

Metal-Carbon Bonds in Enzymes and Cofactors

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About this Book

This volume is the 50th book in the two Sigels' series (44 in *MIBS* and 6 in *MILS*) and this is celebrated with a comprehensive Author Index given at the end of this Volume 6, which is solely devoted to metal-carbon bonds. Written by 20 internationally recognized experts, 12 stimulating chapters provide an authoritative and timely resource for scientists working in the wide range from physical and inorganic biochemistry all the way through to physiology and medicine.

Metal-Carbon Bonds in Enzymes and Cofactors highlights, supported by nearly 1700 references and about 160 illustrations (many in color), the function of these metal-carbon bonds in life, but also their importance in research. Most prominent are the B₁₂ coenzymes with which the field started out about 50 years ago, followed by methyl-coenzyme M reductase with its nickel-porphinoid group (F₄₃₀), the nickel-carbon bonds in ACS/CODH, and the importance of CO (and CN⁻) for [NiFe]-, [FeFe]-, and [Fe]-hydrogenases. *MILS-6* deals further with the dual role of heme as cofactor and substrate for the biosynthesis of CO; it also covers V, Mn, non-heme Fe, and Zn enzymes and their inhibition by CN⁻; it provides evidence that a plant receptor site utilizes copper(I) to sense ethylene, a growth hormone; ... and more.

About the Series

Metal Ions in Life Sciences links coordination chemistry and biochemistry in their widest sense and thus increases our understanding of the relationship between the chemistry of metals and life processes. The series reflects the interdisciplinary nature of *Biological Inorganic Chemistry* and coordinates the efforts of scientists in fields like biochemistry, inorganic chemistry, coordination chemistry, molecular and structural biology, enzymology, environmental chemistry, physiology, toxicology, biophysics, pharmacy, and medicine. Consequently, the volumes are an essential source for researchers active in these and related fields as well as teachers preparing courses, e.g., in *Bioinorganic Chemistry*.

About the Editors

Astrid Sigel has studied languages and was an editor of the *Metal Ions in Biological Systems* series (until Volume 44) and also of the *Handbooks on Toxicity of Inorganic Compounds* (1988), on *Metals in Clinical and Analytical Chemistry* (1994; both with H. O. Sessler) and on *Metalloproteins* (2001; with Ivano Bertini).

Helmut Sigel is Emeritus Professor (2003) of Inorganic Chemistry at the University of Basel, Switzerland, and a previous editor of the *MIBS* series until Volume 44. He serves on various editorial and advisory boards, published over 300 articles on metal ion complexes of nucleotides, coenzymes, and other ligands of biological relevance, and lectured worldwide. He was named *Protagonist in Chemistry* (2002) by *ICA* (issue 339); among further honors are the *P. Ray Award* (Indian Chemical Society, of which he is also an Honorary Fellow), the *Werner Award* (Swiss Chemical Society), a *Doctor of Science honoris causa* degree (Kalyani University, India), appointments as *Visiting Professor* (e.g., Austria, China, Japan, UK) and *Endowed Lectureships*.

Roland K. O. Sigel is Associate Professor (2009) of Inorganic Chemistry at the University of Zürich, Switzerland; from 2003 to 2008 he was endowed with a *Förderungsforschung* of the Swiss National Science Foundation. He received his doctoral degree *summa cum laude* (1999) from the University of Dortmund, Germany, working with Bernhard Lippert. Thereafter he spent nearly three years at Columbia University, New York, USA, with Anna Marie Pyle (now Yale University). During the six years abroad he received several prestigious fellowships from various sources, and he was awarded the *EuroBIC Medal* in 2008. His research focuses on the structural and catalytic role of metal ions in ribozymes, especially group II introns, and on related topics. He was also an editor of Volumes 43 and 44 of the *MIBS* series.

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