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Book review

Gmelin handbook of inorganic chemistry, 8th edition, *Th — Thorium, Supplement Volume A2: History. Isotopes. Recovery of Thorium*, Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1986, xv + 233 pages, DM 981. ISBN 3-540-93532-0.

Normally, the A Supplements of the Gmelin handbook hold little of direct interest to the organometallic or coordination chemist, but this volume on thorium (the seventh dealing with this element, System Number 44) is an exception. The opening section (H.W. Kirby; 14 pages; 130 refs.) describes the history of thorium, and its fascination is reflected in some of the names which appear: Thor, Berzelius, Welsbach, Curie, Rutherford, Soddy, Ramsey, and Seaborg. The second section (S. Möbius; 52 pages; 319 refs.) describes the production of the most important thorium isotopes (^{227}Th–^{234}Th, inclusive), and includes a description of the general procedures of carrier precipitation, use of chelating agents, solvent extraction (see also Supplement Volume D2) and ion exchange, which are used for the isolation of thorium isotopes. The third section (H. Münzel; 86 pages; 522 refs.) describes the decay properties of all the thorium isotopes (^{212}Th–^{236}Th, inclusive), and the fourth section (H. Münzel; 35 pages; 168 refs.) is concerned with the fission of thorium nuclei: the data included are 'best' values. The final chapter (G.M. Ritcey, R. Molnar and G. Pouskouleli; 44 pages; 95 refs.) is of the most chemical interest, and describes the recovery of thorium from ores and concentrates and the production of a saleable product. After a general introduction to the thorium ores and production estimates, there follows a section which describes processing for thorium recovery, detailing the methods of physical and magnetic concentration, the decomposition of monazite {$(La,Ce,Th)PO_4$}, the decomposition of granites and by-product recovery from fly ash. The volume concludes with a section describing purification by precipitation, solvent extraction and ion exchange techniques.

This volume lives up to the high standards which have already been set by the other parts of this series. In particular, intelligent use is made of flow diagrams in the sections dealing with production, processing and purification, and the general quality of the illustrations (the section of the Karlsruhe Chart of Nuclides is in colour) is first class. The text is well written, and references are included up until the end of 1984, with many also from 1985. This volume will clearly become the source book for data concerning thorium isotopes, and should be a part of all libraries attached to institutes in which research into the actinides is conducted.

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