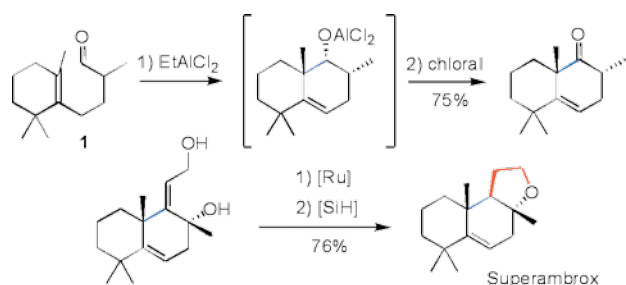


# Science Concentrates

## Stereoselective Synthesis of Superambrox: Stereoselective Type III Intramolecular Ene Reaction and OH-Assisted Ru-Catalyzed Isomerization

C. Fehr\* and I. Farris, *Angew. Chem. Int. Ed.* **2006**, *45*, 6904  
Firmenich SA Geneva

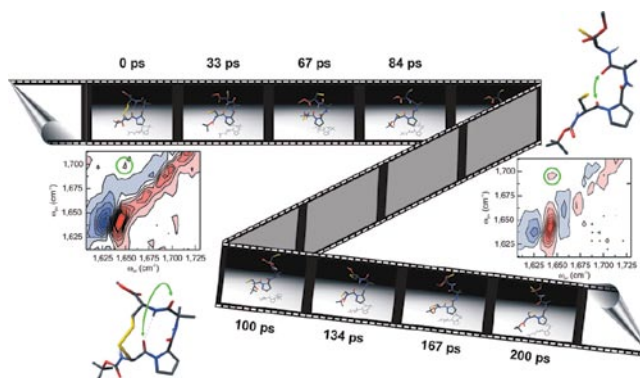
'Superambrox' is an unsaturated analogue of Ambrox which displays excellent odor qualities. The synthetic approach towards Superambrox is challenging because of the highly substituted environment of the C=C double bond and the difficult stereoselective elaboration of the heterocycle. Previous syntheses afforded the racemic material with low stereoselectivity and moderate yields. In this paper a concise, highly selective synthesis of racemic Superambrox is reported based on a new tandem type III intramolecular ene reaction/Oppenauer oxidation of a high-tonnage raw material: dihydro- $\beta$ -C14-aldehyde (**1**).



## Watching Hydrogen-Bond Dynamics in a $\beta$ -Turn by Transient Two-Dimensional Infrared Spectroscopy

C. Kolano\*, J. Helbing, M. Kozinski, W. Sander, and P. Hamm\*, *Nature (London, U. K.)* **2006**, *444*, 469  
Universität Zürich; Ruhr-Universität Bochum

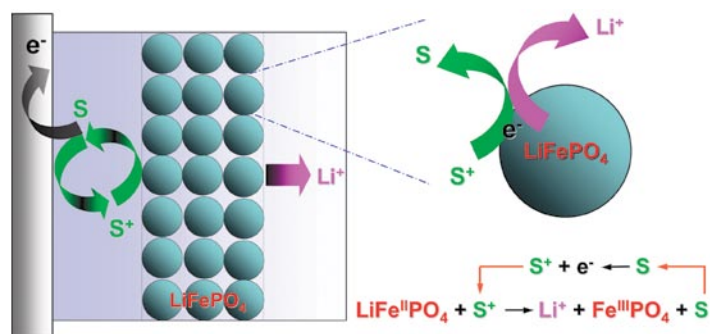
Two-dimensional infrared spectroscopy, which maps vibrational coupling between molecular groups and hence their relative positions and orientations, is used routinely to study equilibrium processes on picosecond timescales. Here it is shown that the extension of this method into the non-equilibrium regime is feasible and allows the observation in real-time in a short peptide of the weakening of an intramolecular hydrogen bond and concomitant opening of a  $\beta$ -turn. The rate of this process is two orders of magnitude faster than the 'folding speed limit' established for contact formation between protein side chains.



## Redox Targeting of Insulating Electrode Materials: A New Approach to High-Energy-Density Batteries

Q. Wang, S.M. Zakeeruddin, D. Wang, I. Exnar, and M. Grätzel\*, *Angew. Chem. Int. Ed.* **2006**, *45*, 8197  
EPF Lausanne

A compact energy-storage system based on redox targeting is proposed, by which insulating  $\text{LiFePO}_4$  particles can be reversibly charged and discharged by redox shuttle molecules (S; see scheme) even in the absence of conducting additives. The energy density of such batteries is expected to be greatly improved.



## Isolated $[\text{Ni}_2\text{H}_7]^{7-}$ and $[\text{Ni}_4\text{H}_{12}]^{12-}$ Ions in $\text{La}_2\text{MgNi}_2\text{H}_8$

J.-N. Chotard, Y. Filinchuk, B. Revaz, and K. Yvon\*, *Angew. Chem. Int. Ed.* **2006**, *45*, 7770  
Université de Genève

The discovery of the first polynuclear solid-state hydride complexes of a 3d metal, nickel, will provide a safe and efficient way of storing hydrogen. The complex  $\text{La}_2\text{MgNi}_2\text{H}_8$  contains (fully ordered) dinuclear  $[\text{Ni}_2\text{H}_7]^{7-}$  and tetranuclear  $[\text{Ni}_4\text{H}_{12}]^{12-}$  anions with both terminal and bridging hydride ligands. The hydride is non-metallic and follows the 18-electron rule. Contrary to expectations, it is slightly ferromagnetic. When deuterated, a large influence on the Ni-Ni distances is observed and rationalized by the stereochemical activity of the deuteride ligands.

