

carefully prepared, comprehensive, and cross-referenced index, and the 4½-page index here is woefully inadequate for a book of 500 pages. I searched in vain in the index for the word “safety” (a not unimportant aspect of oxidations with oxygen or hydrogen peroxide). Safety is briefly mentioned on page 69 in connection with the use of oxygen compared with air, but does not appear in the index.

All in all, the book gives a good overview of heterogeneous selective catalytic oxidations, with a bias towards gas-phase oxidations with O₂ and towards bulk rather than fine chemicals. I can recommend it to academic and industrial researchers interested in the area of selective catalytic oxidation of relatively simple (hydrocarbon) substrates. It will be of less interest to synthetic organic chemists engaged in selective catalytic oxidations of complex organic molecules.

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Synthesis of Inorganic Materials. By Ulrich Schubert and Nicola Hüsing. Wiley-VCH, Weinheim 2000. xvii + 396 pp., softcover € 49.90.—ISBN 3-527-295509-X

Based on a lecture course presented by the authors at the Vienna University of Technology on inorganic materials from molecular precursors, this book is designed to introduce the reader to the chemistry behind materials science. It is not intended to replace standard solid-state chemistry or materials science texts, but to solidify the “weakest link” between preparative inorganic chemistry and technologically important materials.

Given this approach, the text is organized according to preparation processes, with an eye toward those that are actually (or have high potential to be) used in the real world. Several strategies

are employed to introduce the novice to the field. A list of some 120 abbreviations reminds one how prone many scientific niches are to creating their own languages. A glossary of 69 terms, from Alloy to Chelate to Green Body to Superconductor to Yield Strength, is included, and each occurrence of these terms is flagged in the text by referring the reader to the glossary. The examples above give an indication of the range of these terms. Clearly the authors erred on the side of caution in compiling this list, and at times the “see glossary” marker seems to overwhelm some pages. However, an undergraduate student might disagree with this assessment. The well-chosen figures, including flow charts, line drawings, chemical structures, and photo(micro)graphs, are nicely done and are a highlight of the book.

Following a very brief introduction, six chapters form the bulk of the text. A chapter on high-temperature ceramic superconductors serves to introduce solid-state reactions, followed by carbothermal reduction reactions such as the Acheson process for SiC. Combustion synthesis and some of the chemical aspects of sintering are discussed. Finally, intercalation chemistry is introduced and applied to lithium ion batteries. This is typical of the chapters with a comfortable blend of chemistry and technology. Suggested further reading is largely confined to the secondary literature. No problems or study questions are provided, but the level of language is quite accessible to a third year undergraduate or beginning graduate student. The text is relatively free of errors.

The formation of solids from the gas phase is dominated by a discussion of chemical vapor deposition, including formation of metal, diamond, metal oxides and nitrides, and semiconductors. Glasses (as opposed to crystalline materials) are first discussed in the context of the formation of solids from solutions and melts. The topic of precipitates leads to a discussion of biomineralization and the challenges of synthetically replicating or replacing biomaterials. Silicon provides the platform for sol–gel chemistry, which is then extended to hybrid organic–inorganic polymers. Inorganic polymers are dominated by the silicones, but phosphazenes, silanes, and even a few transition metal containing systems,

are mentioned. The concluding chapters discuss porous and nanostructured materials—both topics of intense current interest.

The authors have succeeded in achieving their stated goal. It is unlikely that the level of the chemistry would intimidate a non-chemical scientist and, as an inorganic chemist, I found the level of treatment of the materials aspects of the science to be very approachable. A student (or instructor) seeking to understand how inorganic synthesis is actually applied in materials science will find this text useful.

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Encyclopedia of Analytical Chemistry. Applications, Theory and Instrumentation. 15-volume set. Edited by Robert A. Meyers. John Wiley & Sons, Ltd., New York 2001. 13 970 pp., hardcover \$ 6000.00.—ISBN 0-471-97670-9

Imagine it was your task to present the *complete* discipline of instrumental analytical chemistry in a multivolume book series with an appropriate and state-of-the-art partition between basics and applications of the individual analytical methods. Would this be possible at all considering the enormous effort required? How could one achieve a homogeneous layout and the necessary up-to-date treatment with a large number of individual authors from various subdisciplines? Robert A. Meyers, editor-in-chief of the *Encyclopedia of Analytical Chemistry*, has succeeded in fully achieving these goals by assembling a team of more than 800 authors.

Consisting of 15 volumes and over 13 000 pages, this is a truly unique collection of analytical methods and applications: all parts of the analytical process, from sampling through sample preparation, separation, and detection, to data evaluation and interpretation, have been covered in a logical scheme. Volumes 1–10 contain analytical applications, and Volumes 11–15 deal with the basics of the individual analytical methods. Volume 15 is completed by

