This book provides a noteworthy compilation of the groundbreaking methods of stereoselective synthesis, belonging to the repertoire of every modern practitioner of synthetic organic chemistry. The general principles underlying these processes are highlighted as they form the basis for the rapid and continuing developments in the field. The work also features illustrative examples of drug and natural product syntheses, resulting in a rich source of stimulating ideas for the efficient use of asymmetric reactions in the construction of stereochemically complex structures.

From the contents:

"Macrocyclic stereocontrol

"Carbonyl addition reactions

"alpha-Functionalization of enolates

"Aldol and allylation reactions

"Chiral acetals

"Alkene hydroboration, reduction, and oxidation

"Additions to C=N bonds and synthesis of amino acids
"Conjugate additions

"Chiral carbanions

"Metal-catalyzed allylations

"Cyclopropanations and CH-insertion reactions

"Sigmatropic rearrangements

"Diels-Alder and hetero-Diels-Alder reactions

"[3+2]- and [2+2]-cycloaddition reactions

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Erick M. Carreira, born in La Habana, Cuba, obtained a B.S. degree in 1984 from the University of Illinois at Urbana Champaign under the supervision of Scott E. Denmark, and a PhD in 1990 from Harvard University under the supervision of David A. Evans. After carrying out postdoctoral work with Peter Dervan at the California Institute of Technology through mid-1992, he joined the faculty at the same institution as an assistant professor of chemistry and was promoted to full professor in 1997. In 1998, he moved to the Laboratory of Organic Chemistry at the ETH-Zurich, Switzerland. He has over 180 research publications and numerous patents to his name. He is the recipient of, among others, the American Chemical Society Award in Pure Chemistry the Nobel Laureate Signature Award, and he has held the David and Lucile Packard Foundation Fellowship in Science and Engineering as well as the Tetrahedron Chair Prize. Professor Carreira’s research program is focused on the four interrelated areas of organic synthesis: catalysis, methodology, natural products synthesis, and bioorganic chemistry.

Lisbet Kvaerno, born in Denmark, received her M.Sc. in chemistry from the University of Copenhagen under Prof. Jesper Wengel. She obtained her PhD in 2004 after working in total synthesis at the Technical University of Denmark under Prof. David Tanner and in medicinal chemistry at the ETH Zurich supervised by Prof. Erick M. Carreira. As a postdoctoral fellow in the research group of Prof. David A. Evans at Harvard University, she completed the total synthesis of the marine natural product (+)-azaspiracid. After a brief period as an independent junior group leader at the Max Planck Institute of Coal Research in Muelheim, Germany, she joined Lundbeck in Copenhagen as a process chemist in the late summer of 2008.

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