



Swiss Science Concentrates

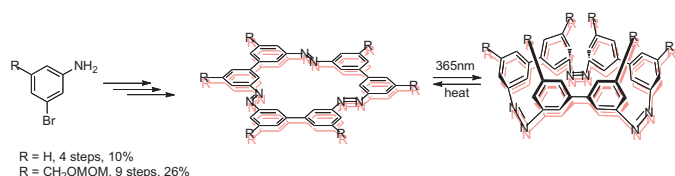
A CHIMIA Column

Short Abstracts of Interesting Recent Publications of Swiss Origin

Synthesis and Isomerization Studies of Cyclotrisazobiphenyl

R. Reuter and H.A. Wegner*, *Chem. Eur. J.* **2011**, *17*, 2987.
University of Basel

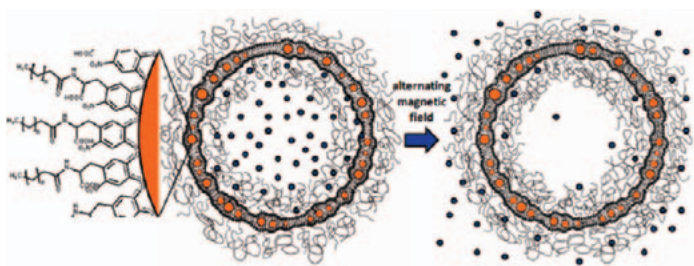
Multichromic systems are of great interest, both for information storage purposes and as molecular machines. In this context, cyclic structures based on the azobenzene scaffold can be expected to undergo significant conformational changes upon *cis-trans* isomerisation. The authors report an efficient synthesis of substituted tris-cycloazobiphenyl scaffolds and their photophysical properties. Such systems lend themselves ideally to the synthesis of molecular grippers which, upon light-triggering, could catch or release their cargo.



Triggered Release from Liposomes through Magnetic Actuation of Iron Oxide Nanoparticle Containing Membranes

E. Amstad, J. Kohlbrecher, E. Müller, T. Schweizer, M. Textor, and E. Reimhult*, *Nano Lett.* **2011**, *11*, 1664.
ETH Zürich, PSI, and University of Natural Resources and Life Sciences, Vienna

Liposomes are promising nano-vessels for drug delivery. The triggered release of their cargo is essential to deliver therapeutics in diseased tissue. Incorporation of superparamagnetic iron oxide nanoparticles into the lipid bilayer of stealth liposomes yielded vesicles that released a model compound upon irradiation with an alternating magnetic field. The release was caused by the local generation of heat, switching the lipid membrane from a tight to a leaky state.

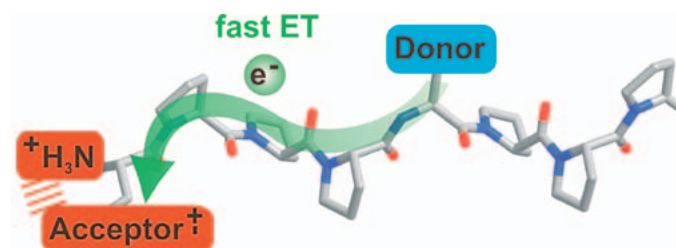


Electron Transfer in Peptides: The Influence of Charged Amino Acids

J. Gao, P. Müller, M. Wang, S. Eckhardt, M. Lauz, K. M. Fromm, and B. Giese*, *Angew. Chem. Int. Ed.* **2011**, *50*, 1926.

Universities of Basel and Fribourg

Long-range electron transfer (ET) through proteins is a fundamental process for all living organisms. The ET mechanism is controversial and the rate critically depends on many parameters, including the overall charge. To address this issue, the authors demonstrate that the ET rate in PPII-helical peptides is strongly influenced by charges. This effect is explained by the influence of the Coulomb energy on the activation free energy according to the Marcus theory.



Access to High Levels of Molecular Complexity by One-Pot Iridium/Enamine Asymmetric Catalysis

A. Quintard, A. Alexakis,* and C. Mazet*, *Angew. Chem. Int. Ed.* **2011**, *50*, 2354.

University of Geneva

This joint effort describes a two-step/one-pot sequence that capitalizes on the excellent compatibility of two reactions: the asymmetric iridium-catalyzed isomerization of primary allylic alcohols to aldehydes, and the organocatalyzed enantioselective α -functionalization of aldehydes. Using this strategy, a variety of synthetically useful compounds can be obtained in good yields, and excellent diastereo- and enantioselectivities.

