Molecular defined manganese catalysts

for hydrogenation and related reactions

Jean-Baptiste Sortais

Laboratoire de Chimie de Coordination du CNRS, Université de Toulouse, CNRS, 205 route de Narbonne, 31077 Toulouse Cedex 4, France

The development of non-noble metal-based catalytic systems has been increasing since the beginning of the century, notably in the field of reduction or hydroelementation reactions. Tremendous progress has been accomplished with catalysts based on iron and cobalt. In the case of manganese, which is the third most abundant transition metal after iron and titanium, its use as sustainable alternative to precious transition metals in hydrogenation and hydrogen borrowing reactions has achieved an impressive explosion in only few years.[1] Our recent contributions in the field (hydrogenation with H_2 or *i*PrOH, methylation of amines and ketones with methanol) using well-defined manganese complexes will be discussed in details.[2]

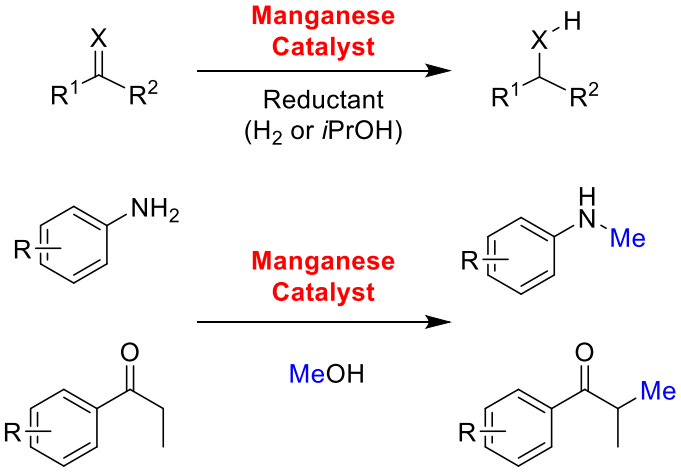

Figure 1: Reduction of unsaturated polar bonds and methylation of anilines and ketones with methanol

[1] a) S. Elangovan, C. Topf, S. Fischer, H. Jiao, A. Spannenberg, W. Baumann, R. Ludwig, K. Junge, M. Beller, *J. Am. Chem. Soc.* **2016**, *138*, 8809-8814; b) A. Mukherjee, A. Nerush, G. Leitus, L. J. W. Shimon, Y. Ben David, N. A. Espinosa Jalapa, D. Milstein, *J. Am. Chem. Soc.* **2016**, *138*, 4298-4301.

[2] a) A. Bruneau-Voisine, D. Wang, V. Dorcet, T. Roisnel, C. Darcel, J.-B. Sortais, *Org. Lett.* **2017**, *19*, 3656-3659; b) A. Bruneau-Voisine, D. Wang, V. Dorcet, T. Roisnel, C. Darcel, J.-B. Sortais, *J. Catal.* **2017**, *347*, 57-62; c) D. Wei, A. Bruneau-Voisine, D. A. Valyaev, N. Lugan, J.-B. Sortais, *Chem. Commun.* **2018**, *54*, 4302-4305; d) R. Buhaibeh, O. A. Filippov, A. Bruneau-Voisine, J. Willot, C. Duhayon, D. A. Valyaev, N. Lugan, Y. Canac, J.-B. Sortais, *Angew. Chem. Int. Ed.* **2019**, *58*, 6727-6731.