Spotlights ...

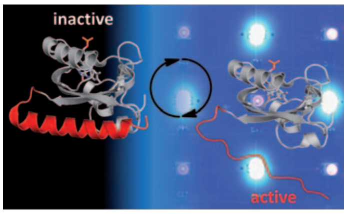
On these pages, we feature a selection of the excellent work that has recently been published in our sister journals. If you are reading these pages on a computer, click on any of the items to read the full article. Otherwise please see the DOIs for easy online access through Wiley Online Library.

Enzyme Function

U. Krauss,* T. Drepper, K.-E. Jaeger

Enlightened Enzymes: Strategies To Create Novel Photoresponsive Proteins

Photoswitchable enzymes—lights on! The photocontrol of protein functions, enzymatic reactions and thus biological activities in living cells and organisms represents a rapidly developing and interdisciplinary field of research at the interface of chemistry and biology. Recently developed methods employ genetically encoded photoreceptor domain fusions for the spatiotemporal control of protein functions (see graphic).



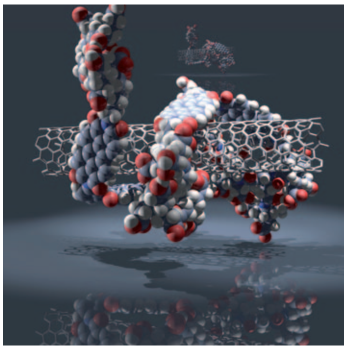
Chem. Eur. J.
DOI: **10.1002/chem.201002716**

Nanotubes

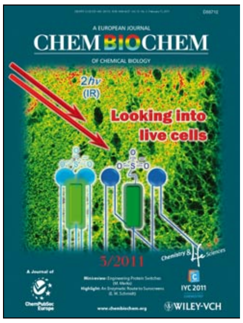
C. Backes, C. D. Schmidt, F. Hauke, A. Hirsch*

Perylene-Based Nanotweezers: Enrichment of Larger-Diameter Single-Walled Carbon Nanotubes

Tubethumping: Selective dispersion of single-walled carbon nanotubes (SWCNTs) in order to preferentially solubilize distinct diameters or even chiralities can be considered as the definitive sorting tool. The enrichment of SWCNTs with diameters larger than 0.8 nm by a novel tweezer-type dispersant with perylene bisimide moieties as SWCNT anchor groups is presented.



Chem. Asian J.
DOI: **10.1002/asia.201000647**

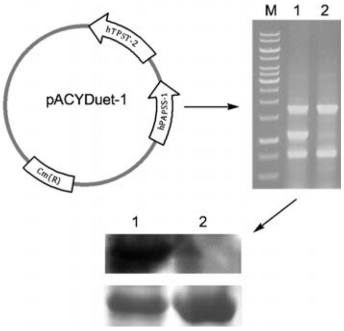


Posttranslational Modifications

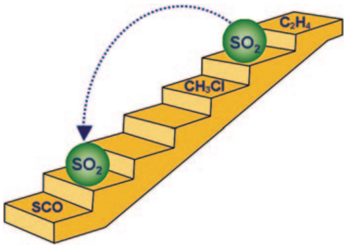
L.-Y. Lu, B.-H. Chen, J. Y.-S. Wu, C.-C. Wang, D.-H. Chen, Y.-S. Yang*

Implantation of Post-translational Tyrosylprotein Sulfation into a Prokaryotic Expression System

Sulfation made easy: Syntheses of tyrosine-sulfated proteins were developed by coupling an in situ 3′-phosphoadenosine-5′-phosphosulfate (PAPS)-generating system and tyrosylprotein sulfotransferase (TPST) catalysis. High catalytic efficiency of TPST in vitro was demonstrated, and by using a similar strategy, sulfated proteins were produced in vivo through bacterial cultivation.



ChemBioChem
DOI: **10.1002/cbic.201000540**



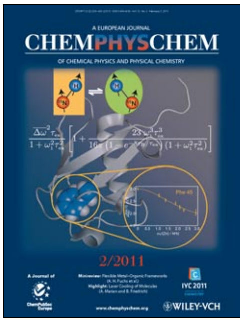
ChemPhysChem
DOI: **10.1002/cphc.201000920**

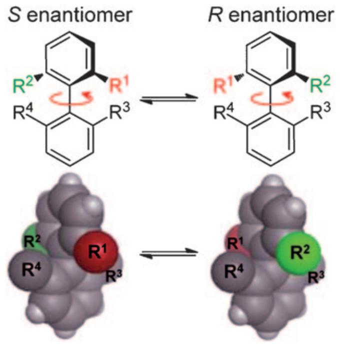
Gas-Phase Studies

G. de Petris,* A. Cartoni, M. Rosi, V. Barone, C. Puzzarini, A. Troiani

The Proton Affinity and Gas-Phase Basicity of Sulfur Dioxide

Going down the steps: New gas-phase experiments and theoretical calculations revise significantly downward the proton affinity and gas-phase basicity of sulfur dioxide (see picture).





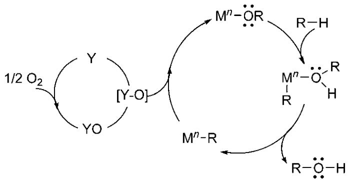
ChemMedChem
DOI: **10.1002/cmdc.201000485**

Drug Discovery

S. R. LaPlante,* P. J. Edwards, L. D. Fader, A. Jakalian, O. Hucke*

Revealing Atropisomer Axial Chirality in Drug Discovery

Uncovering stealth chirality: An often overlooked source of chirality is atropisomerism, which results from slow rotation along a bond axis as a result of steric hindrance and/or electronic factors. A combination of strategies is introduced to flag compounds with atropisomeric properties, and a categorization scheme helps to foresee potential development plans.



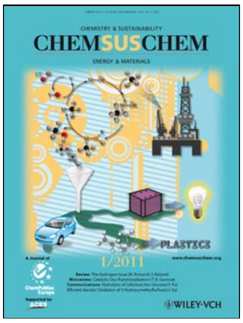
ChemSusChem
DOI: **10.1002/cssc.201000319**

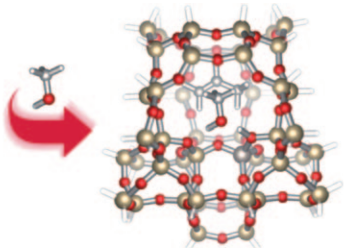
Methanol Economy

J. R. Webb, T. Bolaño, T. B. Gunnoe*

Catalytic Oxy-Functionalization of Methane and Other Hydrocarbons: Fundamental Advancements and New Strategies

The controlled conversion of methane to methanol requires C–H bond cleavage and C–O bond formation. A catalytic cycle incorporating 1,2-CH-addition and net oxygen insertion with late transition metals has been proposed for this conversion. This Minireview discusses the current state of the art for each step of the proposed catalytic cycle.





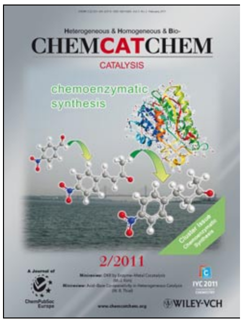
ChemCatChem
DOI: **10.1002/cctc.201000286**

Density Functional Theory

D. Lesthaeghe, J. Van der Mynsbrugge, M. Vandichel, M. Waroquier, V. Van Speybroeck*

Full Theoretical Cycle for both Ethene and Propene Formation during Methanol-to-Olefin Conversion in H-ZSM-5

For methanol-to-olefin conversion in H-ZSM-5, theoretical simulations provide evidence that the 'alkene cycle' offers a viable path to the production of both propene and ethene, in contrast to the failing direct mechanisms. Combined with earlier work on polymethylbenzenes as active hydrocarbon pool molecules, it is clear that, in H-ZSM-5, multiple parallel and interlinked routes operate on a competitive basis.



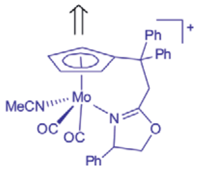
Olefin Epoxidation

P. M. Reis, C. A. Gamelas, J. A. Brito, N. Saffon, M. Gómez, B. Royo*

Chiral Cationic [Cp′Mo(CO)$_2$(NCMe)]$^+$ Species – Catalyst Precursors for Olefin Epoxidation with H_2O_2 and *tert*-Butyl Hydroperoxide

The chiral molybdenum cationic complex [Cp^{ox}Mo(CO)$_2$(NCMe)]$^+$ (**5**) bearing a cyclopentadienyl group tethered to an oxazoline ring was synthesized and applied to olefin epoxidation using H_2O_2 and TBHP. The involvement of both C- and O-centred radicals in the olefin epoxidation with **5** as a catalyst was supported by radical trap experiments.

Olefin epoxidation precatalyst with H_2O_2 and TBHP



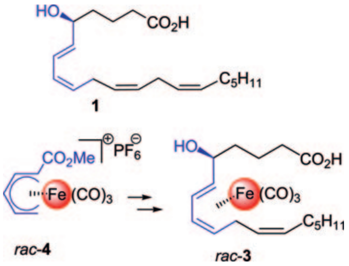
Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.201001065**

Iron-Containing HETE Analogues

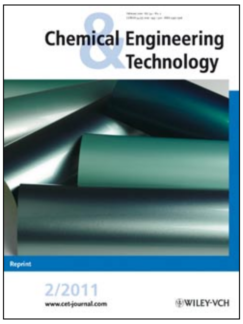
N. Kausch-Busies, B. Kater, J. M. Neudörfl, A. Prokop, H.-G. Schmalz*

Synthesis and First Biological Evaluation of an Iron-Containing HETE Analogue

As a metal-containing analogue of the eicosanoid 5-HETE, iron carbonyl complex *rac*-**3** was stereoselectively synthesized from cationic pentadienyl–Fe(CO)$_3$ precursor *rac*-**4**. Sensitive complex *rac*-**3** was shown to selectively induce apoptosis in relevant tumor cell lines.



Eur. J. Org. Chem.
DOI: **10.1002/ejoc.201001445**

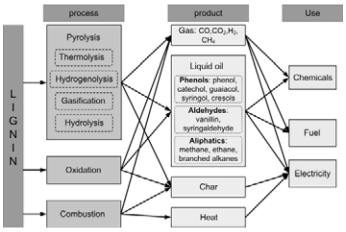


Lignin Depolymerization

M. P. Pandey, C. S. Kim*

Lignin Depolymerization and Conversion: A Review of Thermochemical Methods

An efficient and commercially competitive lignocellulosic biorefinery requires optimum utilization of all biomass components. Till date, lignin is the most underutilized component of a lignocellulosic biomass. However, lignin depolymerization with selective bond cleavage can convert it into various value-added chemicals including monomeric phenols and phenolic aldehydes.



Chem. Eng. Technol.
DOI: **10.1002/ceat.201000270**