DESCRIPTION

Asymmetric catalysis is of ever-increasing importance in organic synthesis, both in the academic and the industrial environment. Between the extremes of metal-based and biocatalytic methods, the use of low-molecular weight and purely organic catalysts has become a third and highly efficient tool for enantioselective transformations. In this book, two experienced authors from academia and industry provide the first comprehensive overview of both the development and the current state of asymmetric organocatalysis. After a historical introduction, all synthetically relevant reaction types, such as nucleophilic substitution, addition to C=X bonds, cycloadditions and redox reactions are thoroughly discussed in a total of 11 chapters, followed by a consideration of large scale applications of organocatalysis. Additionally, the most frequently used organocatalysts and their properties are summarized in an appendix, aiding the research chemist in selecting an appropriate catalyst for a given transformation. Overall, this book targets organic chemists active both in industry and academia, and it deserves a place in every laboratory.

From the Contents:

- Introduction: Organocatalysis - From Biomimetic Concepts to Powerful Methods for Asymmetric Synthesis
- Nucleophilic Substitution at Aliphatic Carbon, e.g. Amino Acid Synthesis by Alkylation
- Nucleophilic Addition to C=C, C=N, C=O, N=N and N=O Double Bonds
- Synthesis of Epoxides and Aziridines
- Cycloaddition Reactions
- Protonation of Enolates
- Oxidation/Reduction
- Kinetic Resolution of Racemic Alcohols and Amines
- Desymmetrization of meso- and prochiral Compounds
- Large-scale Applications
- Appendix: Tabular Survey of Frequently used Organocatalysts

▲ ABOUT THE AUTHOR

Albrecht Berkessel is full professor at the university of Cologne, Germany. His research interests are catalysis, combinatorial chemistry and solid phase chemistry.

Harald Gröger is currently working at the Degussa AG. His research is focussed on enzymatic reactions and biocatalysis.

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