



## Inorganic Chemistry: Principles and Properties

By **Rabindranath Mukherjee**  
 (Indian Institute of Technology Kanpur, India)

### ABOUT THE BOOK

This book focuses on molecular shapes, molecular symmetry, application of molecular orbital concepts to the compounds of main-group and transition elements of varied symmetry, metal-metal bonding, organometallic compounds such as ferrocene, fundamentals of redox properties, and spectroscopic term symbols. For compounds of d-block elements, it delves into discussions on structures and bonding theories (valence bond, crystal field, and molecular orbital), properties (magnetic, spectral, and redox), and reactivities. Basics and applications of organometallic compounds of d-block elements in catalysis and selected topics of bioinorganic chemistry have also been included. An attempt has been made to integrate selected focused topics, which is expected to help both the students and instructors, reducing the need to consult other specialized books.

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For the convenience of the instructors and students, the book highlights in each chapter take home messages. Examples in each subtopic, and at the end of any chapter a list of further reading and exercises to critically think about the concepts are discussed. Almost every chapter lists references to the literature and reviews that has been found to be particularly useful in the advanced Inorganic Chemistry courses. At the end of the book an appendix that gives hints/full answers of the exercises is included.

### CONTENTS

- Lewis Structure, Valence Shell Electron Pair Repulsion, and Hybridization
- Molecular Symmetry
- Molecular Orbital Theory
- Redox Reactions
- Spectroscopic Terms and Spin Orbit Coupling
- Chemistry of d-Block Elements
- Reactions of d-Block Complexes
- Organometallic Chemistry of d-Block Elements
- Organometallic Catalysis
- Bioinorganic Chemistry

### READERSHIP

This book covers material that could be included in Inorganic Chemistry course for postgraduate and research-level graduate (PhD) students.

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## ABOUT THE AUTHOR

**Rabindranath Mukherjee**, known as R N Mukherjee, (born on April 19, 1953 at Tribeni, Hooghly; West Bengal, India) an MSc (Specialization in Inorganic Chemistry) from The University of Burdwan (1976), West Bengal, India obtained his PhD from The University of Calcutta (1983) working in the laboratory of Prof. Animesh Chakravorty, the then Head, Department of Inorganic Chemistry, Indian Association for the Cultivation of Science (IACS), Calcutta (now Kolkata). After spending two years in the same laboratory as a post-doctoral research associate he joined the research group of Prof. R H Holm, Department of Chemistry, Harvard University, USA during May 1985-September 1987. He became a member of the faculty as an Assistant Professor at the Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, India in October 1987. Since December 1995 he is a Professor of Chemistry. Currently he is Head of Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, India. His hobbies include listening to music and watching movies.

## Awards/Honors and Fellowships

- Chair Professor at Indian Institute of Technology Kanpur, (Poonam and Prabhu Goel Chair) (2011–2014)
- Priyadarajan Ray Memorial Award, Indian Chemical Society, Kolkata (2010)
- J C Bose Fellowship, Department of Science & Technology, Government of India (2008–2013)
- Elected Fellow of Indian National Science Academy, New Delhi, India (2008)
- Fellow, Indian Academy of Sciences, Bangalore (1999)
- Silver Medal, Chemical Research Society of India, Bangalore, Bangalore (2011)
- Vice President, Chemical Research Society of India (2008– )
- Member, Advisory Board of Dalton Transactions (RSC) (2008–2011)
- Member, Editorial Board of Inorganica Chimica Acta (Elsevier) (2011–2013)

## Professional Membership

- Life Member, Chemical Research Society of India (1999– )
- Member, Royal Society of Chemistry, UK (2003– )
- Member, American Chemical Society, USA (1999– ).

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