

Book Review

Advances in Inorganic Chemistry and Radiochemistry, Vol. 25, Edited by H. J. Emeléus and A. G. Sharpe, Academic Press, 1982, ISBN 0-12-023625-7

This is the twenty-fifth volume of a deservedly popular series among inorganic chemists. The latest volume presents five reviews: Some aspects of Silicon-Transition-Metal Chemistry, by B. J. Aylett; The Electronic Properties of Metal Solutions in Liquid Ammonia and Related Solvents, by P. Edwards; Metal Borates, by J. B. Farmer; Compounds of Gold in Unusual Oxidation states, by H. Schmidbaur and K. C. Dash; and Hydride Compounds of the Titanium and Vanadium Group Elements, by G. E. Toogood and M. G. H. Wallbridge. Every article is followed by an extensive list of references, the most recent appearing in 1981 for the first two, 1979 for the third, 1980 for the last two. The volume concludes with a detailed subject index and a cumulative index of titles of articles of previous volumes in the series.

The first article (120 pages, 458 references), by Aylett, gives an extensive review on recent studies of molecular transition-metal compounds, placing the main emphasis on the synthetic and reactivity aspects of these compounds. Properties of transition-metal silicides are examined also. The large number of tables and the lucid organization of the material makes it noticeably clear and easy to follow a subject so wide and in such rapid development.

Edwards analyses the recent advances in studies of metal solutions not only in ammonia but also in various organic solvents. The electronic properties

of dilute and concentrated solutions are dealt with in detail from the experimental and theoretical points of view. The nature of the non-metal-to-metal transition in these systems is briefly examined.

The survey of metal borates by Farmer deals with a very intricate topic which has been increasingly clarified in the last two decades, mainly due to X-ray crystallography as well as to vibrational and resonance spectroscopy. Preparation, properties and structural characteristics of hydrated and anhydrous metal borates are covered, along with the behaviour of polyborate ions in aqueous solutions. Lanthanoid and actinoid borates are not considered.

In the shortest of the five articles, Schmidbaur and Dash outline exhaustively the unusual oxidation states of gold including the -1 , $+2$, $+5$, and non integral values for gold clusters.

The final article, by Toogood and Wallbridge, is a timely and comprehensive review on the synthetic, structural, and reactivity aspects of the hydride derivatives of IV B and V B metals. A number of detailed reaction schemes, structural sketches, and synoptic tables makes this article very useful for those interested in such a topic. Overall, this volume (and the series) is of a general interest to researchers in the fields of structural and inorganic chemistry.

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