Book Reviews *

Gold: Progress in Chemistry, Biochemistry and Technology. Edited by Hubert Schmidbaur (Technical University of Munich, Germany). John Wiley & Sons: New York. 1999. xii + 894 pp. $495.00. ISBN 0-471-97369-6.

In this book, Schmidbaur, one of the leading researchers in the field of gold chemistry, attempts to present the "state of the art regarding the role of gold in various disciplines of science and technology". Topics as diverse as the use of gold in jewelry, dentistry, electronics, and medicine are presented alongside academically intriguing subjects such as materials containing a heteroatomic-gold bond, organogold species, and spectroscopic methods in gold chemistry. [David Thompson, Technical Editor of *Gold Bulletin* (**1998**, *31* (4), 134−136) {available online on Jan 7, 2000, at http://www.gold.org/Indu/GBull/1998_4/Gb1998_4.htm} gives a detailed description of the contents of the book.]

This book has its origin in an international conference, "Gold: Progress in the Science and Technology of Gold", which was held in Hanau, Germany, in 1996. However, this work is not a conference proceeding, but rather a collection of reviews by experts in the field. The book is divided into three parts.

Part I discusses the use of gold in economically or technologically driven areas. The topics covered include the use of gold and gold alloys in coinage, decoration of glass and ceramics, dentistry, electrical engineering and electronics, and thin films. There are three chapters in which the geology of gold, its recovery from ores with an emphasis on environmental aspects, and the refining and recycling of this precious metal are discussed.

Part II consists of a single chapter on the biochemistry of gold. The subjects addressed include aqueous gold compounds, gold analogues of medicinally important compounds, gold−protein reactions, and the physiological and cellular biochemistry of gold.

Part III is roughly organized according to what element is bonded to gold. The gold chemistry of nitrogen, phosphorus (and heavy Group V elements), main group and transition metals, alkali metals, halides and pseudohalides, Group 13, and the heavier Group 14 elements is reviewed. In the remaining chapters organogolds, oxides, chalcogenides, homonuclear clusters, and colloids of gold as well as spectroscopic methods employed in the study of gold compounds are addressed.

Clearly, the book's breadth is a tremendous asset. In this regard, Schmidbaur has accomplished what he set out to do by presenting the role that gold plays in different disciplines in science and technology. The book has numerous figures, schematics, reaction schemes, tables, and photographs to enrich the presentation. In particular, the photographs in the first two chapters of Part I, by Hans-Gert Bachmann and Giulio Morteani, place gold in a historical perspective and put a face to it. These chapters are an excellent way to begin the book.

The editor acknowledges less than representative coverage in some specific areas (medicine, solid state, and theory) due to the sheer volume of the material or, as stated in the preface, "...because potential authors were too busy". It is unfortunate that there are no chapters dedicated to the theoretical aspects of gold because its relativistic effects make it particularly interesting. It is also sad that there is only one chapter addressing the medical aspects of gold, considering the notable representation of potential medical applications at the 1996 Hanau Conference. As such, this chapter would have been better placed within the "Chemistry" portion of the book. Part II, with its single chapter, gives the book an unbalanced appearance.

Although Schmidbaur does not claim that the book is comprehensive, the complete lack of reference to the patent art by Shaw (biochemistry), Dyson and Mingos (clusters and colloids), and Pignolet and Krogstad (main group and transition metal gold compounds) is disturbing. A cursory check of the United States Patent and Trademark Office's database clearly shows that many relevant patents exist in these areas. This absence stands in stark contrast to Günter Landgraf's chapter on the decoration of glass and ceramics, in which he makes extensive reference to the patent literature. The book is adequately indexed.

Schmidbaur is to be lauded for his work in editing this book and bringing together a great number of the principal experts in the field. Given the diverse nature and interest of the science and the technology, this was a formidable undertaking. For those working in the science or technology of gold, this book helps identify previously unappreciated relationships and may inspire work that would be mutually beneficial. With this book, better integration of academic interests and application of the art is encouraged and enhanced. Despite some shortcomings, this book is an excellent reference work that deserves a place on the shelf of anyone doing work in a field where knowledge of gold is important. Unfortunately, the outrageous $495.00 price of the book ($495.00) will limit its presence to large industrial or select academic libraries.

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Annual Review of Physical Chemistry. Volume 50. Edited by Herbert L. Strauss (University of California, Berkeley), Gerald T. Babcock (Michigan State University), and Stephen R. Leone (University of Colorado, Boulder). Annual Reviews: Palo Alto, CA. 1999. xiv + 650 pp. $64.00 (individuals) or $128.00 (institutions). ISBN 0-8243-1050-0.

As with previous volumes, Volume 50 of *Annual Reviews* covers topics at the forefront of physical chemistry. The book opens with two historical reviews: the first, by E. E. Nikitin, covers the development of non-adiabatic transition theory, and the second, by G. Boato and G. Volpi, traces the history of molecular dynamics in Italy after World War II. A broad range of experimental and theoretical physicochemical contributions comprise the remaining 18 chapters of the book.

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An Atlas of High Resolution Spectra of Rare Earth Elements for Inductively Coupled Plasma Atomic Emission Spectroscopy. By Benli Huang, Xiaoru Wang, Pengyuan Yang, Hai Ying, Sheng Gu, Zhigang Zhang, Zhixia Zhuang, Zhenhua Sun (Xiamen University), and Bing Li (Ministry of Geology and Mineral Resources). Royal Society of Chemistry: Cambridge. 2000. viii + 250 pp. ISBN 0-85404-477-9.

This is a valuable reference guide for users of inductively coupled plasma−atomic emission spectroscopy (ICP-AES) to study rare earth elements (REEs). Part I, the Introduction, provides an overview of this analytical technique, including some criteria for evaluating spectral interference. Part II lists pertinent references, and Part III features coincidence tables listed in alphabetical order by the elements. The book closes with spectral coincidence profiles for 65 prominent lines of 15 REEs not previously covered in the literature. An electronic version of these profiles is provided on a CD that accompanies the book; instructions for its use are given in an Appendix.

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*Unsigned book reviews are by the Book Review Editor.