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Book reviews

Gmelin handbook of inorganic chemistry, 8th edition, *Th – Thorium, Supplement Volume C5: Compounds with S, Se, Te, and B*, Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1986, xix + 149 pages, DM 601. ISBN 3-540-93531-2.

This is the sixth volume which the Gmelin Institute has published concerning the chemistry of thorium (System No. 44), and the third devoted to its compounds (Part C): Supplement Volume C1 (1978) described the compounds of thorium with the noble gases, hydrogen and oxygen, whilst Supplement Volume C2 (1976) covered the ternary and polynary oxides of thorium (including the borates). The current volume (C5) is devoted to the compounds of thorium with sulfur, selenium, tellurium and boron. In detail, this volume describes the sulfides (ThS, Th_2S_3, Th_7S_{12}, ThS_2 and Th_2S_5), the oxide or nitride sulfides (ThOS and Th_2N_2S), the ternary sulfides with the lanthanide (Ln) elements {$Th_xLn_{1-x}S$ (Ln = Ce or Sm), $Y_{0.84}Th_{0.16}S_{1.3}$, $Ln^{III}_2ThS_5$, $Ln^{III}_4Th_5S_{16}$ and $CeThS_2$}, the sulfites and sulfito complexes, the sulfates and sulfato complexes, the fluorosulfates, the selenides ($ThSe_2$, Th_2Se_3, Th_7Se_{12}, $ThSe_2$, Th_2Se_5 and $ThSe_3$), the oxide or nitride selenides (ThOSe and Th_2N_2Se), the selenites and selenates, the tellurides (ThTe, Th_2Te_3, $ThTe_2$ and $ThTe_3$), the oxide or nitride tellurides (ThOTe and Th_2N_2Te), the tellurites and tellurates, the borides (ThB, ThB_4, ThB_6, ThB_{12}, ThB_{18} and ThB_{66}), the ternary borides {$Th_xNa_{1-x}B_6$, $Ce_{1-x}Th_xB_4$, $Ln_{1-x}Th_xB_6$, $Th_2Fe_{14}B$ and $ThMB_4$ (M = V, Mo, W or Re)} and the tetrahydroborates of thorium. Of course, the section of the most interest to organometallic chemists is this last one, which details the synthesis, structural, spectroscopic and thermal properties, and chemical reactions, of $[Th(BH_4)_4]$, and also describes the remarkable salts $Li[Th(BH_4)_5]$, $Li_2[Th(BH_4)_6]$, $Li_2[ThCl_2(BH_4)_4]$ and $[NBu_4][Th(BH_4)_5]$ – the most recent reference in this section was published in 1972, and there is clearly room for further research in this fascinating area. The sections describing the $[EO_4]^{2-}$ and $[EO_3]^{2-}$ (E = S, Se or Te) complexes will be of most interest to the coordination chemist.

The authors, Horst Wedemeyer and David Brown, have produced an exemplary and exhaustive text, which contains references up to and including 1984. A large number of non-standard sources (particularly reports and documents of difficult availability, and many Russian references) have been cited, and we owe a debt of gratitude to the authors for having performed such a thorough and pain-staking job. As one expects for this series, the type-setting, the quality of the illustrations, and the overall production are excellent. This volume, slim and therefore cheaper than usual (although maintaining about the same price per page as the other volumes in the series), should be in the libraries of all institutes concerned with actinide chemistry.

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