



Swiss Science Concentrates

A CHIMIA Column

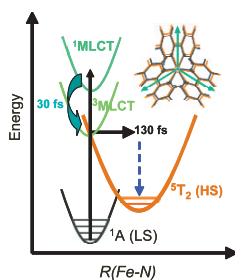
Short Abstracts of Interesting Recent Publications of Swiss Origin

Femtosecond XANES Study of the Light-Induced Spin Crossover Dynamics in an Iron(II) Complex

C. Bressler, C. Milne, V.-T. Pham, A. ElNahas, R. M. van der Veen, W. Gawelda, S. Johnson, P. Beaud, D. Grolimund, M. Kaiser, C. N. Borca, G. Ingold, R. Abela, and M. Chergui*, *Science* **2009**, 323, 489

EPF Lausanne; Paul-Scherrer Institut

Investigations are presented on the ultrafast formation of the lowest quintet state of aqueous iron(II) tris(bipyridine) upon excitation of the singlet metal-to-ligand-charge-transfer ($^1\text{MLCT}$) state by femtosecond optical pump/X-ray probe techniques based on X-ray absorption near-edge structure (XANES). The results resolve the long-standing issue about the population mechanism of quintet states in iron(II)-based complexes, which is now identified as a simple $^1\text{MLCT} \rightarrow ^3\text{MLCT} \rightarrow ^5\text{T}_2$ cascade from the initially excited state.

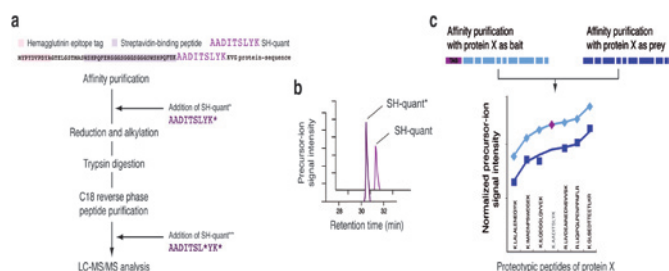


Quantitative Interaction Proteomics Using Mass Spectrometry

A. Wepf, T. Glatter, A. Schmidt, R. Aebersold, and M. Gstaiger*, *Nature Methods* **2009**, 6, 203

ETH Zürich; University of Zurich; Institute of System Biology, Seattle

In the article, the authors present a new mass-spectrometry based method for the absolute quantification of protein complexes in large-scale protein interaction studies. The protein abundance in a sample is measured by comparison with an isotope-labeled peptide of known abundance. This method allows the detection of small changes in the protein interaction networks and the accurate measurement of the stoichiometries of soluble protein interactions. This strategy was efficiently applied to the quantitative analysis of the interaction stoichiometries in the human protein phosphatase 2A network.

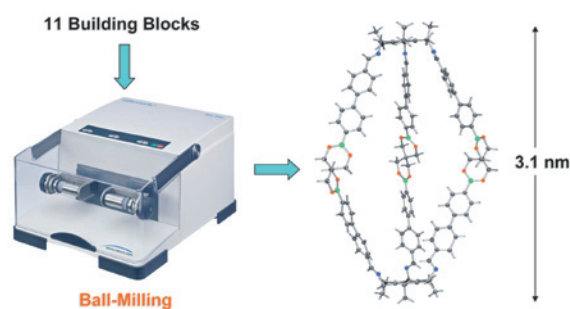


Synthesis of Macromolecular Nanostructures by Multicomponent Condensation Reactions in a Ball Mill

B. İçli, N. Christinat, J. Tönnemann, C. Schüttler, R. Scopelliti, and K. Severin*, *J. Am. Chem. Soc.* **2009**, 131, 3154

EPF Lausanne

In this article, the authors describe the synthesis of two molecular cages obtained by polycondensation of eleven building blocks in a ball mill. Evidence is presented that ball milling induces faster, cleaner, and more efficient syntheses than the corresponding solution-based reactions for this multicomponent process based on dynamic covalent chemistry. The results suggest that ball milling is potentially a very attractive alternative to classical synthetic methods.



Building 2D Crystals from 5-Fold-Symmetric Molecules

T. Bauert, L. Merz, D. Bandera, M. Parschau, J. S. Siegel*, and K.-H. Ernst*, *J. Am. Chem. Soc.*, **2009**, 131, 3460

University of Zurich; Empa Dübendorf

In this article authors discuss the concept of close packing in monolayers of 5-fold-symmetric molecules. It is shown that corannulene avoids C_5 symmetry by a significant tilt into its adsorbate geometry on Cu(111). Chiral pentachloro and pentamethyl analogues form hexagonal lattices with dislocations or azimuthal disorder at a local length scale due to their bulky substituents at the rim of the buckybowls. Complicated process at the molecular level can thus be studied by STM that are in good agreement of modelling results for packing rigid pentagons in two dimensions.

