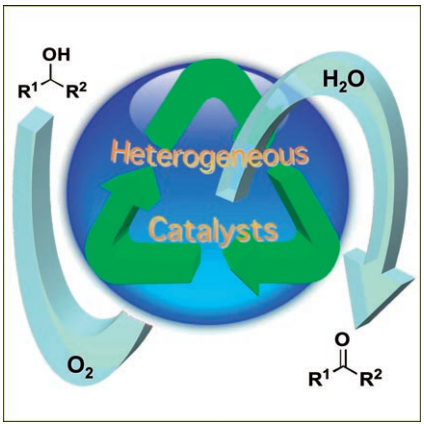
Heterogeneous Catalysts

T. Matsumoto, M. Ueno, N. Wang, S. Kobayashi*

Recent Advances in Immobilized Metal Catalysts for Environmentally Benign Oxidation of Alcohols

Chem. Asian J.
DOI: **10.1002/asia.200700359**



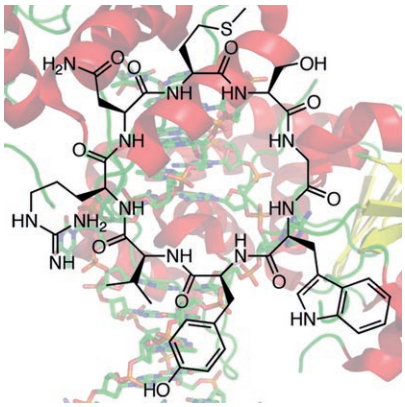
The search is on for heterogeneous catalysts combined with environmentally benign oxidants, such as molecular oxygen and hydrogen peroxide, for the selective oxidation of alcohols. This Focus Review presents an overview of recent developments in immobilized metal catalysts and evaluates the potential of transition metals in the heterogeneously catalyzed oxidation of alcohols.

Cyclic Peptides

T. A. Naumann, A. Tavassoli, S. J. Benkovic*

Genetic Selection of Cyclic Peptide Dam Methyltransferase Inhibitors

ChemBioChem
DOI: **10.1002/cbic.200700561**



Let's go round. We report the development of a transposition based genetic selection methodology used to uncover three cyclic peptide inhibitors of the *E. coli* methyltransferase. The activity of the selected cyclic peptides was confirmed in vivo and in vitro. The IC_{50} of the most active cyclic peptide (SGWYVRNM, shown in the figure) was comparable to that of the known methyltransferase inhibitor, sinefungin.

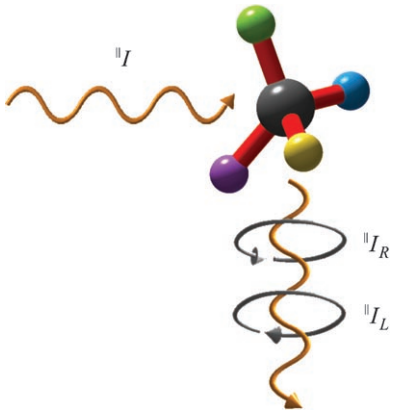
Optical Activity

G. Zuber,* P. Wipf,* D. N. Beratan*

Exploring the Optical Activity Tensor by Anisotropic Rayleigh Optical Activity Scattering

ChemPhysChem
DOI: **10.1002/cphc.200700660**

Exploring optical activity: Anisotropic RayOA scattering in concert with theoretical analysis provides a powerful new method to assign the absolute configuration of chiral molecules (see picture). Anisotropic RayOA invariants also find applications as chirality descriptors that contain information on both the molecular topology and the electronic structure.



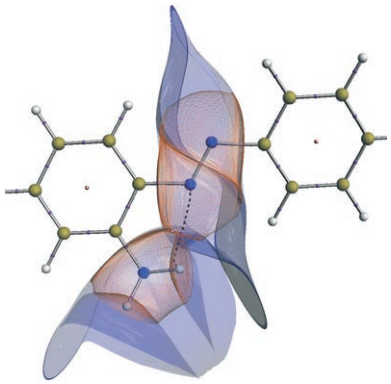
Molecular Modeling

I. Bytheway,* M. G. Darley, P. L. A. Popelier*

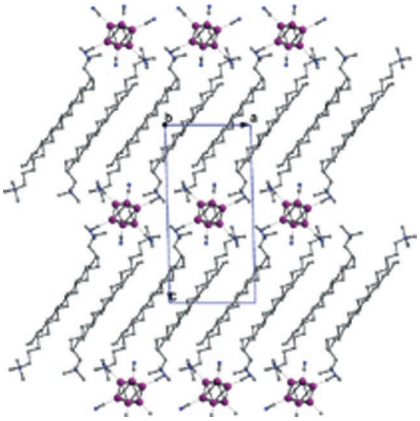
The Calculation of Polar Surface Area from First Principles: An Application of Quantum Chemical Topology to Drug Design

ChemMedChem
DOI: **10.1002/cmdc.200700262**

Using QCT for drug design. A newly developed method to calculate the polar surface areas based on quantum chemical topology is described and the results compared with standard methods. Differences between methods showed how the calculation of the PSA depends on the method used, and therefore, judicious application of the upper limits used in the prediction of oral bioavailability is warranted.



The mesostructured lamellar phases with the general formula $[C_nH_{2n+1}N(CH_3)_3]_4[Re_6Q_8(CN)_6]$ (n = 14, 16, 18; Q = Te, Se, S; **1**: n = 14, Q = Te; **2**: n = 16, Q = Te; **3**: n = 18, Q = Te; **4**: n = 16, Q = Se; **5**: n = 16, Q = S) were prepared by an ion exchange/precipitation reaction of alkyltrimethylammonium surfactants and the corresponding cluster $K_4[Re_6Q_8(CN)_6]$ in an H_2O/acetone medium at room temperature. In the structure, the rhenium clusters form layers with a pseudo-hexagonal arrangement, and these inorganic layers are separated by a bilayer of interdigitated surfactant cations.

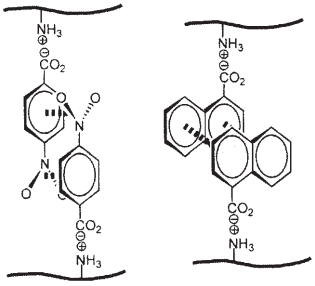


Lamellar Phases of Rhenium Clusters

M.-J. Suh, V. Vien, S. Huh, Y. Kim, S.-J. Kim*

Mesolamellar Phases Containing $[Re_6Q_8(CN)_6]^{4-}$ (Q = Te, Se, S) Cluster Anions

Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.200701125**



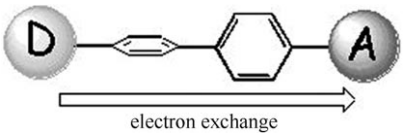
Van der Waals interactions between effector molecules in aqueous solution lead to contraction of polyallymine gel particles, which for benzoic acids increase from about 18% to 70% by the presence of nitro groups, and to 67% with naphthalene derivatives. The observed cooperativity indicates dispersive forces as major driving factor for volume changes in such intelligent materials.

Chemomechanical Polymers

K. Kato, H.-J. Schneider*

Dispersive Effects in Chemomechanical Reactions with Polyallylamine-Derived Hydrogels

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200700850**



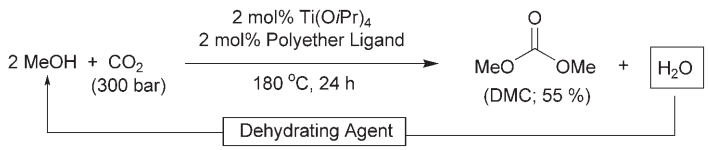
A new angle on energy transfer: The rate of intramolecular triplet energy transfer in donor–spacer–acceptor dyads (see scheme) depends precisely on the dihedral angle between bridging phenylene rings, but the situation is complicated by mixing with an upper-lying excited triplet state localized on the donor.

Donor–Acceptor Systems

A. C. Benniston, A. Harriman,* P. Li, P. V. Patel, C. A. Sams

Electron Exchange in Conformationally Restricted Donor–Spacer–Acceptor Dyads: Angle Dependence and Involvement of Upper-Lying Excited States

Chem. Eur. J.
DOI: **10.1002/chem.200701548**



Run DMC: Homogeneous catalysts based on titanium alkoxides and polyethers were studied for the production of the industrially important intermediate dimethyl carbonate (DMC) from carbon dioxide and methanol (see scheme). The reaction proceeds in the presence of 2,2-dimethoxypropane as a recyclable organic dehydrating agent under supercritical CO_2 conditions.

Carbon Dioxide Fixation

K. Kohno, J.-C. Choi, Y. Ohshima, H. Yasuda, T. Sakakura*

Synthesis of Dimethyl Carbonate from Carbon Dioxide Catalyzed by Titanium Alkoxides with Polyether-type Ligands

ChemSusChem
DOI: **10.1002/cssc.200700113**