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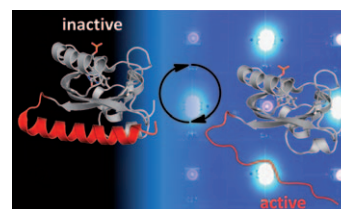


Enzyme Function

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

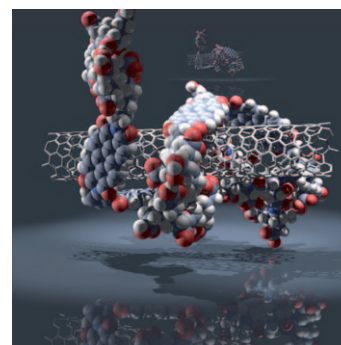


Nanotubes

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

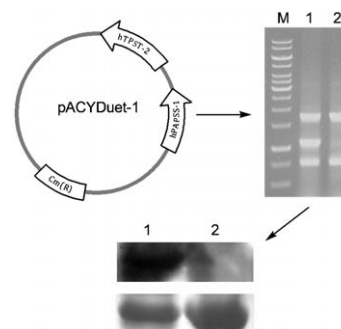


Posttranslational Modifications

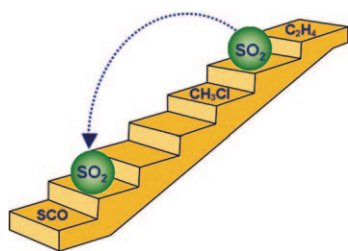
L.-Y. Lu, B.-H. Chen, J. Y.-S. Wu, C.-C. Wang, D.-H. Chen, Y.-S. Yang*

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



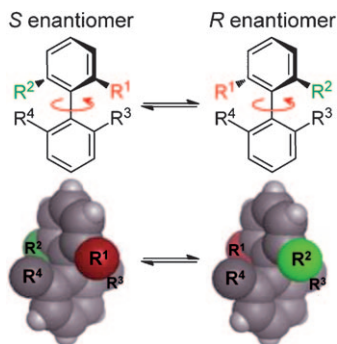
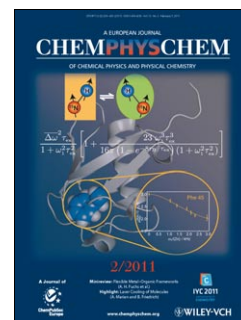
ChemPhysChem
DOI: 10.1002/cphc.201000920

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).



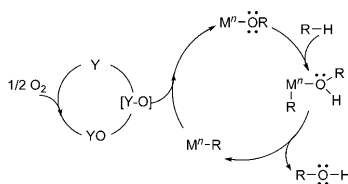
ChemMedChem
DOI: 10.1002/cmdc.201000485

Drug Discovery

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

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.



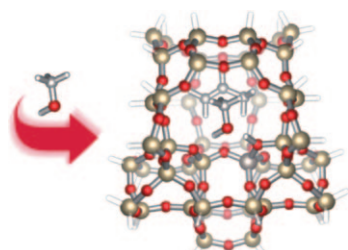
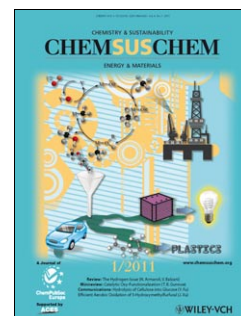
ChemSusChem
DOI: 10.1002/cssc.201000319

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.



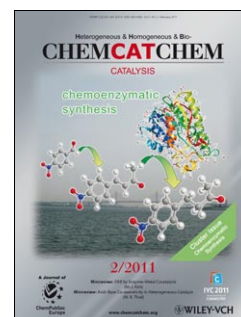
ChemCatChem
DOI: 10.1002/cctc.201000286

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.



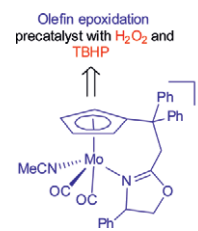


Olefin Epoxidation

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

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

The chiral molybdenum cationic complex $[\text{Cp}^*\text{Mo}(\text{CO})_2(\text{NCMe})]^+$ (**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.



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

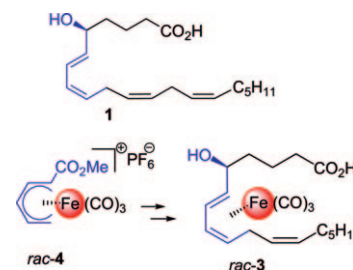


Iron-Containing HETE Analogues

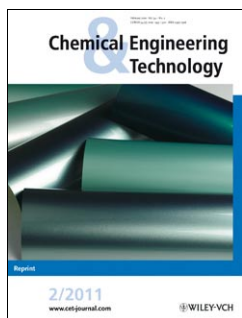
N. Kausch-Busies, B. Kater, J. M. Neudörfl, A. Prokop, H.-G. Schmalz*

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- $\text{Fe}(\text{CO})_3$ 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

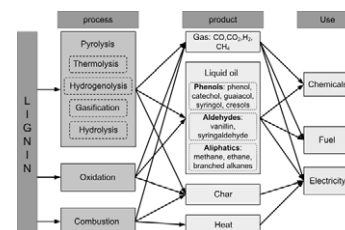


Lignin Depolymerization

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