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Book reviews

Gmelin handbook of inorganic chemistry, 8th edition, *Th — Thorium*, Supplement Volume *A4: General properties. Spectra. Recoil reactions*, Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo, 1989, xvi + 248 pages, DM1155, ISBN 3-540-93589-4.

This is the twelfth volume which the Gmelin Institute has published concerning the chemistry of thorium (System No. 44), and is the third to deal with the element itself (the indispensable volume on coordination compounds, Supplement Volume E, was published in 1985).

This volume is subdivided into five sections. The first section (B. Kanellakopulos; 16 pages) details the electronic structure, metallic radius, ionic radii, coordination numbers, redox potentials, excited electronic configurations, spin-orbit coupling parameters, and magnetic susceptibilities of the thorium atom and thorium ions. The second section (158 pages) covers the spectroscopy of thorium, detailing its atomic spectra (R. Engleman, Jr.), absorption spectra of its compounds (B. Kanellakopulos), X-ray spectra (M. Bickel), photoemission spectra of thorium and its compounds (B.W. Veal and D.J. Lam), EPR spectra of its organometallic compounds (B. Kanellakopulos), NMR and Mössbauer spectra of its binary compounds (B. Kanellakopulos), and mass spectrometry, including TIMS, IDMS, FDMS, FIMS, SSMS, ICPMS, RIMS, SLMS and SIMS (L.E. Grimes and R.G. Behrens). The third section (J. Fuger; 16 pages) is a data compilation of the thermodynamic properties of thorium and its compounds. The last two sections describe the effects of ionizing radiations on the chemical and physicochemical properties of thorium and its compounds (J. Fuger; 8 pages) and the thorium recoil reactions (K. Roessler; 48 pages).

It must be stated that, for a volume which purports to deal with the element, it contains a significant amount of data upon binary, coordination and organometallic compounds. The only problem is that, in the absence of a compound index, it is difficult to find this information, particularly when one considers how unlikely it would have been to look for that information in this volume in the first place. I doubt whether many chemists would have expected to find a description of the EPR spectrum of $[Th(\eta^5\text{-}C_5H_5)_3]$ (p. 137–138) or the mass spectrum of $[Th(acac)_4]$ (acacH = pentane-2,4-dione; p. 162) in a volume describing thorium metal! Thus, despite misleading first appearances, this book is surprisingly of interest to both the coordination chemist and the organometallic chemist. It is an invaluable source book, meeting the exacting standards of excellence of the Gmelin Institute, and is a must for most chemistry libraries.

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