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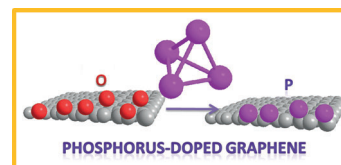


Graphene

H. L. Poh, Z. Sofer, M. Nováček, M. Pumera*

Concurrent Phosphorus Doping and Reduction of Graphene Oxide

Doping graphene: A scalable method for a one-step doping of graphene with phosphorus, and a simultaneous reduction of graphene oxide, is described. The resultant phosphorus-doped materials are characterized in detail and exhibit important electronic and electrochemical properties (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201304217

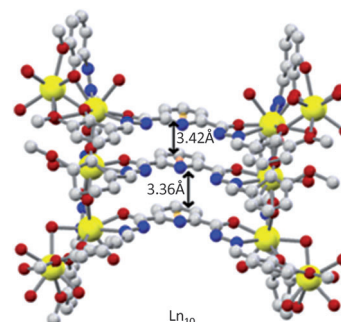


Cage Compounds

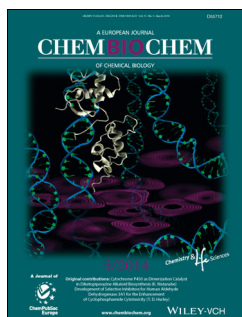
A. Adhikary, H. S. Jena, S. Khatua, S. Konar*

Synthesis and Characterization of Two Discrete Ln_{10} Nanoscopic Ladder-Type Cages: Magnetic Studies Reveal a Significant Cryogenic Magnetocaloric Effect and Slow Magnetic Relaxation

Top of the ladder: Two lanthanide-based nanoscopic cages [Ln_{10}] have been synthesized. Structural characterization of [Gd_{10}] reveals an aesthetically pleasing ladder-type cage (see figure). Magnetic investigation reveals that [Gd_{10}] is a good candidate for magnetic refrigeration with a significant entropy change, whereas [Dy_{10}] shows single-molecule magnet (SMM)-like behavior.



Chem. Asian J.
DOI: 10.1002/asia.201301619

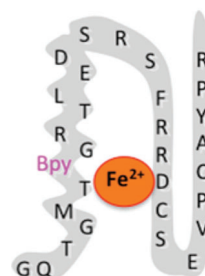


Metalloproteins

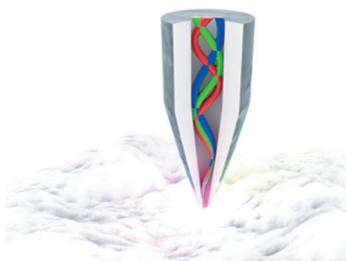
M. Kang, K. Light, H.-w. Ai, W. Shen, C. H. Kim, P. R. Chen, H. S. Lee, E. I. Solomon,* P. G. Schultz*

Evolution of Iron(II)-Finger Peptides by Using a Bipyridyl Amino Acid

Laying a finger on DNA: Zinc-finger-like proteins containing (2,2'-bipyridin-5-yl)alanine (Bpy-Ala) were engineered by using a phage-display library in which five residues in Zif268 were randomized to include both canonical amino acids and Bpy-Ala. The selected Bpy-Ala-containing Zif268 mutant binds its target DNA with high affinity and has a finger domain that forms a bipyridyl Fe^{II} complex.



ChemBioChem
DOI: 10.1002/cbic.201300727



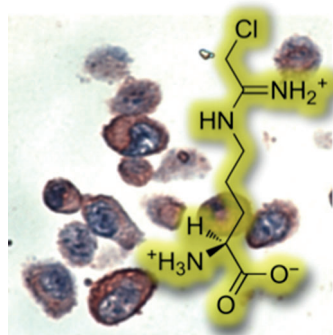
ChemPhysChem
DOI: 10.1002/cphc.201300826

Near-field Optical Imaging

J.-S. G. Bouillard,* W. Dickson, G. A. Wurtz, A. V. Zayats

Near-Field Hyperspectral Optical Imaging

Understanding light–matter interactions at the nanoscale demands access to full spectroscopic information on the phenomena involved. Scanning near-field optical microscopy (SNOM) imaging is extended to allow simultaneous acquisition of near-field images over a broad spectral range. Applications of SNOM are described for the visualization of plasmonic modes in metallic nanostructures and near-field fluorescence spectroscopy.



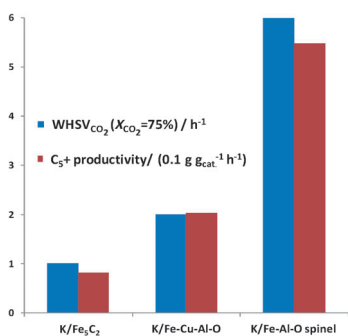
ChemMedChem
DOI: 10.1002/cmdc.201300557

Antitumor Agents

Y. Wang, S. Hu, A. M. Gabisi, Jr., J. A. V. Er, A. Pope, G. Burstein, C. L. Schardon, A. J. Cardounel,* S. Ekmekcioglu,* W. Fast*

Developing an Irreversible Inhibitor of Human DDAH-1, an Enzyme Upregulated in Melanoma

Inactivator of DDAH-1: The enzyme DDAH-1 regulates nitric oxide production by catabolizing endogenous inhibitors of nitric oxide synthases. Here, we develop a potent irreversible inactivator of DDAH-1 and demonstrate its use with purified enzymes, with DDAH-1 artificially expressed in cultured cells, and with DDAH-1 that we found to be overexpressed in ~80% of cultured melanoma cell lines tested.



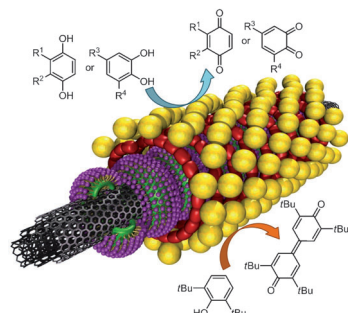
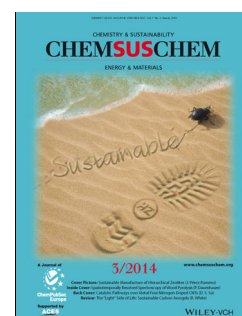
ChemSusChem
DOI: 10.1002/cssc.201301181

Iron catalysis

M. V. Landau, R. Vidruk, M. Herskowitz*

Sustainable Production of Green Feed from Carbon Dioxide and Hydrogen

Drying out: A new iron-based spinel catalyst tested in a new configuration of fixed-bed reactors in series displays a dramatic increase in activity and productivity of C₅+ hydrocarbons from CO₂ in comparison with other published catalysts (see picture). The results can be considered as a breakthrough in one of the key steps required for the conversion of CO₂ and water to liquid fuels and represents a feasible process.



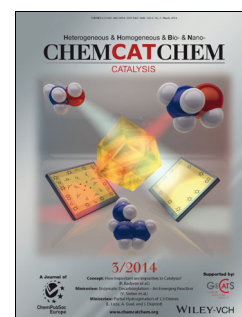
ChemCatChem
DOI: 10.1002/cctc.201301069

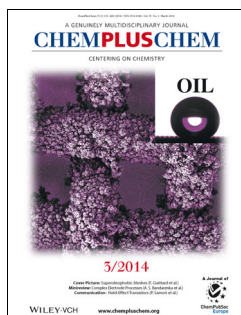
Nanohybrids

D. V. Jawale, E. Gravel, V. Geertsen, H. Li, N. Shah, I. N. N. Namboothiri,* E. Doris*

Aerobic Oxidation of Phenols and Related Compounds using Carbon Nanotube–Gold Nanohybrid Catalysts

Coming up for air: Gold nanoparticles supported on carbon nanotubes were investigated as efficient catalysts in the catalytic aerobic oxidation of phenol-type compounds.



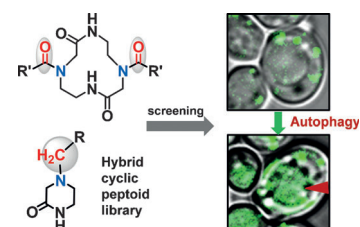


Peptoids

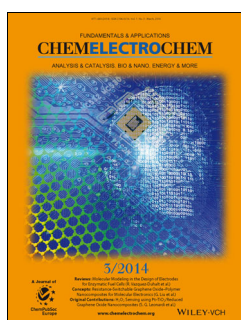
K. Rajasekhar, N. Narayanaswamy, P. Mishra, S. N. Suresh, R. Manjithaya, T. Govindaraju*

Synthesis of Hybrid Cyclic Peptoids and Identification of Autophagy Enhancer

Simplicity makes the difference: A methodology for the synthesis of small and medium-size hybrid cyclic peptoids from functionalized *N*-(2-aminoethyl)glycine monomers is described. ¹⁵N-Alkyl- and ¹⁵N-acyl substituents enforce differential cyclization to 6- and 12-membered products, respectively. Screening of a cyclic peptoid library identified a potential enhancer of the autophagy process (see figure).



ChemPlusChem
DOI: 10.1002/cplu.201300343

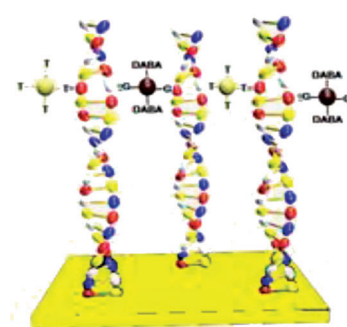


Electrochemical Genotyping

S. Mehdi khoshfetrat, M. A. Mehrgardi*

Electrochemical Genotyping of Single-Nucleotide Polymorphisms by using Monobase-Conjugated Modified Nanoparticles

Rules of engagement: A new approach for electrochemical genotyping of single-nucleotide polymorphisms (SNPs) is reported. Silver and gold nanoparticle probes, based on DNA polymerase I (Klenow fragment), induce coupling of the nucleotide-modified nanoparticle probe to the mutant sites of duplex DNA, according to the Watson–Crick base-pairing rule.



ChemElectroChem
DOI: 10.1002/celc.201300221

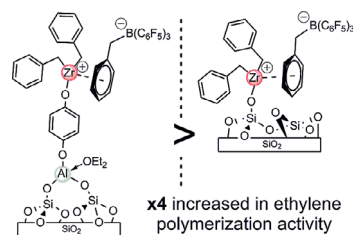


Supported Catalysts

N. Popoff, B. Macqueron, W. Sayhoun, J. Espinas, J. Pelletier, O. Boyron, C. Boisson, N. Merle, K. C. Szeto, R. M. Gauvin, A. De Mallmann, M. Taoufik*

Well-Defined Silica-Supported Zirconium–Benzyl Cationic Species: Improved Heterogenization of Single-Site Polymerization Catalysts

A new hybrid material featuring unique phenol grafting sites was used to immobilize tetrabenzylzirconium on silica. Fully characterized single-site cationic polymerization species were obtained by benzyl abstraction with B(C₆F₅)₃ as activator. As a result of reduced surface interactions, the polymerization activities of the well-defined neutral and cationic species were up to four times higher.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201301317

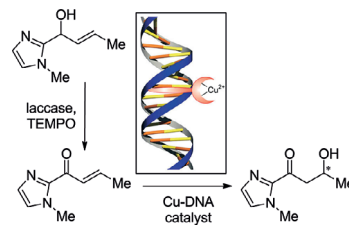


Enzyme Catalysis

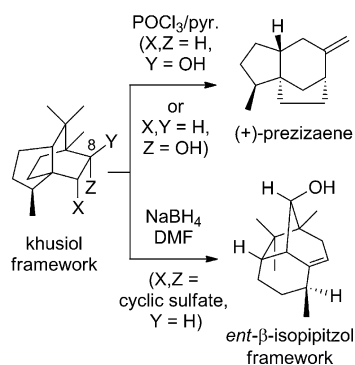
J. S. Willemsen, R. P. Megens, G. Roelfes, J. C. M. van Hest, F. P. J. T. Rutjes*

A One-Pot Oxidation/Enantioselective Oxa-Michael Cascade

A one-pot reaction was developed containing a laccase/(2,2,6,6-tetramethylpiperidin-1-yl)oxy-mediated oxidation followed by a DNA-based, copper-catalysed oxa-Michael addition reaction. The enantioselective oxa-Michael addition reaction only occurred if the sequence was performed stepwise and the first reaction was inhibited with HCO₂K.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201301885



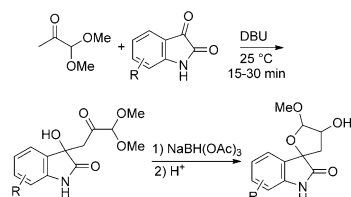
Asian J. Org. Chem.
DOI: 10.1002/ajoc.201400019

Natural Products

M. K. Sharma, M. G. Banwell,* A. C. Willis

Generation of (+)-Prezizanol, (+)-Prezizaene, and the *ent*-β-Isopipitzol Framework via Cationic Rearrangement of Khusiol and Related Compounds

Ring the changes with khusiol: Two distinct rearrangements that take place within the khusiol framework are reported. In the first, the reaction of khusiol or its C8 epimer with POCl_3 in pyridine affords (+)-prezizaene, whereas in the second, treatment of a related cyclic sulfate with NaBH_4 in *N,N*-dimethylformamide affords a pleasant smelling alcohol that embodies the *ent*-β-isopipitzol framework.



ChemViews magazine
DOI: 10.1002/chemv.201400016

Anion Pairs

D. Bradley

Theoretical Chloride Clusters to Help Chemical Engineers and Geochemists

The dichloride anion pair is not well investigated, but in their recent study, Alexander Boldyrev, Alexander Ivanov, et al. conclude that stable gaseous $\text{Cl}^- \cdot \text{Cl}^-$ pairs may play a key role in the nucleation of industrial steam and thus have implications for chemical engineering. The results of their systematic study of the microsolvation of the $\text{Cl}^- \cdot \text{Cl}^-$ pair are discussed in ChemViews Magazine.

