

of the author and a clear presentation of the many data make this review precious for the researchers in the area.

An article by G. W. Brudvig and R. H. Crabtree deals with the bioinorganic chemistry of manganese related to photosynthetic oxygen evolution (36 pages, 126 refs.). The most recent theories on the role of manganese in photosynthesis are discussed together with proposed mechanisms of oxygen evolution. The coordination chemistry of manganese complexes and manganese clusters is reviewed.

J. M. Berg presents a review on metal binding domains in nucleic acid binding and gene regulatory proteins (34 pages, 185 refs.). Seven groups of proteins are discussed among which the most familiar to bioinorganic chemists are the zinc fingers proteins. The possible role of metal ions is discussed.

A review of 100 pages and 128 refs. is devoted to 'Molecular Mechanics Calculations as a Tool in Coordination Chemistry' by R. D. Hancock. The utility of MM is shown in understanding the chemistry of a large variety of complexes from those obtained with open chain ligands, macrocycles, superchelates, siderophores, etc.

E. Krauz and J. Ferguson present 90 pages with 209 refs. on the spectroscopy of $\text{Ru}(\text{bipy})_3^{2+}$. It is an impressive work for specialists!

M. J. Natan and M. S. Wrighton present a review on chemically modified microelectrode arrays (95 pages, 183 refs.).

T. S. Lobana presents a review on 'Structure and Bonding of Metal Complexes of Tertiaryphosphines-arsine Chalcogenides' (90 pages, 406 refs.). It is a complete review on spectroscopic, structural catalytic and thermodynamic aspects of these complexes.

This book will certainly be attractive to a large variety of researchers in inorganic and bioinorganic chemistry. It is worthy to have on the shelf or in the library.

Ivano Bertini
University of Florence
Florence
Italy

Structure and Reactivity

Edited by Joel F. Liebman and Arthur Greenberg,
published by VCH Publishers, Inc., New York, 1990,
385 pp., DM 195.

Prediction of chemical reactivity from the ground-state structure of a molecule remains a prime goal in chemistry. In spite of the extreme refinement of

experimental techniques such as high resolution X-ray crystallography, electron diffraction and microwave spectroscopy, and of tremendous improvements in calculations techniques which complement experimental studies, the translation of the conclusion to the solution phase, where most chemistry is done, is still not self-evident. This book presents a series of essays concerned with different aspects of these approaches.

The first chapter by Politzer and Murray introduces their calculational construct of the bond deviation index and relates this to the strain of various carbocycles and to the electrostatic potentials in these molecules. The following chapter, by Klein and Stevens, complements the preceding contribution, discussing electron density distributions and electrostatic potentials from the experimentalist's point of view. The concept of molecular strain is also reexamined by Cremer and Kraka which shows that the topology of electron density distribution provides valuable insights into reactivity. Greenberg explores the distortion of the seemingly familiar amide linkage which is so vital in proteins, antibiotics and polymers. A crucial contribution from Mitsuhashi is devoted to the relationship between solid-state structure and reactivity, and the role of solvation, so critical in all solution chemistry, is discussed. The following chapter, by Krygowski, explicates crystal derived structures in terms of canoni references structures. The chapter by Iyer and Slagg identifies the structural features which characterize explosives, propellants and other high energy species. The final chapter, by Schulz and Schweig, deals with one of the most active areas of UV photoelectron spectroscopy, that is, the identification of valence shell ionization energies in transient molecular species.

The prime feeling which emanates from this book is the evident enjoyment each author had to write his chapter. Even if only senior firmly educated readers will be actually capable of taking full advantage of such top contributions, this book must be acquired for proving to the young co-workers that enthusiasm may exist within the world of Research!

Jean-François Labarre
CNRS, Laboratoire Structure et Vie
Université Paul Sabatier
118, route de Narbonne
31062 Toulouse Cédex
France