

## Book Review of Molecular Catalysis of Rare-Earth Elements

**Molecular Catalysis of Rare-Earth Elements.** Edited by Peter W. Roesky. (Karlsruhe Institute of Technology, Germany). From the series, Structure and Bonding, 137. Edited by D. M. P. Mingos. Springer-Verlag: Berlin, Heidelberg. 2010. xiv + 230 pp. \$259. ISBN 978-3-642-12810-3.

This book provides a strong introduction to rare-earth-containing catalysts, including those containing the lanthanides, scandium, and yttrium, and has homogeneous catalysis as its major focus. The text is written at a level appropriate for readers already having a background in catalysis but who may not be familiar with the use of rare-earth metals in it. Additionally, this book could serve to update readers who have been away from the field because discoveries within the past 10 years are described in the context of older and seminal studies, which this reviewer appreciated.

*Molecular Catalysis of Rare-Earth Elements* is part of the Structure and Bonding series, a collection of thematic reviews with emphasis on important developments of the past decade. This volume covers some aspects of catalysis using the rare-earth elements but does not exhaustively cover this large topic; for example, catalysis with Lewis acids is not covered. The first two chapters are organized with respect to type of reaction, e.g.,  $\sigma$ -bond metathesis and diene polymerization, whereas the last two are organized by type of catalyst, e.g., amidinate-, guanidinate-, and amido-based ligands. The areas covered in this text are described in enough overall detail that the goals of the book are achieved.

The book has the aim of presenting the most significant recent developments, which was largely accomplished, but it reads more like a series of review articles than one continuous reference. Its four chapters were written by different authors; thus, there is great variance in the writing style between chapters. Chapters 2 and 3 were at times frustrating to read because of the typos and grammatical errors in the former and the heavy emphasis on citing previous reviews written by the author of the latter rather than providing references to the primary literature. Some of the positive aspects of the individual chapters that stood out to this reader include the outline of remaining problems in the field of catalytic  $\sigma$ -bond metathesis at the end of Chapter 2 and the entirety of Chapter 4, entitled "Rare-Earth Metal Postmetallocene Catalysts with Chelating Amido Ligands".

Overall, this book is a good introduction to the field of rare-earth-based catalysis that integrates old and new science. As noted earlier, it does not completely cover the field, a task that would require a much larger number of pages, but the material that is covered is detailed and informative. I recommend it for readers who are familiar with catalysis and would like to learn more about the use of rare-earth metals in it.

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