

to analyze reactor kinetic measurements. It presents clear descriptions of the measurements themselves—along with many extremely pertinent observations about possible sources of error, both theoretical and experimental. In many cases the theoretical analysis relating to the measurements is carried out only to the first order, and the theoretical tools for a more thorough approach are not developed. This omission (which, of course, may be intentional) makes the book somewhat incomplete. Nevertheless, I recommend it as a most valuable adjunct in dealing with practical kinetics problems.

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#### A VALUABLE TEXT

*Title* Experimental Reactor Analysis and Radiation Measurements

*Author* Donald D. Glower

*Publisher* McGraw-Hill Book Company, 1965

*Pages* xiii + 348

*Price* \$13.50

*Reviewer* T. G. Williamson

It is a pleasure to find a new book that includes almost everything one has been teaching in a course and find it presented clearly and in enough detail to make a valuable text. *Experimental Reactor Analysis and Radiation Measurements* by Donald D. Glower is just such a book.

The author has written a laboratory text that includes some 60 experiments in the areas of basic radiation measurements, subcritical assemblies, pulsed-neutron-source experiments, shielding, radiation effects, nuclear reactors, and reactor kinetics. The experiments range in complexity and degree of sophistication from introductory experiments on detection elements to more advanced techniques such as measurement of reactor conversion ratio and reactor noise analysis. Each experiment is presented in a format similar to that which a student report might be expected to follow, i.e., a) purpose, b) introduction and theory, c) experimental apparatus, d) procedure, e) analysis of results, and f) topics for discussion. About half of the experiments can be done in an afternoon lab with equipment ordinarily present at a research reactor facility, critical laboratory, or in a laboratory with only a subcritical assembly and a pulsed source. Some of the rest of the experiments require more specialized equipment or are

of such nature as to lead to longer term projects or even graduate theses.

The experimental procedures are written in general terms in such a manner that they can be applied at each facility. As the experiments progress to the more sophisticated, the procedures become more general, leaving most of the experiment to the design of the students. Each experiment includes a section on topics for discussion, which includes several thought-provoking questions which could lead to valuable class discussions or become a large part of the student reports.

The author makes good use of references. In nearly all experiments he refers to a standard text or to a primary source in a readily available journal. At the end of the second chapter there is a bibliography with 57 entries, relative to the contents of the previous chapter. However, one wonders why such bibliographies do not appear at the end of the other chapters.

One can always be critical of a book if it doesn't meet all preconceived ideas of what its content should be. For example, I would like to have seen more shielding experiments (various source geometries, albedo measurements, slant incidence, etc.), more than one paragraph devoted to measuring the fast fission factor, and a little more emphasis on the concept of dollars and cents as units of measured reactivity. However, these are minor points and should not be allowed to detract from the overall excellence of the book.

In his preface the author states that the book is not for use in a training laboratory in which radiation counting skills are taught, and in the text he doesn't place great emphasis on instrumentation or simple counting techniques. Rather, he makes liberal references to other books in this field, particularly *Nuclear Radiation Detection* by Price. He further states that "... particular care has been taken to include basic experiments which require academic proficiency at the M.S. and Ph.D. student level." He has successfully attained the goal, in my opinion, of producing a graduate-level text book. The book is a valuable addition to the library of the reactor experimentalist. Students and teachers will find many good experiments and procedures; the researcher will find it a good reference for experimental techniques with which he is not intimately associated.

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#### A REVIEW AND A HALF

*Title* Ceramics for Advanced Technologies

*Editors* John E. Hove and William C. Riley

*Publisher* John Wiley & Sons, 1965