

Book Review

"Infrared and Raman Spectra of Inorganic and Coordination Compounds," 3rd edition, K. Nakamoto, Wiley-Interscience, New York, 1978, xv + 448 pages, \$24.50.

Professor Nakamoto has written another excellent edition of his well-known text dealing with infrared spectroscopy of inorganic and coordination compounds. As the new title of the book suggests discussions of Raman spectroscopy have been greatly expanded, with added sections on the theories of Raman spectroscopy as well as several applications of laser-Raman spectroscopy to inorganic and coordination compounds. Of particular interest to this readership is the added brief review of vibrational studies in *organometallic chemistry* and the recent developments in matrix isolation spectroscopy.

The book is divided into four parts. Part I describes the fundamental theories of infrared and Raman spectroscopy in abridged form, including normal vibrations, symmetry and group theory, selection rules, GF matrix method, vibrational frequencies of isotopic molecules, infrared and Raman intensities, depolarization of Raman lines, resonance Raman spectra, matrix isolation spectroscopy, and vibrational spectra of crystals. Parts II and III illustrate applications of these theories to inorganic and coordination compounds, respectively. Part II includes discussions of a variety of organometallic compounds, namely carbonyl and nitrosyl complexes, molecular oxygen and nitrogen complexes, hydrido complexes, metal clusters, and complexes of phosphine and arsines. Finally, Part IV contains a brief review of vibrational studies of other organometallic compounds (*vide supra*), e.g., metal alkanes, alkenes, alkynes; and cyclopentadienyl compounds

The text contains many references and review articles (2168 to be exact); however, the latest references are in 1974 with a few early 1975 ones. This is somewhat unfortunate, for many significant contributions have been made in matrix-isolation spectroscopy and structure determination in organometallic chemistry since that time. Undoubtedly, this is in part due to the lag time between writing and publishing. The coverage of the literature up to 1974 is fairly complete, and the book thus provides a foundation on which to build literature searches.

Throughout the volume numerous tables of observed frequencies with band assignments, infrared and Raman spectra of typical compounds, and structural formulae greatly aid in the presentation. The text is well produced and clearly written. This work is warmly commended to the reader for both learning and reference purposes.

DONALD J. DARENSBOURG

Department of Chemistry
Tulane University
New Orleans, Louisiana 70118 (U. S. A.)