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Book Review

Bioinorganic Chemistry: A Short Course

Rosette M. Roat-Malone; Wiley, New York, 2002;
ISBN: 047115976X; 348 pp.; $89.95 (paper back)

This textbook is an excellent addition to a limited number of existing texts on bioinorganic chemistry. The organization of the book, the scope of the covered material, and the level of coverage are well suited for the target audience (senior undergraduates and beginning graduate students). The first three chapters introduce the reader to the fundamentals of coordination chemistry and biochemistry, and to physical and computational methods in bioinorganic chemistry. This clear and concise introduction should be very helpful both to students and to researchers with diverse backgrounds who are newcomers to the interdisciplinary field of bioinorganic chemistry. A survey of computational methods and commercial software is uncommon for bioinorganic texts and is a welcome feature. The body of the book covers four topics in bioinorganic chemistry: heme oxygen carriers, copper enzymes, nitrogenase, and metals in medicine. The author deliberately takes a "case studies" approach, admitting that full coverage of the filed is virtually impossible in a one-semester introductory course aimed at a nonspecialized audience. Instructors who prefer broader, more systematic coverage of the material will still benefit from supplementing their courses with up-to-date material from this book. The coverage of oxygen carriers and metalloenzymes is based on structural information (supported with references to Protein Databank entries and illustrated with the figures that were generated from PDB atomic coordinates) followed by a brief description of reaction mechanisms. The lack of detailed mechanistic information (unavoidable in a short book) is partially offset by references to the pertinent literature. At the end of the chapters on heme oxygen carriers, copper enzymes, and nitrogenase, synthetic models (structural and functional) of the active sites are introduced, and their role in elucidating the enzyme mechanism and/or in carrying out biomimetic chemical reactions *in vitro* is discussed. The final chapter ("Metals in Medicine") should be especially attractive to students interested in the biomedical sciences and includes such diverse topics as manganese superoxide dismutase mimicking anti-inflammatory drugs, vanadium and chromium complexes for treatment of diabetes, platinum anticancer drugs, technetium radiopharmaceuticals, gadolinium MRI contrast agents, and the potential treatment of diseases related to copper homeostasis (Menkes and Wilson diseases). The book should be useful not only to bioinorganic

students and their instructors, but also to researchers seeking clear introductory reviews of the four bioinorganic topics covered in Chapters 4–7. Although these reviews cannot be comprehensive, important representative references (and some guidance for additional literature searches) are provided. The bibliography covers the literature up to 2000 and includes several citations from 2001. The book is well written and carefully illustrated.

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