

lene)ethylnylenes] and six other contributions by J.L. Dye, A.G. MacDiarmid, J.O. Morley, L.Y. Chiang, A. Kakuta and D.S. Donald on organic materials with interesting chemical, optical, electronic and magnetic properties.

The third section on Organic Synthesis for Life Sciences contains an article on metal-based Selective Oxidations in Organic Chemistry using Biomimetic Catalysts by D. Mansuy and four contributions from T. Shiba, H. Yamada, P.G. Schultz and Y. Kanaoka on peptides, enzymes, antibodies and ion channels.

All of the chapters are well written and generally easy to read. The editors and authors are to be congratulated; the book overall is extremely well produced despite being a collection of camera-ready manuscripts, and represents a compilation of reviews of the various distinguished authors' contributions. The volume admirably demonstrates the extent to which very many areas of science rely on the crucial contributions of organic, and in particular, organometallic chemistry. Chemists from all disciplines would gain from reading this book, but its very broad scope and high price (£85) make this a library book rather than one for individual collections.

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Coordination Chemistry of Aluminium

G.H. Robinson (ed.) (Howard L. Hunter, Chemistry Laboratory, Clemson University, Clemson, SC 29634-1905, USA) VCH, New York, xiii + 232 pages
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Aluminium is the third most abundant element in the Earth's crust. Its coordination chemistry, which determines its speciation in natural waters, its mineralogical transport and distribution, its effect on biology and its role in the environment, are of immense importance. Curiously, however, the coordination chemistry of aluminium in aqueous solution has hitherto been little studied and therefore not very well understood. That is why in this book there is only one chapter, out of five covering particular ligands, on aqueous solutions. The others cover areas where chemistry has to be studied in environments where water is rigorously excluded and aluminium–carbon–nitrogen or–phosphorus bonds are instantly converted by moisture into the aluminium–oxygen bonds that are ubiquitous in the natural environment.

The book comprises six chapters, all by internationally acknowledged experts. The first by A. Haaland

(University of Oslo) is a survey of normal and dative bonding in neutral aluminium compounds. This brings together and rationalises an enormous body of structural and thermodynamic data and shows how subtle changes in bond lengths in complex coordination compounds can be understood. The second chapter, by G.H. Robinson, is a straightforward factual summary of coordination compounds based on aluminium–nitrogen bonds. Since valence requirements mean that aluminium nitride itself forms a three-dimensional lattice many molecular coordination compounds are organometallic, with small aluminium–nitrogen cores separated by peripheral organic groups. There is a good summary here both of early work on derivatives of simple amines and of more recent studies on products from multidentate amines where Professor Robinson's own contributions have been extensive. The third chapter on aqueous coordination chemistry is by C. Orvig (University of British Columbia). There are several pages showing organic ligands, associated thermodynamic data (the compilation is illustrative rather than comprehensive), and ^{27}Al NMR results. Low valent and paramagnetic compounds of aluminium are considered by A.R. Barron (Harvard): some of these are transient species investigated mainly by ESR but a number of well-characterised compounds with aluminium–aluminium bonds have recently been made by W. Uhl. The chemistry of alkoxides, thiolates and the heavier Group 16 derivatives of aluminium and gallium are described by J.P. Oliver, R. Kumar and M. Taghiof (Wayne State University). A glance at the reference pages show the enormous advances made in the last few years. The final chapter by J.L. Altwood (University of Alabama) on anionic and cationic organoaluminium compounds describes liquid clathrate compounds and compounds with cyclic ethers.

Though this book makes no claim to be about organoaluminium chemistry, the reviews in it are of considerable interest to those working in this area. They are up-to-date and authoritative and are likely to stimulate even more work in a rapidly developing field.

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Gmelin Handbook of Inorganic and Organometallic Chemistry, 8th Edition, Gallium Supplement Volume D1
J-C. Maire, K. Greiner, M. Kotowski, V. Kruppa, M. Mirbach, E. Schleitzer-Rust and D. Tille, Springer, Berlin, 1992, xvi + 320 pages
ISBN 3-540-93657-2

The main volume of Gmelin covering the chemistry of gallium was published as long ago as 1936. Since