



Asymmetric Catalysis

Foreword

Following an invitation of the Editor-in-Chief of the *Comptes rendus Chimie*, this thematic issue is dedicated to 'Asymmetric Catalysis' and illustrates the applications of new strategies in asymmetric transformations catalysed by transition-metal complexes. Due to the requirement of obtaining enantiomerically pure products through environmentally friendly technologies, the development of new methods in asymmetric catalysis is becoming an important approach to asymmetric synthesis. Asymmetric catalysis avoids (or strongly reduces) the formation of by-products and allows a decrease of the number of synthetic steps, thus reducing the cost of the overall synthesis. The very small amounts of metal complexes needed to perform these transformations limit the problems caused by the presence of metals in the final products. All these aspects are the basis for the development of sustainable processes.

Within the area of asymmetric catalysis, major innovation can be found in the design of organic ligands, which are essential to the overall asymmetric catalytic process, in the development of new catalysts and new reactions and in the use of special reaction media that facilitate product separation and recovery and reuse of the catalyst.

Beginning with an introduction considering general guidelines and methodologies in asymmetric catalysis, this thematic issue includes surveys of recent advances in two important reactions: asymmetric hydrogenation

(Ir) and asymmetric allylic substitution (Pd), both involving the use of modular ligands. It also includes overviews on aspects of asymmetric catalysis that have not been systematically reviewed in the past, such as the catalytic asymmetric boron–boron addition to unsaturated molecules and the use of ionic liquids for enantioselective catalysis.

New advances in specific asymmetric reactions of particular interest for organic synthesis are also considered, such as the hydrogenation of arylketones (Ru) through the development of new diamine ligands and the asymmetric catalysed allylation chemistry (Ni).

In summary, this collection of original reviews and articles should provide the readers interested in asymmetric catalysis with state-of-the-art approaches in this interesting and challenging field of chemistry, where homogeneous catalysis and coordination chemistry fit perfectly to achieve sustainable processes through a better fundamental understanding of the catalytic reactions.

Carmen Claver

*Departamento de Quimica Fisica e Inorganica,
Universitat Rovira I Virgili, Pl.
Imperial Tarraco 1, 43005 Tarragona, Spain
E-mail address: carmen.claver@urv.cat*

Available online 8 March 2007