



Swiss Science Concentrates

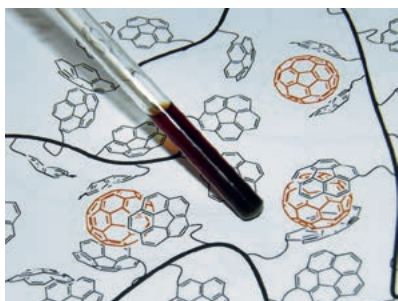
A CHIMIA Column

Short Abstracts of Interesting Recent Publications of Swiss Origin

Rationally Designed Polymer Hosts of Fullerene

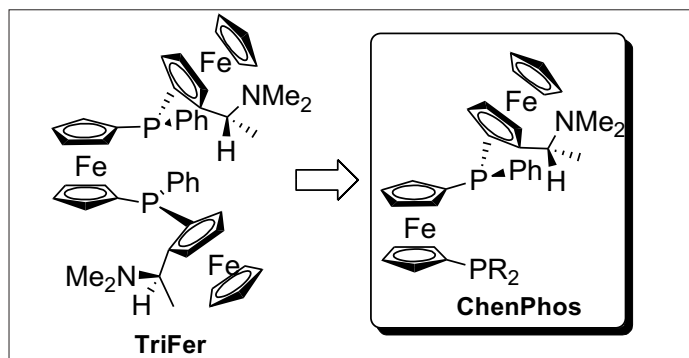
M. C. Stuparu, *Angew. Chem. Int. Ed.* **2013**, 52, 7786. University of Zurich

The development of fullerene-containing host-guest systems is an active area of research with technological implications. Stuparu reports on a novel polymer class which can encapsulate C_{60} molecules through a series of 'ball-and-socket'-type π - π stacking interactions. The non-covalent interaction is ensured by corannulene groups incorporated within the polymer structure. Polymers with tailored properties can be obtained by tuning critical parameters during the synthesis. As a proof-of-principle, a water soluble copolymer was synthesized which dispersed hydrophobic C_{60} molecules in water through the formation of micellar aggregates. Further tuning of the host-guest interaction could give rise to new materials for use in photovoltaics and plastic electronics.



ChenPhos: Highly Modular P-Stereogenic C_1 -Symmetric Diphosphine Ligands for the Efficient Asymmetric Hydrogenation of α -Substituted Cinnamic Acids

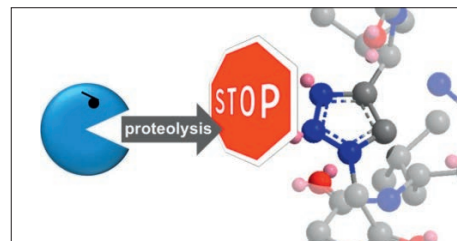
W. Chen*, F. Spindler, B. Pugin, and U. Nettekoven, *Angew. Chem. Int. Ed.* **2013**, 52, 8652. Solvias AG, Basel
Enantioselective hydrogenation provides atom economic access to many key chiral building blocks of pharmaceuticals. The ligands employed must fulfill various stringent criteria, such as ease of synthesis, handling and intrinsic versatility; the selectivity, activity and productivity conveyed to the resulting metal complexes must be high. A simple and efficient synthesis of ferrocene based P-stereogenic phosphines, which includes a thermal epimerization, yields P-chiral, extremely air-stable ligands. Their corresponding rhodium complexes are outstanding hydrogenation catalysts, e.g. in the key step intermediate transformation of renin inhibitor aliskiren.



1,2,3-Triazoles as Amide Bond Mimics: Triazole Scan Yields Protease-Resistant Peptidomimetics for Tumor Targeting

I. E. Valverde, A. Bauman, C. A. Kluba, S. Vomstein, M. A. Walter, and T. L. Mindt*, *Angew. Chem. Int. Ed.* **2013**, 52, 8957. University of Basel Hospital

The selective targeting of tumors and metastases with specific probes is an important component in the diagnosis and therapy of cancer. One possible strategy combines a radionuclide with a vector that binds to a receptor which is overexpressed by tumor cells. By substituting different peptide bonds in a fragment of the peptide bombesin with a 1,2,3-triazole, Mindt and co-workers prepared a library of agonists for GRPr (gastrin-releasing peptide receptor). One of their radiotracers not only exhibits a significantly higher stability in blood serum, but also shows an improved tumor uptake in a mouse model. This approach could become a versatile strategy for the stabilization of linear peptides used in drug delivery, molecular imaging, or endoradiotherapy.



Copper(I) Dye-sensitized Solar Cells with $[Co(bpy)_3]^{2+/3+}$ Electrolyte

B. Bozic-Weber, E. C. Constable*, S. O. Furer, C. E. Housecroft*, L. J. Troxler, and J. A. Zampese, *Chem. Commun.* **2013**, 49, 7222. University of Basel

Solar cells are expected to play a critical role in Mankind's attempt to rely on renewable energy sources only. In this report, the authors have used a systems approach to hierarchically assemble a dye-sensitized solar cell (DSC) relying on an earth abundant copper-based dye combined with $[Co(bpy)_3]^{2+/3+}$ instead of the more traditional I^-/I_3^- electrolyte. This latter modification prevents the formation of CuI, potentially detrimental to the long term performance of DSC. These findings thus represent a critical step toward the development of dye-sensitized solar cells with increased stability.

