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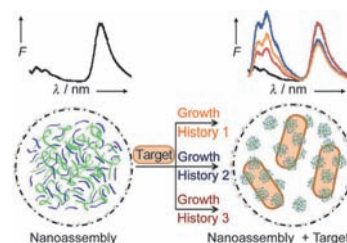


Biosensors

A. Duarte, M. Slutsky, G. Hanrahan,* C. M. Mello,* G. C. Bazan*

Supramolecular Electrostatic Nanoassemblies for Bacterial Forensics

Electrostatic nanoassemblies were employed to identify bacteria growth conditions. They comprise a cationic conjugated oligoelectrolyte and fluorescein-tagged ssDNA and were optimized with a hybrid, computational neural network model. The photoluminescence spectra contained the oligomer and sensitized fluorescein emission. The spectra changed depending on the growth history of the bacteria introduced (see figure).



Chem. Eur. J.
DOI: 10.1002/chem.201103237



Nanoporous Materials

H. L. Poh, M. Pumera*

Nanoporous Carbon Materials for Electrochemical Sensing

A great sense of achievement! The performance of nanoporous carbon as an electrode material was investigated and compared with that of bare glassy carbon, graphite microparticles, and carbon nanotubes. Nanoporous carbon was found to exhibit the highest heterogeneous electron transfer (HET) rate among these materials, thus sensing analytes such as NADH, DNA bases, and 2,4,6-trinitrotoluene (TNT) with an improved electrochemical response.



Chem. Asian J.
DOI: 10.1002/asia.201100681

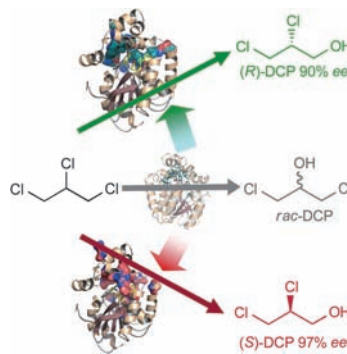


Haloalkane Dehalogenases

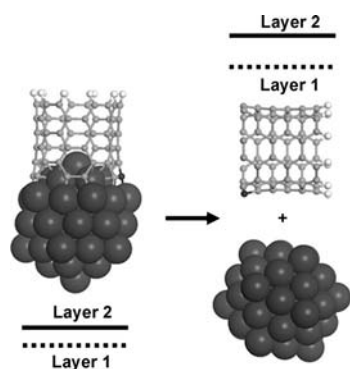
J. G. E. van Leeuwen, H. J. Wijma, R. J. Floor, J.-M. van der Laan, D. B. Janssen*

Directed Evolution Strategies for Enantiocomplementary Haloalkane Dehalogenases: From Chemical Waste to Enantiopure Building Blocks

Waste not, want not: A carefully optimized directed evolution strategy was used to obtain two enantiocomplementary haloalkane dehalogenase variants that convert the toxic waste compound 1,2,3-trichloropropane into either (*R*)- or (*S*)-2,3-dichloropropan-1-ol. The products can be converted into optically active epichlorohydrins that could be used for the preparation of various chiral pharmaceuticals.



ChemBioChem
DOI: 10.1002/cbic.201100579



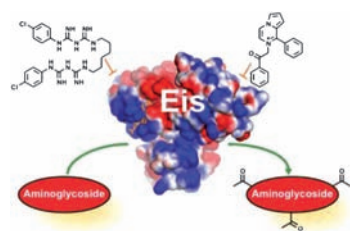
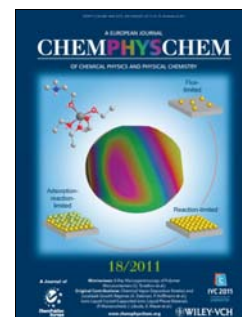
ChemPhysChem
DOI: 10.1002/cphc.201100454

Carbon Nanotubes

J. P. O'Byrne, Z. Li, S. L. T. Jones, P. G. Fleming, J. A. Larsson, M. A. Morris, J. D. Holmes*

Nitrogen-Doped Carbon Nanotubes: Growth, Mechanism and Structure

Bamboo nanostructures: Nitrogen-doped bamboo-structured carbon nanotubes are successfully grown using a series of cobalt/molybdenum catalysts (see picture). The growth of bamboo-structured nanotubes in the presence of nitrogen, in preference to single-walled and multi-walled nanotubes, is due to the greater binding energy of nitrogen for cobalt in the catalyst compared to the binding strength of carbon to cobalt, as determined by density functional theory.



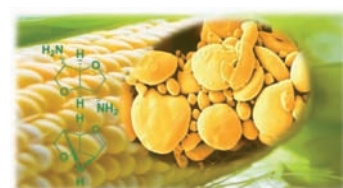
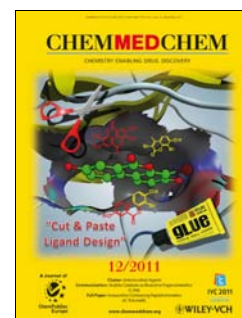
ChemMedChem
DOI: 10.1002/cmdc.201100332

Drug resistance

K. D. Green, W. Chen, S. Garneau-Tsodikova*

Identification and Characterization of Inhibitors of the Aminoglycoside Resistance Acetyltransferase EIS from *Mycobacterium tuberculosis*

Stopping resistance in tuberculosis: The unusually regioversatile acetyltransferase EIS is a cause of resistance to kanamycin A in cases of tuberculosis. En route to new tuberculosis treatments, several inhibitors of the EIS enzyme were identified and characterized.



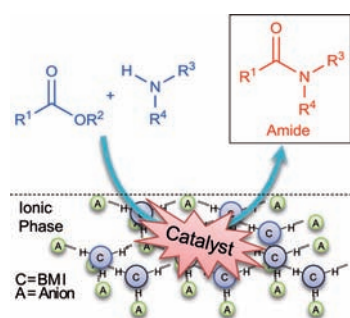
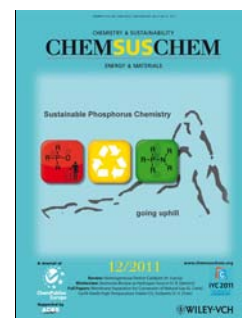
ChemSusChem
DOI: 10.1002/cssc.201100398

Renewable Resources

S. Thiyagarajan, L. Gootjes, W. Vogelzang, J. van Haveren, M. Lutz, D. S. van Es*

Renewable Rigid Diamines: Efficient, Stereospecific Synthesis of High Purity Isohexide Diamines

Turning up the stereo: An efficient three-step strategy for synthesizing chiral biobased dideoxy-diamino isoside and dideoxy-diamino isosorbide in high yield with absolute stereo control is described. These highly interesting chiral building blocks are presently the subject of several investigations due to their application in high-performance biobased polymers such as polyamides and polyurethanes.



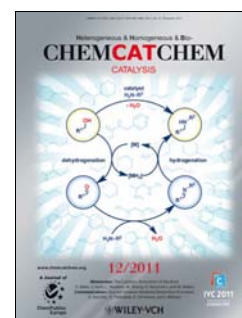
ChemCatChem
DOI: 10.1002/cctc.201100221

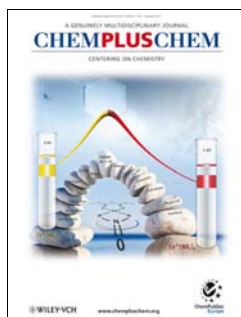
Ionic Liquids

V. M. de Oliveira, R. Silva de Jesus, A. F. Gomes, F. C. Gozzo, A. P. Umpierre, P. A. Z. Suarez, J. C. Rubim, B. A. D. Neto*

Catalytic Aminolysis (Amide Formation) from Esters and Carboxylic Acids: Mechanism, Enhanced Ionic Liquid Effect, and its Origin

Amides ride the ionic liquid cycles: A novel catalytic method to perform amide bond formation from esters and carboxylic acids in ionic liquids is described. Mechanistic studies and the ionic liquid effect are also investigated. Recycling reactions are performed successfully. NMR and electrospray ionization–quadrupole time-of-flight experiments allowed for the proposition of a catalytic cycle to explain the reaction with Brønsted acids, such as SnCl_2 and CdO .



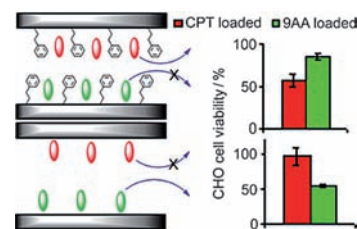


Nanoparticles

N. Ž. Knežević,* I. I. Slowing, V. S.-Y. Lin

Tuning the Release of Anticancer Drugs from Magnetic Iron Oxide/Mesoporous Silica Core/Shell Nanoparticles

A series of core/shell magnetic mesoporous silica nanoparticle (MMSN) materials were prepared comprised of iron oxide nanoparticle cores embedded in mesoporous silica shells having radial or hexagonal porous structures. The loading and release of anticancer drugs, 9-aminoacridine (9AA) and camptothecin (CPT), as well as cytotoxic activity of drug loaded materials, is influenced by the presence of phenylethyl functionalization inside the MMSN mesopores (see figure). An externally applied magnetic field accelerates the drug release from the materials. core/shell structures drug delivery magnetic materials mesoporous silica nanoparticles



ChemPlusChem
DOI: 10.1002/cplu.201100026

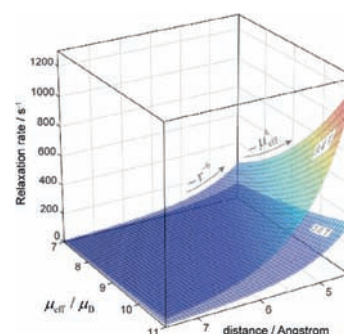


Magnetic Resonance Probes

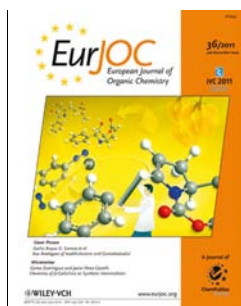
P. Harvey, I. Kuprov,* D. Parker*

Lanthanide Complexes as Paramagnetic Probes for ^{19}F Magnetic Resonance

Sensitivity in ^{19}F magnetic resonance spectroscopy and imaging is enhanced by placing a paramagnetic lanthanide within 7 Å of the spin label. Faster relaxation allows more rapid data acquisition for systems generating one main resonance, and the proximate lanthanide ion amplifies the chemical shift non-equivalence in responsive probes.



Eur. J. Inorg. Chem.
DOI: 10.1002/ejic.201100894

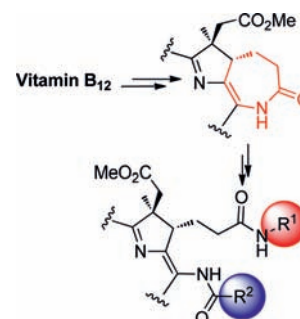


Lactam Formation

K. ó Proinsias, S. Kurcoń, D. Gryko*

Hydrophobic Vitamin B_{12} Derivatives: Unprecedented Formation of a 7-Membered Lactam

Synthesis of a seven-membered lactam–cobalamin derivative was achieved through intramolecular acidic aminolysis of heptamethyl dicyanocobyrinate with the NH_2 group at the C10 position. Subsequent ring opening gave new C8,C10-diamides.



Eur. J. Org. Chem.
DOI: 10.1002/ejoc.201101249



Green Carbon Dioxide – Interview with A. Quadrelli and G. Centi

Vera Köster

Green Carbon Dioxide – Interview with A. Quadrelli and G. Centi

Alessandra Quadrelli and Gabriele Centi guest edited the ChemSusChem special issue on Green Carbon Dioxide which focuses on emerging technologies for large-volume CO_2 recycling. They talk about how the perception of CO_2 has changed, the special issue, and the future of CO_2 recycling.



ChemViews magazine
DOI: 10.1002/chemv.201000144