Green Chemistry and Catalysis, by R. A. Sheldon, I. Arends, U. Hanefeld, Wiley-VCH: Weinheim, **2007**, hardcover, 434 pp, € 142 / US$ 190 / £ 95, ISBN 978-3-527-30715-9

Survey on a hit topic of academic and technical research

On the background of rising costs for petrochemical feedstock and for mineral resources, 'green chemistry' and 'sustainability' are more than simple buzz words. Most publishing houses recognized the cutting-edge nature of this particular topic and have published books in this field. Wiley itself has recently both announced and published several books about this vivid research area! Roger Sheldon is a central figure who coined the expression 'green chemistry'. He has written, together with Isabel Arends and Ulf Hanefeld, a monograph that focuses on catalysis in the context of green chemistry. The replacement of potentially hazardous stoichiometric reagents by environmentally benign and sustainable reagents is the major issue. In order to direct selectivity and activity, the central role of the catalyst was identified. Since switching to alternative feedstock and more efficient chemical processes will be the utmost challenge for the near future, Sheldon et al. have hit the right button with this book.

The book is systematically organized into ten chapters. After an introduction that familiarizes the reader with the definitions in this field, a chapter dealing with heterogeneous acids and bases follows. The next three reviews on catalytic reduction, oxidations, and carbon–carbon bond formation represent the major part of the book. In this section, metal-catalyzed reactions give the best performance, whereas in the subsequent chapter about hydrolysis, enzymatic conversions turn out to be superior. With novel reaction media and renewable raw materials the monograph critically treats two further green subjects. In order to enhance the yield in kinetic resolutions, metal-catalyzed transformations or enzyme cascades can be coupled. The book closes with a future outlook wherein the authors describe the pathways in catalytic transformations which have to be explored. It made me wonder why electrochemical conversions where not at all considered in this book since they virtually create no reagent waste.

Unfortunately, little care was given to several schemes which are either distorted (p. 20, 94) or have different sizes and styles. The number of mistakes in the schemes is on a tolerable level. The chemical mistakes are often not obvious since some additional atoms appear (p. 343) or disappear (p. 284). The compounds are not numbered, but the text contains many references to the individual schemes. Although abbreviations are frequently used, there is no listing of them in the book. However, the well-made index will enable the reader to find the desired topic quickly.

The book is a splendid collection of impressive examples of academic and technical achievements. With about 1400 references and many citations leading to existing reviews and further reading, the book will be an indispensable reference book that should find its place in every scientific library. For scientists dealing with green chemistry or catalysis in general, this book will be compulsory reading.

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