



Swiss Science Concentrates

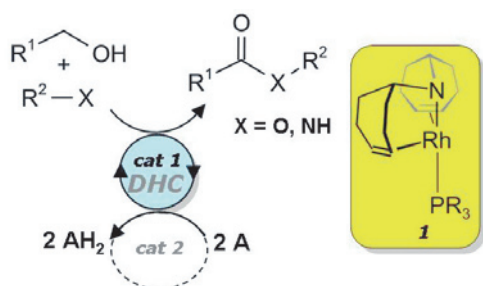
A CHIMIA Column

Short Abstracts of Interesting Recent Publications of Swiss Origin

Catalyzed Dehydrogenative Coupling of Primary Alcohols with Water, Methanol, or Amines

T. Zweifel, J.-V. Naubron, and H. Grützmacher*, *Angew. Chem., Int. Ed.* **2009**, *48*, 559
ETH Zürich

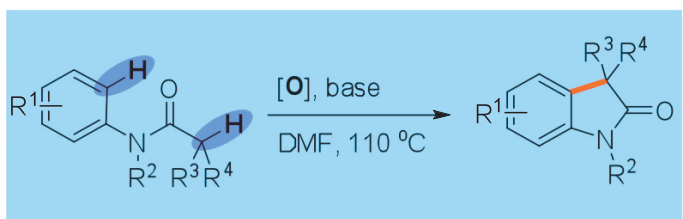
Conversion of biomass into fine chemicals is a real challenge as an alternative for using fossil resources. In this article, the authors describe an interesting method that could be useful in this respect. Using a rhodium amido complex (**1**) as catalyst, carboxylic acids, esters and amides are synthesized from the corresponding alcohols *via* a dehydrogenative coupling reaction. This method presents several advantages (mild conditions, low catalyst loading and functional group tolerance). The hydrogen acceptor **A**, typically a ketone, can be recycled in a second catalytic cycle (cat 2). The multistep mechanism was elucidated by computation.



Oxindole Synthesis by Direct Coupling of C_{sp}²-H and C_{sp}³-H Centers

Y.-X. Jia and E. P. Kündig*, *Angew. Chem., Int. Ed.* **2009**, *48*, 1636
University of Geneva

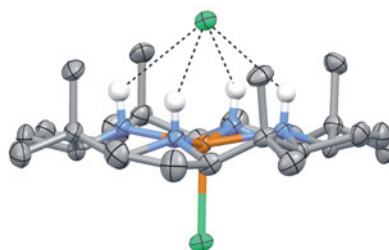
Oxindoles are common and important substructures in natural products and biologically active molecules. In this article, the authors describe a novel method for an easy access to 3,3-disubstituted oxindoles by direct intramolecular oxidative coupling of an aryl C_{sp}²-H and a C_{sp}³-H centre. Importantly, the transformation is simple, high yielding and promoted by inexpensive oxidants like CuCl₂.



Synthesis, Structure, and Complexation Properties of Partially and Completely Reduced *meso*-Octamethylporphyrinogens (Calix[4]pyrroles)

V. Blangy, C. Heiss, V. Khlebnikov, C. Letondor, H. Stoeckli-Evans,* and R. Neier* *Angew. Chem., Int. Ed.* **2009**, *48*, 1688
Université de Neuchâtel

In this article the first synthesis and structures of partially- and total-reduced calixpyrroles are presented. The product of the partial reduction is stable and only the regioisomer of the 1,3-reduction is isolated. Whereas the calixpyrrole precursor forms transition-metal complexes only under forcing conditions, the completely reduced derivative readily generate classical Werner complexes with Cu, Ni, and Pd ions. These metal complexes present an array of four directed hydrogen bonds, which specifically bind the counteranions.



Rapid Detection of Melamine in Untreated Milk and Wheat Gluten by Ultrasound-Assisted Extractive Electro Spray Ionization Mass Spectrometry (EESI-MS)

L. Zhu, G. Gamez, H. Chen*, K. Chingin, and R. Zenobi* *Chem. Commun.* **2009**, 559

ETH Zürich; East China Institute of Technology, Fuzhou
In this paper, the authors have designed a method based on ultrasound-assisted EESI-MS to rapidly detect the presence of melamine in raw milk, wheat gluten, and milk powder with no or minor sample pre-treatment. With this approach, liquids can be analyzed directly and only small amounts of sample are consumed. It is also able to detect trace amount of compounds present inside the liquid droplet, even in the case of complicated biological matrices. The high sample throughput and figures of merit make it especially useful for screening melamine levels well below the current safety limit in various food matrices.

