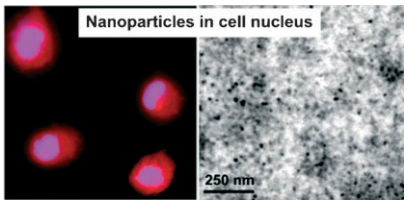
Cell Imaging

C. Xu, J. Xie, N. Kohler, E. G. Walsh, Y. E. Chin, S. Sun*

Monodisperse Magnetite Nanoparticles Coupled with Nuclear Localization Signal Peptide for Cell-Nucleus Targeting

Chem. Asian J.
DOI: **10.1002/asia.200700301**



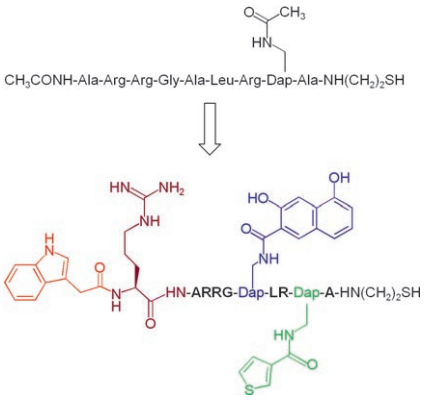
On target! Monodispersed Fe_3O_4 nanoparticles were readily functionalized with nuclear localization signal (NLS) peptide and stabilized under physiological conditions. The NLS-peptide-coated nanoparticles show preferred uptake by HeLa cell nuclei over the non-NLS-labeled nanoparticles. This strategy could potentially be applied to various signal peptides, genes, or drugs to deliver them to specific organelles.

Bisubstrate Inhibitors

J. H. Lee, S. Kumar, D. S. Lawrence*

Stepwise Combinatorial Evolution of Akt Bisubstrate Inhibitors

ChemBioChem
DOI: **10.1002/cbic.200700583**



Bisubstrate analogue inhibitors have recently received considerable attention as mechanistic and structural probes of protein kinases. A stepwise library-based strategy was employed to create a potent bisubstrate inhibitor of Akt from an extraordinarily weak nonphosphorylatable peptide. The combinatorial methodology offers a means to retain desirable properties during the directed evolution of inhibitory species.

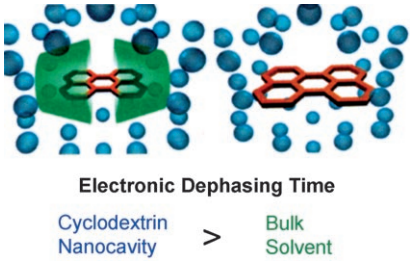
Electronic Dephasing

T. Kiba, T. Kasajima, Y. Nishimura, S.-i. Sato*

Cyclodextrin Nanocavity Caging Effect on Electronic Dephasing

ChemPhysChem
DOI: **10.1002/cphc.200700742**

Decoherence moderation: The quantum interference (QI) of the molecular wavefunction of perylene in THF is compared with that in γ-cyclodextrin (CD). The rate of the electronic dephasing of perylene is found to decrease in the CD nanocavity (see picture), which suggests a CD-encapsulation-moderated decoherence of the wavefunction—even at room temperature.

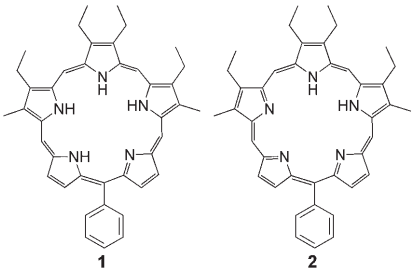


Photochemistry

V. Rapozzi, C. Lombardo, S. Cogoi, C. Comuzzi, L. Xodo*

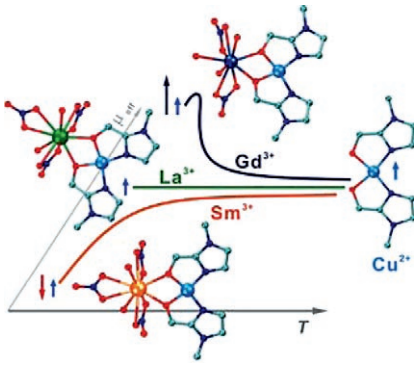
Small Interfering RNA-Mediated Silencing of Glutathione-*S*-Transferase A1 Sensitizes Hepatic Carcinoma Cells to Photodynamic Therapy with Pentaphyrins

ChemMedChem
DOI: **10.1002/cmdc.200700273**



Photodynamic therapy (PDT) uses nontoxic photosensitizers and visible light to produce reactive oxygen species that kill malignant cells by apoptosis or necrosis. Silencing the antioxidant *GSTA1-1* gene by siRNA sensitizes hepatic HepG2 cells to PDT with pentaphyrins. The study is a proof-of-concept for combining PDT with antigene molecules that decrease cellular response to oxidative stress.

Three discrete dinuclear copper(II)–lanthanide(III) complexes, namely, $[CuLn(mmi)_2(NO_3)_3(H_2O)_2]$ [Ln = La, Sm] and $[CuGd(mmi)_2(NO_3)_2(H_2O)_3][NO_3]$, were assembled with the cupric metalloligand $[Cu(mmi)_2]$ and characterized by X-ray crystallography. They exhibit paramagnetic, antiferromagnetic and ferromagnetic behaviours, respectively.

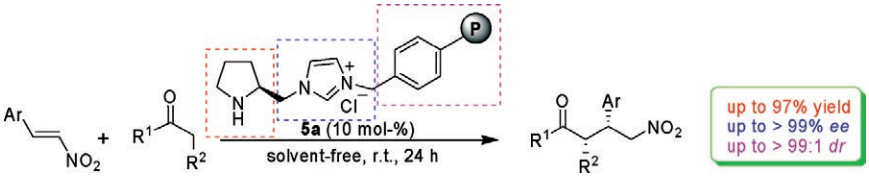


Heterometallic 3d–4f Metal Clusters

W.-X. Zhang, Y.-Y. Yang,* S.-B. Zai, S. Weng, N., X.-M. Chen*

Syntheses, Structures and Magnetic Properties of Dinuclear Copper(II)–Lanthanide(III) Complexes Bridged by 2-Hydroxymethyl-1-methylimidazole

Eur. J. Inorg. Chem.
DOI: **10.1002/ejic.200701041**



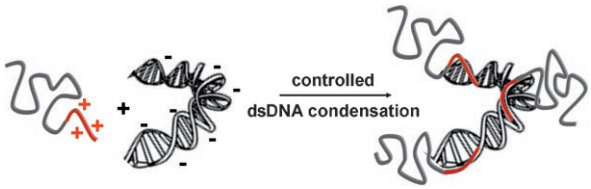
A polymer-immobilized pyrrolidine-based chiral ionic liquid **5a** was found as a highly efficient catalyst for the Michael additions of ketones and aldehydes to nitrostyrenes. The reactions afforded the corresponding adducts in good yields (up to 97%), excellent enantioselectivities (up to >99% *ee*) and high diastereoselectivities (up to >99:1 *dr*) under solvent-free reaction conditions. Furthermore, **5a** could be reused at least eight times without a significant loss of its catalytic activity and stereoselectivity.

Immobilized Chiral Ionic Liquids

P. Li, L. Wang,* M. Wang, Y. Zhang

Polymer-Immobilized Pyrrolidine-Based Chiral Ionic Liquids as Recyclable Organocatalysts for Asymmetric Michael Additions to Nitrostyrenes under Solvent-Free Reaction Conditions

Eur. J. Org. Chem.
DOI: **10.1002/ejoc.200701037**



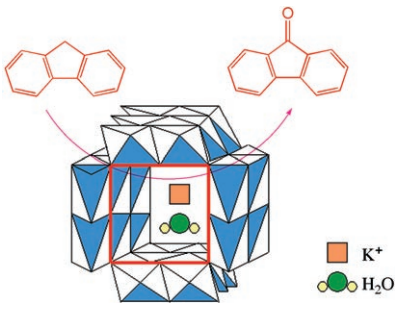
Controlled DNA complexation with new carrier systems that are based on monodisperse, sequence-defined poly(amidoamines) (PAA) are reported. A set of polymer carriers for DNA delivery is synthesized by combining monodisperse, sequence-defined, poly(amidoamine) segments with poly(ethylene oxide) blocks; this enables a controlled compression of double-strand plasmid DNA and a direct correlation of the chemical PAA-structure (monomer sequence) with the resulting biological properties of the carrier.

DNA Complexation

L. Hartmann, S. Häfele, R. Peschka-Süss, M. Antonietti, H. G. Börner*

Tailor-Made Poly(amidoamine)s for Controlled Complexation and Condensation of DNA

Chem. Eur. J.
DOI: **10.1002/chem.200701223**



Sift fluorene into a bowl: Manganese oxide octahedral molecular sieves (OMS-2), with the overall composition $KMn_8O_{16}{\cdot}n\,H_2O$, catalyze the mild, green, and efficient oxidation of 9H-fluorene to 9-fluorenone. The involvement of lattice oxygen species has been implicated in a free-radical chain mechanism. In terms of reaction kinetics, the breaking of the C–H bond is rate controlling.

Heterogeneous Catalysis

N. N. Opembe, Y.-C. Son, T. Sriskandakumar, S. L. Suib*

Kinetics and Mechanism of 9H-Fluorene Oxidation Catalyzed by Manganese Oxide Octahedral Molecular Sieves

ChemSusChem
DOI: **10.1002/cssc.200700094**