Principles of Activation Analysis

Author	Paul Kruger
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Reviewer	Ralph T. Overman

The author indicates that this book is designed as a text book for use by students of diverse scientific backgrounds, such as engineers, biologists, chemists, and metallurgists, and is suitable for a quarter- or one-semester course. My quick reaction is that if a student had nothing else to do that quarter, he might well be able to work through the material presented in this comprehensive work. The term comprehensive, in this case, has positive connotations in the sense that a great variety of topics are considered, but negative in the sense that the treatment of so much material in a single course is probably not realistic. This does not suggest that the material should not be included in a good text, but that selectivity in treatment will be required.

The first six chapters (231 pages) contain the basic nuclear science covering structure, decay, detection, and radiochemistry. The book really begins on p. 232, and continues at an intense pace to p. 511. The chapters are well put together and the book has a good format. Each chapter concludes with a set of problems. I did not actually sit down and work a representative selection, but they appear to be straightforward and uncomplicated.

The first section of the book is essentially a condensation of an early Friedlander and Kennedy, and touches on most of the basic ideas of nuclear science. The treatment is so abbreviated that I feel it would be difficult for a novice to obtain the information needed for the rest of the book. In addition, the level of sophistication of the first part (aluminum absorption curves and Glendenin range-energy relationships) is at some variance with the sophistication of the activation analysis portions of the book.

The latter two-thirds of the book, on the other hand, is an excellent treatment of activation analysis. It approaches the field from the standpoint of techniques and practices, and limitations, and contains excellent material on a variety of applications. Although considerable material is included on the chemical problems associated with analysis, the emphasis is on instrumental approaches. The only material of questionable relevance in these chapters is a section on trace element analysis which gives a brief description of a variety of non-nuclear methods of trace analysis.

The book is quite contemporary in its applications and includes results of typical analyses of lunar materials, as well as other samples. The categorization of the applications into biosphere, cosmosphere, etc., is interesting.

There is no question that the book is an essential addition to the library of any individual interested or concerned with highly sensitive analytical techniques. I can recommend the book highly for all nuclear analysts and without reservation for an advanced course in nuclear chemical applications.

Ralph T. Overman (PhD, physical chemistry, Louisiana State University, 1943) was a pioneer in teaching and research in many fields of radiochemistry. Presently he is the planning director of the Bi-State Regional Medical Program in St. Louis, Missouri. An associate professor in the St. Louis University School of Medicine and lecturer in radiology at Washington University, he is currently concerned with the translation of medical resources into the development of a health care delivery system.