

## BOOKS

**Nuclear Chemical Engineering.** (Part of the McGraw-Hill Series in Nuclear Engineering) Manson Benedict, Professor, Nuclear Engineering, M.I.T., and Thomas H. Pigford, Associate Professor, Nuclear Engineering, M.I.T. McGraw Hill Book Company, Inc., New York (1957). 594 pages. \$9.50.

At last a book devoted to the chemical aspects of nuclear chemical engineering has been published. With the ever-growing interest of chemical engineering students in the atomic energy field such a text was overdue. Professors Benedict and Pigford compiled a considerable amount of currently available information which should be helpful to the chemical engineering graduate entering the rapidly expanding nuclear energy field. The material covered in this book is an essential supplement to a sound chemical engineering background, if one is to assume a productive role in nuclear engineering as rapidly as possible.

However, the book is somewhat limited in scope. Some important chemical engineering aspects of nuclear reactors, such as heat transfer and fluid flow, are not discussed at all. In conjunction with C. F. Bonilla's "Nuclear Engineering," which is also part of the current McGraw Hill Series in Nuclear Engineering, the two books provide a fairly comprehensive review of the chemical engineering aspects of the nuclear energy field.

Two major subjects are covered in detail: first, the processing of reactor fuels, and second, isotope separation of materials normally associated with reactors. Five chapters are devoted to fuel handling and fuel cycles. The second major topic, isotope separation, is discussed in four chapters. This section of the book is highly comprehensive, and it is an invaluable source of information not only to the student, but also to all concerned with nuclear engineering.

In addition, there is one chapter (Chapter V) devoted to a discussion of the chemical, physical, and nuclear properties of zirconium, hafnium, thorium, and beryllium, all of which have become integral parts of current power reactors.

The weakest part of the book is the first two chapters which rather hastily, and without much continuity, introduce the problems of nuclear chemical engineering and present the physics of nuclear reactions. These subjects are essential fundamentals of what is to come later in the text, and thus, the reader is well advised to become familiar with these fundamentals from a nuclear physics text.

All in all the book is well written, the text is fluent and not involved with difficult vocabulary, and the mathematics does not go beyond the elementary differential equation level. All chapters are generously furnished with references, tables, graphs, and flow sheets illustrating the various principles. The book is comparatively new, and up to date; however, with the rapidly progressing nuclear technology frequent revisions and/or supplements will be required to keep it up with the times.

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