## DESCRIPTION

Covers the vastly expanding subject of oxidative processes mediated by copper ions within biological systems

Copper-mediated biological oxidations offer a broad range of fundamentally important and potentially practical chemical processes that cross many chemical and pharmaceutical disciplines. This newest volume in the *Wiley Series on Reactive Intermediates in Chemistry and Biology* is divided into three logical areas within the topic of copper/oxygen chemistry—biological systems, theory, and bioinorganic models and applications—to explore the biosphere for its highly evolved and thus efficient oxidative transformations in the discovery of new types of interactions between molecular oxygen and copper ion. Featuring a diverse collection of subject matter unified in one complete and comprehensive resource, *Copper-Oxygen Chemistry* probes the fundamental aspects of copper coordination chemistry, synthetic organic chemistry, and biological chemistry to reveal both the biological and chemical aspects driving the current exciting research efforts behind copper-oxygen chemistry. In addition, *Copper-Oxygen Chemistry*:

- Addresses the significantly increasing literature on oxygen-atom insertion and carbon-carbon bond-forming reactions as well as enantioselective oxidation chemistries
- Progresses from biological systems to spectroscopy and theory, and onward to bioinorganic models and applications
Covers a wide array of reaction types such as insertion and dehydrogenation reactions that utilize the cheap, abundant, and energy-containing O2 molecule.

With thorough coverage by prominent authors and researchers shaping innovations in this growing field, this valuable reference is essential reading for bioinorganic chemists, as well as organic, synthetic, and pharmaceutical chemists in academia and industry.

ABOUT THE AUTHOR

Kenneth D. Karlin is Ira Remsen Professor of Chemistry at Johns Hopkins University. His bioinorganic research focuses on coordination chemistry relevant to biological and environmental processes, involving copper or heme (porphyrin-iron) complexes. Dr. Karlin's main approach involves synthetic modeling, i.e., biomimetic chemistry. He is the winner of the prestigious F. Albert Cotton Award in Synthetic Inorganic Chemistry and the Sierra Nevada Distinguished Chemist Award, both awarded in 2009.

Shinobu Itoh focuses his current research on chemical modeling and application of novel active sites in biological systems. He was formerly an assistant professor at Osaka University, where he worked on the chemistry of coenzyme PQQ and cofactor TTQ as well as model compounds of galactose oxidase. In 1994, he was promoted to associate professor at Osaka University, where he collaborated with Professor Shunichi Fukuzumi in copper-dioxygen chemistry research. In 1999, he moved to Osaka City University as a full professor and started biological studies of dinuclear copper proteins, such as hemocyanin and tyrosinase. He returned to Osaka University in 2008 and further expanded his research interests to the design of artificial non-heme metalloenzymes using genetic engineering.

SERIES

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