



## Swiss Science Concentrates

A CHIMIA Column

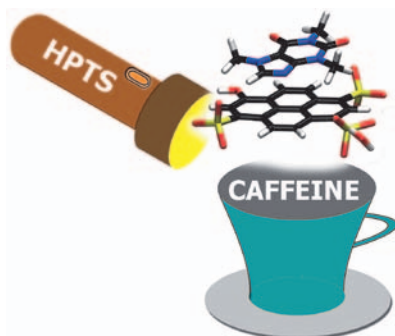
Short Abstracts of Interesting Recent Publications of Swiss Origin

### Fluorescence Sensing of Caffeine in Water with Polysulfonated Pyrenes

S. Rochat, S. N. Steinmann, C. Corminboeuf, and K. Severin\*, *Chem. Commun.* **2011**, 47, 10584.

EPF Lausanne

The selective recognition of caffeine by small-molecule receptors is challenging. Major limitations are sensitivity, selectivity or requirement of organic solvents. The authors report the application of the commercially available fluorescence dye 8-hydroxypyrene-1,3,6-trisulfonate (HPTS) for fluorescence detection of caffeine in buffered aqueous solutions. The sensitivity and selectivity of the molecular probe HPTS was demonstrated by successful analysis of the caffeine content of beverages and solid samples. The new fluorescence assay with HPTS is a promising alternative to traditional caffeine analyses methods (mostly liquid chromatography), which typically require more elaborate instrumentation.

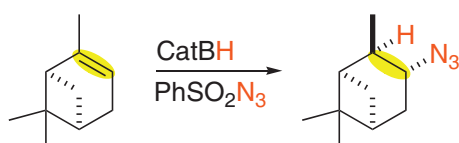


### A Radical Procedure for the Anti-Markovnikov Hydroazidation of Alkenes

A. Kapat, A. König, F. Montermini, and P. Renaud\*, *J. Am. Chem. Soc.* **2011**, 133, 13890.

University of Bern

Amino functions are present in a large proportion of biologically active compounds. Their introduction by hydroamination of olefins seems attractive, but remains challenging despite intense research activity in the field. It has now been shown that the reaction of alkylboranes with sulfonylazides under carefully conceived conditions leads to efficient anti-Markovnikov hydroazidation of alkenes. The procedure is applicable to a wide range of alkenes and gives excellent results with mono-, di- and trisubstituted alkenes. The versatility of the introduced azide function makes this reaction particularly suitable for the synthesis of more complex structures.

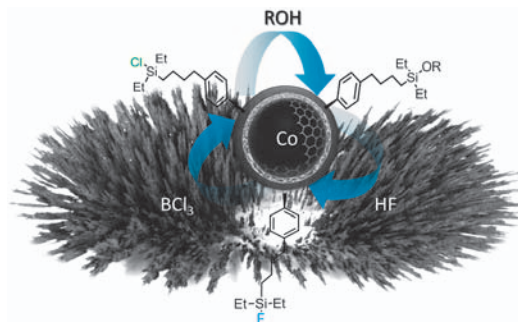


### Magnetic Silyl Scaffold Enables Efficient Recycling of Protecting Groups

A. Schaetz, M. Zeltner, T. D. Michl, M. Rossier, R. Fuhrer, and W. J. Stark\*, *Chem. Eur. J.* **2011**, 17, 10566.

ETH Zürich

Recycling of valuable, stoichiometrically used reagents in organic synthesis allows for more economic and environmentally friendly synthesis strategies. The authors report magnetic cobalt metal nanoparticles coated with a polymer as a solid support for trialkylsilane protecting groups. These protecting groups were successfully used to protect a variety of alcohols and could be easily recycled by magnetic separation after the deprotection of the alcohols. The system is ideal as a carrier for recyclable immobilized reagents, as the particles possess high magnetization, are stable against the acidic conditions required for the deprotection step, and show high reagent loading due to the functionalized polymer coating.



### Fluorine-Directed Glycosylation

C. Bucher and R. Gilmour\*, *Angew. Chem. Int. Ed.* **2011**, 50, DOI: 10.1002/ange.201004467

ETH Zürich

Fluorinated pharmacophores play an ever-increasing role and glycostructures are no exception. Controlling oxonium ion conformation, and the resulting  $\alpha/\beta$  ratios at the anomeric center, is challenging, especially with 2-deoxy sugars. In this context, the authors present an elegant approach whereby introduction of a fluorine in the 2-fluoropyranose series leads to rigidification of the oxonium-ion, resulting in high glycosylation selectivities. This bias can be further improved by combining it with the inductive nature of O-protecting groups, eventually resulting in exquisite selectivities: (2-F<sup>Gluc</sup>/Benzyl  $\rightarrow$   $\beta$ ; 2-F<sup>Manno</sup>/Pivaloyl  $\rightarrow$   $\alpha$ ).

