

## Book Reviews

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**The Chemistry of Plutonium.** By J. M. Cleveland. The Dow Chemical Company. Gordon and Breach, Science Publishers, Inc., New York, 1970. Pp XXii + 653.

This book is a detailed and complete monograph on the chemistry of plutonium in its present state of knowledge. The subject matter is made up of four parts. Part I summarizes current ideas on actinide theory. Part II, which covers seven chapters, describes extensively various facets of the solution chemistry of plutonium in its various oxidation states specifically, redox reactions, hydrolytic behavior, complex formation with various ligands, ion exchange processes, solvent extraction, and the chemistry in non-aqueous solvents and molten salts are examined in detail. The nine chapters of Part III describe near all of the plutonium compounds known so far, with plentiful information on preparation methods and properties. Part IV illustrates, mainly from a chemical point of view, the methods currently employed for the separation of plutonium from irradiated reactor fuel and the subsequent conversion processes. Finally, one chapter is devoted to problems of recovery and waste disposal.

The Author has certainly carried out a thorough search of pieces of information on the subject matter available in the literature. Also assisted by his own personal experience as a researcher who has studied various aspects of plutonium chemistry himself, the Author generally realizes the difficulties one sometimes encounters in interpreting some unaccurate data reported in the literature. Somewhere in the book, however, a more critical appraisal of the material in hand would have been desirable. For instance, such statements as « plutonium in any given valence is more strongly complexed than the corresponding uranium and neptunium ions » in the chapter on complexes appear to lend themselves to criticism, to say the least.

The book is well printed and the layout of the subject matter, accompanied by more than 1100 references, is rational and clear. No doubt all those interested in the chemistry of this important and difficult element will be indebted to the Author for this most useful scientific and reference work.

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