Tentative Outline

Special Issue for MINI-REVIEWS IN ORGANIC CHEMISTRY

Guest Editors: Feng Liang and Juan Shen

AN OVERVIEW ON THE RECENT ACHIEVEMENTS IN NON-METAL ASYMMETRIC CATALYSIS

Aims & Scope:

Asymmetric catalysis entails the catalytic, selective, and reproducible generation of a given enantiomer of a chiral product from achiral reactants. Leading the quest of asymmetric catalysis is the need from the pharmaceutical, flavors and fragrances, and agrochemical industries for enantiopure molecules because the different enantiomers or diastereomers of a molecule often have different biological activity. Nearly 85% of new drugs in the market are chiral.

Organocatalysis can be used as environmentally-friendly alternatives to transition-metal catalysts as no toxic metals are required. The principle interactions of organocatalyst are non-covalent, such as hydrophobic, hydrogen bonding, van der Waals and electrostatic as in enzymes. These catalysts are often inexpensive to prepare and reaction can be performed under aerobic environments and in wet solvents. The beneficial impact of organocatalytic reactions on a large scale production of chiral intermediates has been demonstrated.

Enzyme catalysis is characterized by high catalytic activities and selectivities, achieved under mild conditions. However, compared to synthetic catalysts, the catalytic pool of enzymes is limited. There is an emerging field of bio-inspired catalysts which bridge this gap and combine the catalytic power of transition metal catalysis with the chiral architectures of biopolymers such as proteins and DNA.

The synthetic chemistry community has been revolutionized over the past 20 years by the advent of asymmetric catalysis; it appears to be necessary to revisit the field. Therefore, this special issue aims to review the advances in asymmetric catalysis during the last decade. Contributions covering the sub-topics mentioned below are encouraged.

Keywords:

Asymmetric catalysis, organocatalysis, bio-inspired catalysis

Sub-topics:

- Brønsted bases and Brønsted acids catalyzed asymmetric reactions
- Lewis bases and Lewis acids catalyzed asymmetric reactions
- DNA-based asymmetric catalysis
- Protein-based asymmetric catalysis

Schedule:

Manuscript Submission Deadline: July 2012
Peer Review Due: August 2012
Revision Due: September 2012
Notification of Acceptance by the Guest Editor: September 2012
Final Manuscripts Due: October, 2013