



Catalysis in Asymmetric Synthesis, 2nd Edition

Vittorio Caprio, Jonathan M. J. Williams

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DESCRIPTION

Asymmetric synthesis has become a major aspect of modern organic chemistry. The stereochemical properties of an organic compound are often essential to its bioactivity, and the need for stereochemically pure pharmaceutical products is a key example of the importance of stereochemical control in organic synthesis. However, achieving high levels of stereoselectivity in the synthesis of complex natural products represents a considerable intellectual and practical challenge for chemists.

Written from a synthetic organic chemistry perspective, this text provides a practical overview of the field, illustrating a wide range of transformations that can be achieved. The book captures the latest advances in asymmetric catalysis with emphasis placed on non-enzymatic methods.

Topics covered include:

- Reduction of alkenes, ketones and imines
- Nucleophilic addition to carbonyl compounds
- Catalytic carbon-carbon bond forming reactions
- Catalytic reactions involving metal carbenoids
- Conjugate addition reactions

Catalysis in Asymmetric Synthesis bridges the gap between undergraduate and advanced level textbooks and provides a convenient point of entry to the primary literature for the experienced synthetic organic chemist.

ABOUT THE AUTHOR

Dr Vittorio Caprio

Lecturer in Organic and Medicinal Chemistry in the Department of Chemistry, University of Auckland, New Zealand.

His research interests lie in the application of synthetic organic methods to the synthesis of bioactive natural products of diverse structure. A central aim is the efficient and elegant syntheses of target core structures in a stereocontrolled manner using nature as the source of chirality. The ultimate goal is to use natural medicines as the basis for designing and synthesizing drugs of greater therapeutic value.

Professor Jonathan MJ Williams (author of the first edition)

Department of Chemistry, University of Bath, UK

Research involves with the use of transition metals for the synthesis of useful organic molecules. In particular, we have been developing reactions using 'borrowing hydrogen.' In this chemistry, ruthenium or iridium catalysts temporarily remove hydrogen to give an aldehyde. This aldehyde then reacts to give an alkene (or imine) and the hydrogen is then returned to give a C-C or C-N bond. These procedures allow alcohols to be used as alkylating agents in place of more conventional, but often toxic/mutagenic alkyl halides.

FEATURES

Written from a synthetic organic chemistry perspective, to ensure the treatment is highly practical and relevant to undergraduates, postgraduates and industrial organic chemists

Bridges the gap between standard undergraduate textbooks, which generally take a functional group approach to chemistry, and advanced level textbooks, which often obscure the essential information in the level of detail they present

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