

Catalysis – a Tool of Green Chemistry

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Abstract:

In 2018, the majority of FDA-approved active pharmaceutical ingredients are still small molecules. Thus, the development of robust and scalable synthetic routes to a large variety of complex molecules is still a major task in organic process development. Nowadays, also topics like sustainability, atom- and step economy and E-factors needs to be considered for an environmentally benign synthesis. A very convenient way to implement these green chemistry concepts is to consider catalytic transformations in the synthetic route.

The commercial availability of a large variety of chiral ligands is an important key for a successful lead finding and subsequent optimization in the development of a catalytic reaction. This wide library of modular ligands were initially designed and successfully applied in asymmetric hydrogenation on industrial scale and have, in turn, been applied to new applications with unprecedented findings. In the last years very interesting transformations have been demonstrated like asymmetric allylic substitutions, asymmetric 1,2-additions, asymmetric reductive couplings or Buchwald-Hartwig aminations with ammonia. New applications will be discussed in the presentation to highlight the versatility of catalytic transformations and its benefits for increased sustainability processes.