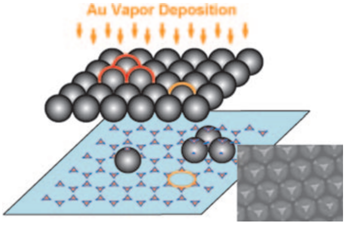
Spotlights ...

Nanostructures

G. Zhang, D. Wang*

Colloidal Lithography—The Art of Nanochemical Patterning

Nanochemical Printmaking: Colloidal lithography paves a powerful nanochemical way for patterning on planar substrates and microparticles. The feature size can easily be scaled down to 100 nm by reducing the diameter of the microspheres and the feature shape diversified by the crystalline structure of a colloidal crystal mask, the mask etching time, the incidence angle of the vapor beam, and the mask registry (the azimuth angle of the vapor beam).



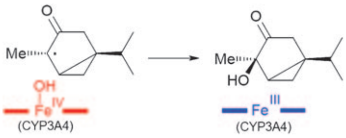
Chem. Asian J.
DOI: **10.1002/asia.200800298**

Allosterism

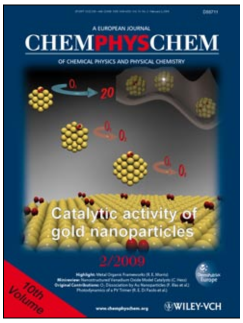
Y. Jiang, P. R. Ortiz de Montellano*

Cooperative Effects on Radical Recombination in CYP3A4-Catalyzed Oxidation of the Radical Clock β-Thujone

Tick tock: The timing of the β-thujone radical clock (see scheme) can be specifically altered by an allosteric effector. Progesterone, a well-documented CYP3A4 allosteric effector, was found to increase the yield of the unrearranged, C4-derived product of β-thujone oxidation at the expense of the combined yields of all the rearranged C4-oxidized metabolites. The results demonstrate that the apparent radical recombination rate in the CYP3A4 hydroxylation of β-thujone is accelerated by the progesterone hetereotropic cooperativity.



ChemBioChem
DOI: **10.1002/cbic.200800772**

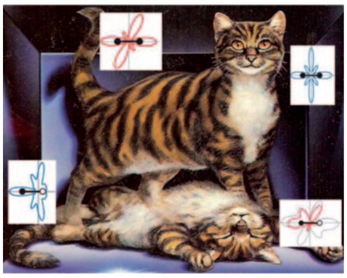


Diatomic Molecules

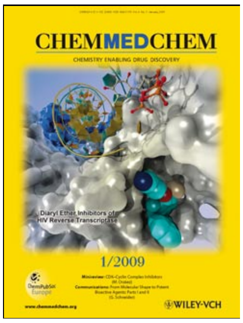
M. Pedio, M. Chergui*

The Molecular Cat

A manifestation of electronic entanglement in core-level spectroscopic measurements of diatomic molecules, reported recently by Schöffler and co-workers, is discussed. The results are reminiscent of Schrödinger's famous Gedanken experiment with the cat (see picture).



ChemPhysChem
DOI: **10.1002/cphc.200800770**

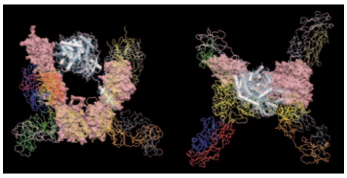


Treating Diabetes

A. K. Petrus, D. G. Allis, R. P. Smith, T. J. Fairchild,* R. P. Doyle*

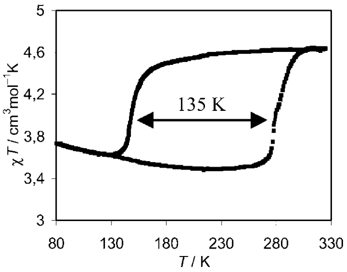
Exploring the Implications of Vitamin B_{12} Conjugation to Insulin on Insulin Receptor Binding

The dynamic behavior of insulin in solution and its binding geometry with the insulin receptor (IR) have been the focus of experimental and computational studies. We investigated how the structure of an orally deliverable insulin changes in solution after vitamin B_{12} conjugation and its effect on IR binding capacity. In vitro immunoelectron microscopy confirms conjugate activity, IR binding, and cellular uptake.



ChemMedChem
DOI: **10.1002/cmdc.200800346**

Prussian Blue Analogues

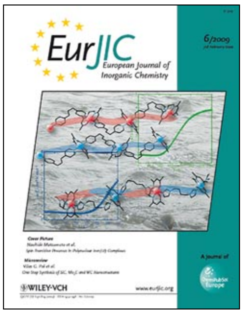


L. Salmon, E. J. M. Vertelman, C. B. Murgui, S. Cobo, G. Molnár, P. J. van Koningsbruggen,* A. Bousseksou*

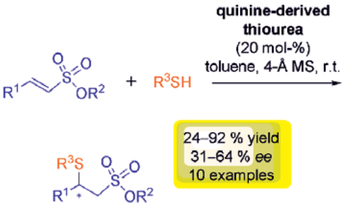
Valence-Tautomeric RbMnFe Prussian Blue Analogues: Composition and Time Stability Investigation

Three different stoichiometric forms of $Rb_xMn[Fe(CN)_6]_y{\cdot}zH_2O$ Prussian blue analogues were synthesized and characterized. ^{57}Fe Mössbauer and X-ray powder measurements revealed the electron-transfer-active centers. The stability of the compounds with time and following heat treatment is also discussed.

Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.200800978**



Organocatalysis



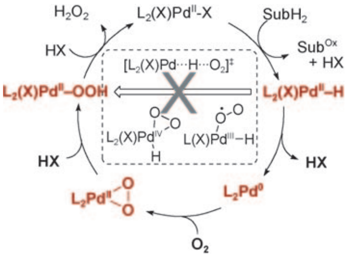
D. Enders,* K. Hoffman

Organocatalytic Asymmetric Sulfa-Michael Additions to α,β-Unsaturated Sulfonates

A quinine-derived thiourea was found to catalyze the sulfa-Michael addition of various aromatic thiols and α,β-unsaturated sulfonates to afford chiral β-sulfur-substituted sulfonic acid derivatives. Moderate levels of asymmetric induction were achieved in this reaction, which represents the first use of α,β-unsaturated sulfonates in catalytic asymmetric synthesis.

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200801202**

Homogeneous Catalysis



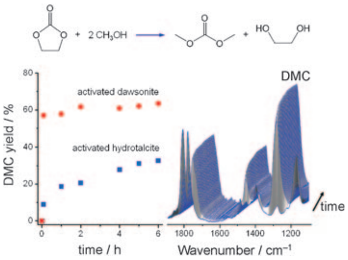
B. V. Popp,* S. S. Stahl*

Mechanism of $Pd(OAc)_2$/Pyridine Catalyst Reoxidation by O_2: Influence of Labile Monodentate Ligands and Identification of a Biomimetic Mechanism for O_2 Activation

Aerobic oxidation: Mechanisms of aerobic oxidation of the $Pd^{II}(OAc)_2$/pyridine catalyst system were evaluated by using density functional theory methods. The results reveal that labile monodentate ligands, such as pyridine, favor a catalyst reoxidation pathway that proceeds via Pd^0, rather than direct reaction of O_2 with a Pd^{II}–hydride intermediate (see scheme).

Chem. Eur. J.
DOI: **10.1002/chem.200802311**

Heterogeneous Catalysis

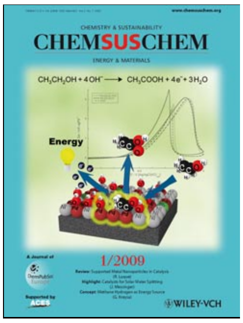


G. Stoica, S. Abelló, J. Pérez-Ramírez*

Synthesis of Dimethyl Carbonate by Transesterification of Ethylene Carbonate over Activated Dawsonites

Basic instinct: Basic aluminates derived from the activation of Na- and K-dawsonites are highly active and reusable catalysts for the transesterification of ethylene carbonate and methanol to dimethyl carbonate. The product is obtained in about 65 % yield in 6 h even when the reaction is scaled up 100-fold to a 2 L reactor.

ChemSusChem
DOI: **10.1002/cssc.200800195**



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