

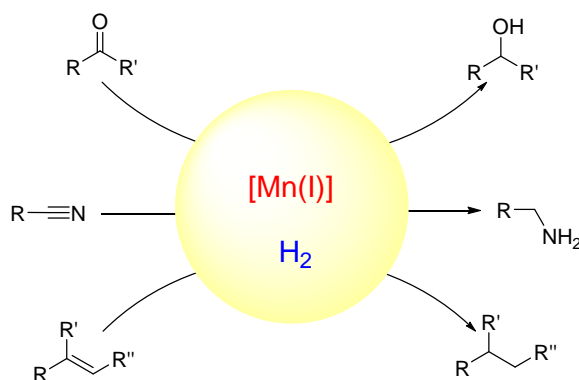
Hydrogenation of unsaturated compounds using well-defined Mn(I) complexes

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The reduction of unsaturated functionalities such as ketones, nitriles or alkenes plays a major role in organic chemistry. In order to increase the atom efficiency of these transformations, transition metal catalyzed reductions using hydrogen gas can be employed. For this purpose, noble metals such as ruthenium or rhodium are widely used. Within the last years, the use of base metal catalysts based on cobalt, iron and very recently manganese^[1] was investigated.



Through rational design of the ligand sets, where steric and electronic properties of the donating groups play a major role, the reactivity and stability of the synthesized manganese (I) complexes can be adjusted.

Due to fine tuning of these parameters, well-defined, air-stable manganese (I) compounds can be achieved which are able to reduce ketones and alkenes at room temperature as well as nitriles above room temperature with high functional group tolerance and good chemoselectivity.^[2]

[1] Garbe, M.; Junge, K.; Beller, M. *Eur. J. Org. Chem.* **2017**, 30, 4344–4362

[2] Weber, S.; Stöger, B.; Kirchner, K. *Org. Lett.* **2018**, 20, 7212–7215