

Book Reviews

The Chemistry of Uranium. By E. H. P. Cordfunke, American Elsevier Publishing Company, Inc. (March 1970). 250 pp. \$ 16.75.

This monograph is one of a collection on topics on inorganic and general chemistry edited by P. L. Robinson. It is a well-written and carefully prepared little volume on some of the chemistry of uranium and its applications in nuclear technology.

The size of the volume precludes exhaustive treatment of a subject as broad as the chemistry of uranium and many readers will quarrel with the particular items selected for study. For example, I found the sections on reprocessing rather inadequate. While the Redox and Purex processes are described, solvent extraction as an entry does not appear in the index and the entire subchapter on reprocessing is confined to four pages equally divided among aqueous, fluoride volatility, and pyrochemical processes. The discussion on fuel fabrication is only marginally better, but the properties of many individual pure uranium compounds are described quite adequately.

The author's interests are obviously concentrated in the thermochemistry of uranium compounds and most of the measured heats of formation, entropies, heat capacities, and free energies for binary uranium compounds will be found conveniently indexed.

The book includes chapters on uranium metal, alloys, the hydrides, oxides, uranium ions, salts, halides, and compounds with Group IV, Group V, and Group VI elements as well as a 13-page chapter on applications and 4 pages on the analytical chemistry of uranium.

The discussion of nitrides, carbides, and other possible fuel element components is in more depth.

The material given is well supported with references

back to the original reports rather than secondary sources, particularly for that material which is well covered. Unfortunately, for the sections which are slighted the references are primarily to rather general review articles and not always the latest or most detailed of these.

The monograph will belong in any library serving a nuclear facility, but its value to professionals actually manipulating uranium in any of its forms will be severely limited. If, as the bookjacket indicates, the time has come for a monograph to replace or supplement Katz and Rabinowich, this is not the one.

The author, however, has blended the actual and potential nuclear applications into the chemistry discussion in a sensible and easy-to-read fashion and the non-nuclear chemist may get the most out of his approach.

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About the Reviewer: Herbert H. Hyman has been associated with the Argonne National Laboratory and its predecessor, the Metallurgical Laboratory, since 1944, and is presently a senior chemist there. Dr. Hyman completed his graduate studies at Illinois Institute of Technology following undergraduate work at the College of the City of New York and a masters degree from Brooklyn Polytech. He has been an exchange scientist at Harwell and a visiting professor at Brandeis. His areas of research include non-aqueous solutions, fluorine chemistry, and noble gas chemistry. Perhaps the Editor will be pardoned the remark that he was the reviewer's first physics instructor.