analysis and comparisons for LMFBRs are performed with the CORONA code, and for PWRs the PACTOLE code is used.

There is no space here to comment individually about all the papers, most of good to excellent quality. Extensive, complicated analyses and computation involving Monte Carlo, discrete ordinates $S_n$ methods, and progeny were performed, reported, and discussed. The potential development of better competitive and implemented transport methods, vitally needed in shielding problems, should be encouraged.

There are a few misprints, mistakes, and omissions, but nothing terribly serious. The editors, all the teams and committees, and the authors are to be congratulated on a good job well done.

The proceedings of this conference should be of vital interest to the entire American Nuclear Society community, especially since it delineates where future efforts need be directed in solving streaming and damage problems.

*Clarence E. Lee is a professor in the Department of Nuclear Engineering at Texas A&M University. He is currently doing research on analytical and numerical methods in diffusion and transport theory, charged particle transport, HTGRs (prismatic and pebble bed), fission product migration, and fast reactor accident analysis.*

### Nuclear Safeguards Analysis, Nondestructive and Analytical Chemical Techniques

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| *Editor* | E. Arnold Hakkila |
| *Publisher* | American Chemical Society, Washington, D.C. (1978) |
| *Pages* | 213 |
| *Price* | $22.00 |
| *Reviewer* | L. B. Church |

This book is the proceedings of an American Chemical Society (ACS) symposium held in March 1978. The 12 chapters commence with an overview as perceived by the U.S. Department of Energy (DOE) Office of Safeguards and Security. This excellent review chapter outlines the nature of the safeguards problem and reviews recent history in regard to the roles of the U.S. Atomic Energy Commission, U.S. Energy Research and Development Administration, U.S. Nuclear Regulatory Commission, DOE, and International Atomic Energy Agency (IAEA). Although the title of the book suggests that the book would be of interest to only analytical scientists working in the realms of reprocessing special nuclear materials (SNM) and safeguards, this clearly written first chapter is valuable reading for any scientist with a concern for the long-term role of nuclear power in our society.

The next six chapters show the need for two different types of analytical techniques: rapid or on-line analyses (often with relatively large uncertainties), to detect large and sudden diversions of SNM, and more refined, usually slower analyses (always with less uncertainty), to detect small diversions and/or losses. A key element in the safeguards problem (especially in dealing with the nonscientific public) is the role of uncertainties. To ensure accurate and reliable detection of diverted materials, the extent of the uncertainties of each measurement must be known.

There are four rather technical chapters each devoted to a separate analytical technique. Specifically, these techniques are x-ray absorption edge spectrometry, alpha-particle spectrometry, gamma-ray spectrometry, and calorimetry.

The book concludes with a chapter describing the accountability of a working on-line fuel reprocessing plant. Although this work was not given at the original ACS symposium, its inclusion provides the opportunity to see how safeguards analysis is accomplished at a working facility.

The major criticism of this reviewer has to do with the lack of international input to the book. Only one of the 12 chapters is by authors who do not work directly or indirectly (via a government funded lab) for the U.S. Government. Certainly safeguard experts are available in Canada, Great Britain, France, and through the IAEA. To read this book, one would get the impression (with the exception of the above-mentioned German authors) that the safeguards analysis problem is being researched only in the U.S.

Nevertheless, this volume has much to be said on its behalf. This reviewer found it to be well edited, clearly written, and a nice compromise between the technical and nontechnical aspects of the problem. Several chapters are valuable reading for scientists speaking before lay audiences, on behalf of or against nuclear power. The current state-of-the-art and science of analytical analysis as applied to safeguarding SNM is well presented.

*L. B. Church received his PhD in nuclear chemistry at Carnegie Institute of Technology in 1966. Following 14 years of academic pursuits, he joined the Materials Analysis Laboratory of Tektronix, Inc. His current research interests involve the role of trace impurities in semiconductor materials.*

***Editor's Note:*** The following two reviews came to us by different routes, but since they have somewhat different perspectives, we decided to publish both together.

### Nuclear Power: Technology on Trial

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| *Author* | James J. Duderstadt and Chihiro Kikuchi |
| *Publisher* | The University of Michigan Press, Ann Arbor, Michigan (1979) |
| *Pages* | 228 |
| *Price* | $16.00 hardcover; $8.50 in paperback |
| *Reviewer* | John M. Carpenter |

These are days of crucial decision making with regard to U.S. national and worldwide energy policy. It is most