Third Edition

BIOLOGICAL INORGANIC CHEMISTRY

A New Introduction to Molecular Structure and Function

Robert Crichton

Biological Inorganic Chemistry: An Introduction to Molecular Structure and Function, Third Edition provides a comprehensive discussion of the biochemical aspects of metals in living systems. The fascinating world of the role of metals in biology, medicine, and environment has progressed significantly since the very successful Second Edition published in 2012.

Beginning with an overview of metals and selected nonmetals in biology, the book supports the interdisciplinary nature of this vibrant area of research by providing an introduction to basic coordination chemistry for biologists and structural and molecular biology for chemists. Having built this accessible foundation, the book progresses to discuss biological ligands for metal ions; intermediary metabolism and bioenergetics; and methods to study metals in biological systems. This valuable resource also covers metal assimilation pathways; transport, storage, and homeostasis of metal ions; the biological chemistry of iron; and copper chemistry and biochemistry. In addition, the book discusses non-metals in biology; metals in the brain; metals and neurodegeneration; metals in medicine and metals as drugs; and metals in the environment, and much more.

Now in its *Third Edition*, this popular and award-winning resource highlights recent exciting advances, and provides a thorough introduction for researchers, as well as advanced students, approaching the field from a variety of backgrounds.

New Sections Include

- An overview of the different functions of essential metal ions
- Toxic metals, metals in diagnosis and therapeutics
- Crystal and ligand field theory and their limitations
- Molecular orbital theory
- Genetic and molecular biological approaches to study metals
- More complex cofactors and their biosynthesis
- Photosynthetic oxidation of water
- Man-made environmental pollution
- Metals as poisons

About the Author

Robert Crichton is an Emeritus Professor, Faculty of Science, Université Catholique de Louvain in Belgium. He has around forty years of experience teaching the subject, and published over 200 scientific articles and a number of books. Since 1985 he has organized a series of over twenty advanced courses on Metals in Biology in Louvain-la-Neuve, which have trained over 1,300 doctoral and postdoctoral students, many of whom are today leaders in the field.

The Second Edition of *Biological Inorganic Chemistry: An Introduction to Molecular Structure and Function* received the 2013 TEXTY Textbook Excellence Award in Physical Sciences from the Text and Academic Authors Association.

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