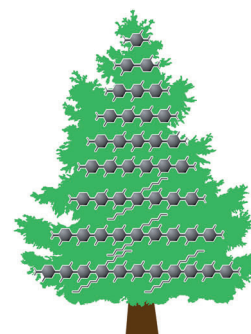


### Molecular Gauge Blocks

S. Grunder, C. Valente, A. C. Whalley, S. Sampath, J. Portmann, Y. Y. Botros, J. F. Stoddart\*

Molecular Gauge Blocks for Building on the Nanoscale

**Walking along a fine line:** The synthesis and characterization of a series of high aspect-ratio oligoparaxylenes as molecular gauge blocks are reported. The lengths of the molecules range from 10 Å for the shortest member of the series with two phenylene rings up to 50 Å for the longest member with eleven phenylene units (see figure). Minimalistic design criteria led to a walk along a fine line between keeping the molecules slender, yet also rendering them soluble.



Chem. Eur. J.  
DOI: 10.1002/chem.201201985

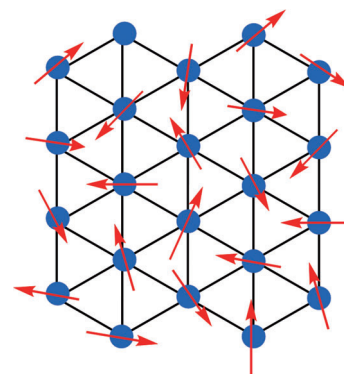


### Magnetic Properties

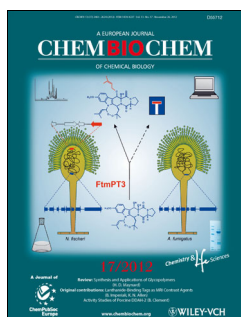
W. Fujita,\* K. Kikuchi, W. Mori

Crystal Growth, Structure, and Magnetic Properties of a Two-dimensional Triangular Lattice Magnet,  $\text{Cu}_2(\text{OH})_3\text{HCO}_2$

**Take a (spin) flop:** Crystal growth of basic copper formate  $\text{Cu}_2(\text{OH})_3\text{HCO}_2$  was carried out by hydrolysis of formate anions in an aqueous solution of copper formate. X-ray structure analysis revealed that this material has a layered structure with a two-dimensional triangular lattice network with  $S=1/2$ . The material showed antiferromagnetic ordering at 5.4 K and spin-flop transition at 2 K under a magnetic field of about 20 kOe. The saturation magnetization was almost one-half of the theoretical value at 2 K under 70 kOe.



Chem. Asian J.  
DOI: 10.1002/asia.201200732

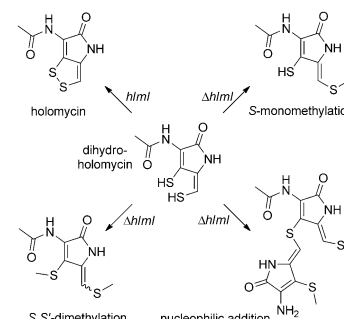


### Detoxification

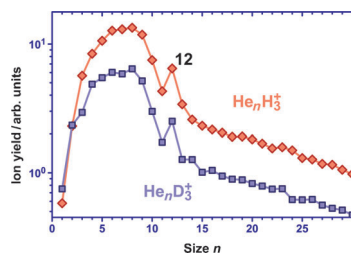
B. Li, R. R. Forseth, A. A. Bowers, F. C. Schroeder, C. T. Walsh\*

A Backup Plan for Self-Protection: S-Methylation of Holomycin Biosynthetic Intermediates in *Streptomyces clavuligerus*

**A good host looks after itself!** The redox accessibility of the cyclic disulfide in holomycin is likely essential to its biological activity. We used metabolite profiling of genetic deletion mutants ( $\Delta hlm1$ ) incapable of disulfide formation to identify a number of shunt products. In these newly identified compounds, the enethiol warheads have been incapacitated by a combination of S-methylation and dimerization as a host strategy for self-protection.



ChemBioChem  
DOI: 10.1002/cbic.201200536



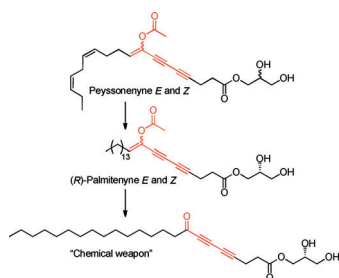
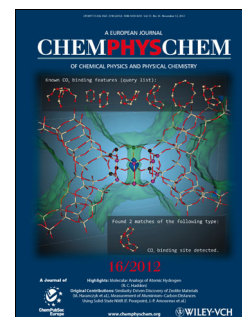
ChemPhysChem  
DOI: 10.1002/cphc.201200664

## Mass Spectrometry

P. Bartl, C. Leidlmair, S. Denifl, P. Scheier,\* O. Echt\*

Cationic Complexes of Hydrogen with Helium

**Trapping helium on hydrogen:** Helium nanodroplets are doped with hydrogen or deuterium and subsequently ionized by electron impact. Cationic complexes of  $H_x^+$  ( $x=1, 2, 3, \dots$ ) with up to 30 helium atoms are identified in the high-resolution mass spectra. Pronounced anomalies in the size dependence of their abundance indicate particularly stable helium–hydrogen complexes (see picture).



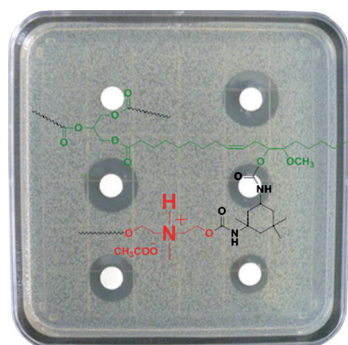
ChemMedChem  
DOI: 10.1002/cmdc.201200366

## Epigenetics

P. García-Domínguez, M. Weiss, I. Lepore, R. Álvarez, L. Altucci,\* H. Gronemeyer,\* Á. R. de Lera\*

A DNA Methyltransferase Modulator Inspired by Peyssonenine Natural Product Structures

**Everything in moderation:** We characterized a new epigenetic modulator that incorporates the putative reactive functional group of the natural product peyssonenine. This compound displays a profile of DNMT1 inhibition and DNMT3A activation. It is toxic to normal human fibroblasts (BJ) and mouse embryo fibroblasts (MEF), but not to immortalized human fibroblasts (BJEL), a unique effect not observed with the classical DNMT inhibitor azacytidine.



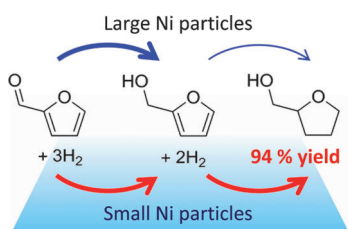
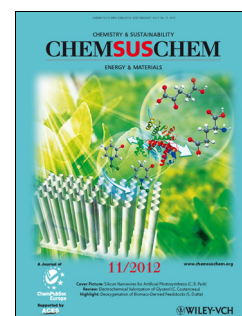
ChemSusChem  
DOI: 10.1002/cssc.201200352

## Renewable Polymers

Y. Xia, Z. Zhang, M. R. Kessler,\* B. Brehm-Stecher,\* R. C. Larock\*

Antibacterial Soybean-Oil-Based Cationic Polyurethane Coatings Prepared from Different Amino Polyols

**Plant-oil-based antibacterial coatings:** Antibacterial soybean-oil-based cationic polyurethane coatings have been successfully prepared from five different amino polyols. The structure of these amino polyols affects the mechanical properties, thermal stability, and antibacterial properties of the coatings. These coatings exhibit antibacterial properties to both gram-positive and gram-negative bacteria, with best antibacterial activity against a structural mutant of *Salmonella minnesota* possessing a severely truncated outer membrane structure.



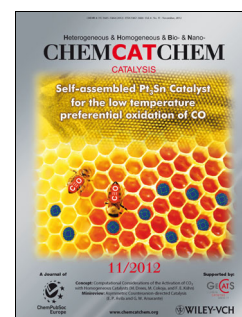
ChemCatChem  
DOI: 10.1002/cctc.201200218

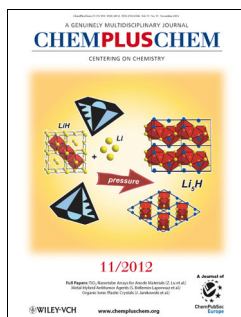
## Hydrogenation

Y. Nakagawa, H. Nakazawa, H. Watanabe, K. Tomishige\*

Total Hydrogenation of Furfural over a Silica-Supported Nickel Catalyst Prepared by the Reduction of a Nickel Nitrate Precursor

**Tiny one works:** Silica-supported nickel nanoparticles that are approximately 3 nm in size are highly active in the gas-phase total hydrogenation of furfural to tetrahydrofurfuryl alcohol. Particles with a larger size are less active in the hydrogenation step of the furfuryl alcohol intermediate to tetrahydrofurfuryl alcohol.



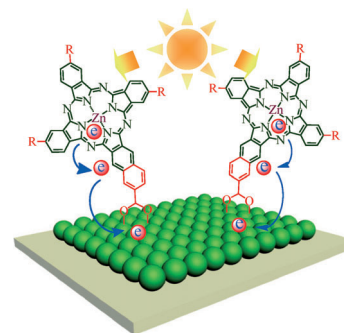


### Dye-Sensitized Solar Cells

L. Yu, X. Zhou, Y. Yin, Y. Liu, R. Li,\* T. Peng\*

Highly Asymmetric Tribenzonaphtho-Condensed Porphyrazinatozinc Complex: An Efficient Near-Infrared Sensitizer for Dye-Sensitized Solar Cells

**Novel zinc phthalocyanine (ZnPc)** derivatives containing tribenzonaphtho-condensed porphyrazine (see figure) are reported. As a dye for dye-sensitized solar cells (DSSCs), the highly asymmetric derivative containing *t*Bu groups yields a 3.56% efficiency with the highest IPCE of 60.7% in the red/near-IR region, which is higher than that of the derivative containing *n*BuO groups (2.20% with an IPCE of 22.9%) under AM 1.5G solar irradiation.



ChemPlusChem  
DOI: 10.1002/cplu.201200219

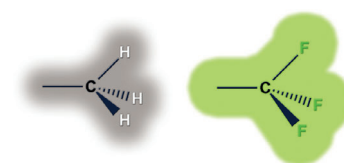


### The Trifluoromethyl Group

M. A. García-Monforte, S. Martínez-Salvador, B. Menjón\*

The Trifluoromethyl Group in Transition Metal Chemistry

Definitely different: As the chemistry of trifluoromethyl-TM derivatives continues to develop, it becomes clearer that methyl and trifluoromethyl ligands ( $\text{CH}_3$  vs.  $\text{CF}_3$ ) exhibit more differences than similarities in their chemical behavior.



Eur. J. Inorg. Chem.  
DOI: 10.1002/ejic.201200620

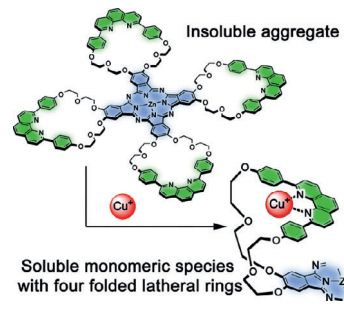


### Functionalized Phthalocyanines

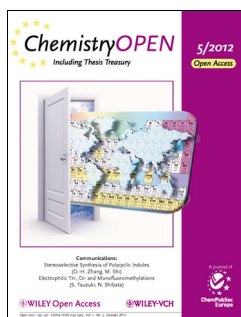
A. G. Martynov,\* Y. G. Gorbunova, S. E. Nefedov, A. Y. Tsivadze, J.-P. Sauvage\*

Synthesis and Copper(I)-Driven Disaggregation of a Zinc-Complexed Phthalocyanine Bearing Four Lateral Coordinating Rings

A new phthalocyanine bearing four peripheral 1,10-phenanthroline-incorporating rings was prepared as an insoluble aggregate. After addition of copper(I), a monomolecular species was obtained, which shows good solubility. It has a folded and globular conformation originating from the interaction between the four lateral copper-1,10-phenanthroline complexes and the central phthalocyanine macrocycle.



Eur. J. Org. Chem.  
DOI: 10.1002/ejoc.201200944

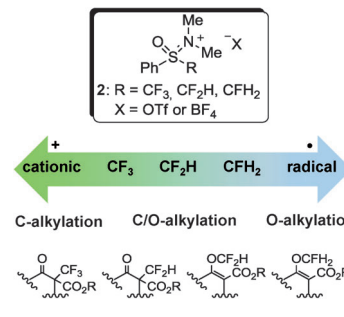


### Regioselectivity

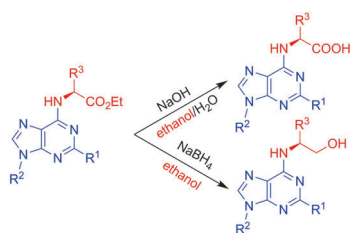
Y.-D. Yang, X. Lu, G. Liu, E. Tokunaga, S. Tsuzuki,\* N. Shibata\*

Cation versus Radical: Studies on the C/O Regioselectivity in Electrophilic Tri-, Di- and Monofluoromethylations of  $\beta$ -Ketoesters

**Fluoromethylation.** The C/O regioselectivity of  $\beta$ -ketoesters with fluorinated methylsulfoxonium salts **2** is discussed. Trifluoromethylation involves the formation of a more cationic species represented by  $^+\text{CF}_3$  to provide C-alkylated products, while monofluoromethylation possibly proceeds involving a more radical-like species such as  $^{\bullet}\text{CFH}_2$  to give O-alkylated species. Difluoromethylation could involve both cationic and radical species, which afford a mixture of C and O isomers.



ChemistryOpen  
DOI: 10.1002/open.201200032



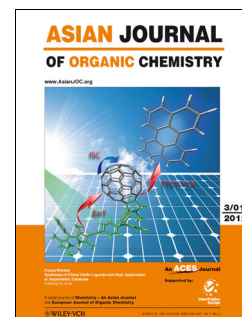
Asian J. Org. Chem.  
DOI: 10.1002/ajoc.201200081

### Chiral Purines

H.-Y. Niu, S.-X. Bai, S. Wu, G.-R. Qu,\* H.-M. Guo\*

Synthesis of Chiral N-(Purin-6-yl)amino Acid Derivatives by Using Natural Amino Acids as Starting Materials

**Pur-ine and simple:** An efficient synthetic method for the preparation of N-(purin-6-yl)amino acids and their derivatives under mild reaction conditions from readily available natural amino acids has been developed. The advantages of this method are that it can be performed in one pot within a short time to give high yields of the desired chiral derivatives with a simple post-reaction procedure. TEA = triethylamine.



ChemViews magazine  
DOI: 10.1002/chemv.201200130

### Nanoparticle Synthesis

D. Bradley

Butterfly Effects in Nano Solutions

An unexpected factor in controlling the size and shape of cobalt nanoparticles at first sounds like a weird solution-memory effect, almost homeopathy: Stock solutions containing the same reactants at the same concentrations result in different nanoparticle sizes and morphology, even when the reactions are performed under the same conditions.

