## Catalytic (De)hydrogenation Processes Mediated by Base Metals

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Metal-catalysed hydrogenation and dehydrogenation reactions play an important role in organic synthesis, and constitute a broad class of industrially relevant chemical reactions. Direct hydrogenation with molecular hydrogen and transfer hydrogenation using alternative sources of hydrogen (e.g. alcohols) are omnipresent transformations in the synthesis of fine chemicals. In the last decade, metal-catalyzed dehydrogenation reactions of alcohols has gained great interest as environmetally friendly processes that allows the production of a wide variety of products (aldehydes, ketones, imines, amides, esters, N-heterocyclic compounds). In this course, an analysis of (de)hydrogenation reactions and their impact in the field of chemical synthesis and energy will be presented. Special emphasis will be given to the use of earth-abundant and inexpesive metals as catalysts for these type of transformations.

## Lecture 1 (monday, september 23<sup>rd</sup>, 9:30-11:15, hall N): Hydrogenation and transfer hydrogenation reactions. Metal-Ligand cooperativity

Lecture 2 (tuesday, september 24<sup>th</sup>, 9:30-11:15, hall N): Acceptorless dehydrogenative coupling and borrowing hydrogen processes

**Lecture 3** (wednesday, september 25<sup>th</sup>, 9:30-11:15, hall N): **The impact of dehydrogenative processes in the synthesis of N-heterocycles** 

> Lecture 4 (thursday, september 26<sup>th</sup>, 9:30-11:15, hall N): Catalytic dehydrogenation for energy storage