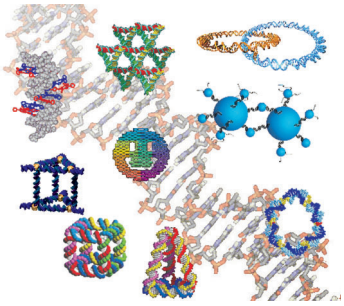
DNA

E. Stulz*

DNA Architectonics: towards the Next Generation of Bio-inspired Materials

Any which way but loose: DNA has become a fascinating construction material for nanosized objects (see figure); these are beginning to play an important role in nanotechnology due to their ability to form structures with function. This article highlights the recent developments in the field of DNA architectonics, including 2D and 3D structures, nanoparticle complexes, chemical modification and DNA-based nanodevices.



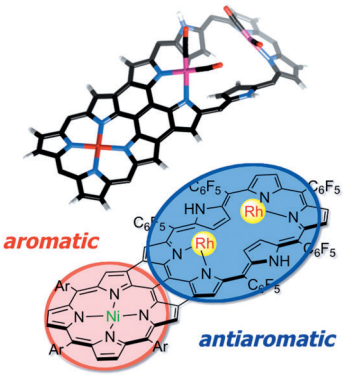
Chem. Eur. J.
DOI: **10.1002/chem.201102908**

Porphyrinoids

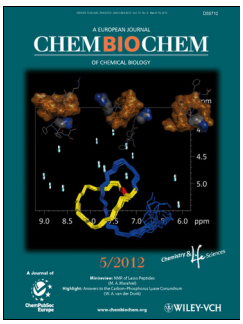
T. Tanaka, N. Aratani, A. Osuka*

Aromatic-to-Antiaromatic Switching in Triply Linked Porphyrin Bis(rhodium(I)) Hexaphyrin Hybrids

Switch 'em up: Two-electron oxidation and reduction switches the title complexes between aromatic and antiaromatic character (see picture). The switching is confirmed by ^{1}H NMR and UV/Vis/NIR absorption spectroscopy and by cyclic voltammetry. The structure of the porphyrin–[26]hexaphyrin hybrid tape was elucidated by X-ray diffraction analysis.



Chem. Asian J.
DOI: **10.1002/asia.201101039**

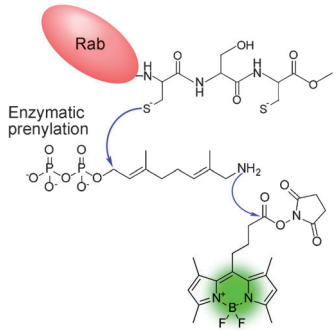


Protein Prenylation

D. Das, Z. Tnimov, U. T. T. Nguyen, G. Thimmaiah, H. Lo, D. Abankwa, Y. Wu, R. S. Goody, H. Waldmann, K. Alexandrov*

Flexible and General Synthesis of Functionalized Phosphoisoprenoids for the Study of Prenylation in vivo and in vitro

Prenylation probes: Eukaryotic protein prenyltransferases modify polypeptides with isoprenoid lipids. Modification of isoprenoids with reporter groups allows the creation of probes for the analysis of protein prenylation in vitro and in vivo. An amine-derivatized isoprenoid scaffold was used as a novel starting point for the synthesis of functionalized phosphoisoprenoid libraries.



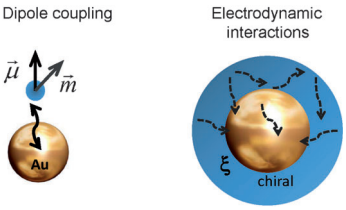
ChemBioChem
DOI: **10.1002/cbic.201100733**

Circular Dichroism

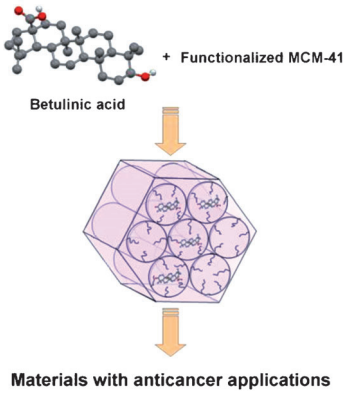
A. O. Govorov,* Z. Fan

Theory of Chiral Plasmonic Nanostructures Comprising Metal Nanocrystals and Chiral Molecular Media

Chirality transfer: In large chiral plasmonic structures, a new electrodynamic mechanism of plasmonic CD that is qualitatively different to near-field, dipolar mechanism of plasmonic chirality is described. The models presented also show that anisotropic nanocrystals have strongly enhanced CD at the plasmonic frequency.



ChemPhysChem
DOI: **10.1002/cphc.201100958**



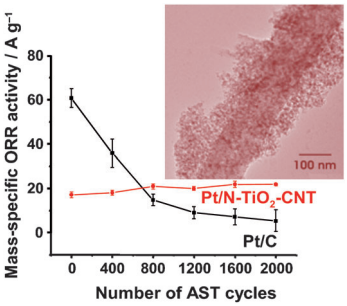
Drug Delivery

S. Sánchez-Muñoz, S. Gómez-Ruiz,* D. Pérez-Quintanilla,* S. Morante-Zarcero, I. Sierra, S. Prashar, R. Paschke, G. N. Kaluđerović*

Preliminary Study of the Anticancer Applications of Mesoporous Materials Functionalized with the Natural Product Betulinic Acid

The perfect combination: The combination of functionalized mesoporous materials such as MCM-41 with betulinic acid, a potent anticancer drug, led to novel drug delivery systems which may be useful in the future as adjuvant agents to avoid the recurrence of bone tumors on local implantations.

ChemMedChem
DOI: **10.1002/cmdc.201100588**



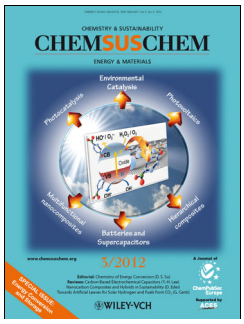
Fuel Cells

J. Masa, A. Bordoloi, M. Muhler, W. Schuhmann,* W. Xia*

Enhanced Electrocatalytic Stability of Platinum Nanoparticles Supported on a Nitrogen-Doped Composite of Carbon Nanotubes and Mesoporous Titania under Oxygen Reduction Conditions

Cheers for titania: An N-doped composite of carbon nanotubes (CNTs) and mesoporous TiO_2 is used as support for Pt nanoparticles applied in the oxygen reduction reaction. The composite Pt/N-TiO_2-CNT shows a higher stability than Pt particles on carbon black or N-doped CNTs, as indicated by accelerated stress tests of up to 2000 cycles. The enhanced stability is attributed to strong interactions between TiO_2 and Pt and a higher corrosion resistance of TiO_2 as well as CNTs.

ChemSusChem
DOI: **10.1002/cssc.201100643**



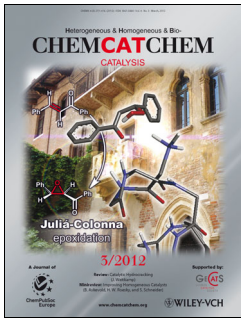
Cellulose Conversion

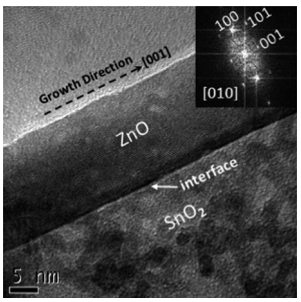
R. M. Ravenelle, F. Z. Diallo, J. C. Crittenden, C. Sievers*

Effects of Metal Precursors on the Stability and Observed Reactivity of Pt/γ-Al_2O_3 Catalysts in Aqueous Phase Reactions

Pt precursor promotes performance: The use of H_2PtCl_6 as metal precursor affects the observed activity of γ-Al_2O_3 supported catalysts in aqueous phase conversion of cellulose to sugar alcohols. The precursor changes the point of zero charge and leads to leaching. These two phenomena shift the dissociation equilibrium of water and enhance acid-catalyzed hydrolysis of cellulose.

ChemCatChem
DOI: **10.1002/cctc.201100307**





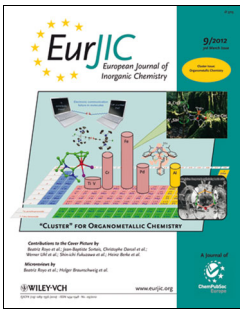
Photocatalysis

L. Zheng, Y. Zheng,* C. Chen, Y. Zhan, X. Lin, Q. Zheng,* K. Wei

Facile One-pot Synthesis of ZnO/SnO_2 Heterojunction Photocatalysts with Excellent Photocatalytic Activity and Photostability

It's all about performance: ZnO/SnO_2 heterojunction nanocatalysts (see the formation of a ZnO/SnO_2 heterojunction in the TEM image) with excellent photocatalytic performances have been synthesized through a simple one-pot solvothermal method. The relationship between their structure and photocatalytic performances, especially antiphotocorrosion property, has been systematically studied.

ChemPlusChem
DOI: **10.1002/cplu.201100066**

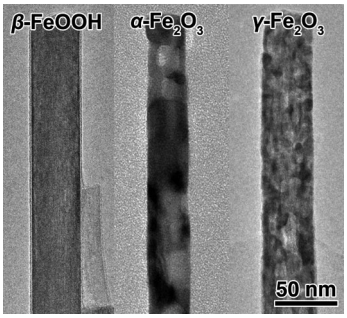


Ferric Oxide Nanorods

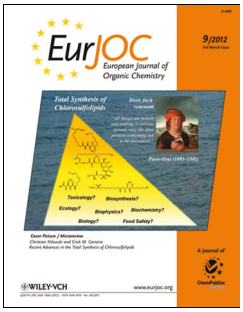
X. Mou, Y. Li, B. Zhang, L. Yao, X. Wei, D. S. Su,* W. Shen*

Crystal-Phase- and Morphology-Controlled Synthesis of Fe_2O_3 Nanomaterials

α- and γ-Fe_2O_3 nanorods were obtained by proper dehydration of a rod-shaped β-FeOOH precursor. The Fe_2O_3 nanorods showed a distinct crystal-phase effect in the reduction of NO by CO on the basis of their exposed surface facets.



Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201101066**

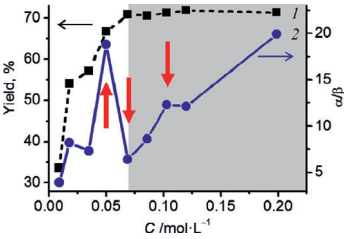


Sugar Hydroxy Group Acidity

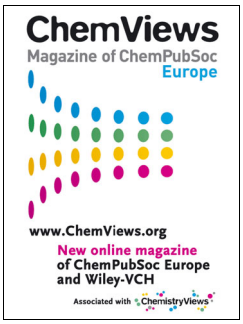
M. Matwiejuk, J. Thiem*

Hydroxy Group Acidities of Partially Protected Glycopyranosides

Relative acidities were determined spectrophotometrically for twenty partially methylated methyl α-D-glycopyranosides. It was proven that the more adjacent hydroxy groups a sugar displays, the more acidic is the corresponding hydroxy system, apparently caused by extended hydrogen bonding. A first estimation of the pK_a of partially methylated methyl α-D-glycopyranosides was obtained.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201101708**



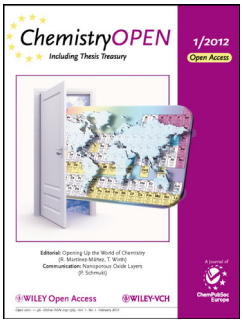
Biomass Conversion

Vera Köster

CatchBio – Speaking With Consortium Partners

CatchBio, a consortium of 21 partners from industry and academia, stands for Catalysis for Sustainable Chemicals from Biomass. It is working toward the integrated conversion of cellulose and lignin from biomass into fuels, chemicals and pharmaceuticals. Three of the consortium partners tell ChemViews about their expectations and experiences of the project and what makes it so unique.

ChemViews magazine
DOI: **10.1002/chemv.201200025**



Microwave Chemistry

Wen Chen, Bernhard Gutmann, C. Oliver Kappe*

Characterization of Microwave-Induced Electric Discharge Phenomena in Metal–Solvent Mixtures

Turning on the power: Irradiating metal–solvent mixtures with microwaves produces electric discharges that are critically dependent on microwave power, solvent, metal type, size and morphology.

ChemistryOpen
DOI: **10.1002/open.201100013**