

BOOK REVIEW

RADIOCHEMICAL METHODS

Analytical Chemistry by Open Learning

by William J Geary and Edited by Arthur M James

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This text on Radiochemical Methods is one in the series of 29 books on Analytical Chemistry by Open Learning (ACOL) resulting from the Thames Polytechnic project for the development of material suitable for use by "Distance Learners", that is by those unable to attend conventional educational courses. As stated in the introductory STUDY GUIDE it is designed to provide the reader with a good basic background in the theory and practice of radiochemistry as it is applied to analytical chemistry and in no way is it intended to be a comprehensive review of radioactivity and its applications. The author has successfully achieved these goals in providing a very readable and understandable elementary text consisting of five major sections.

The first introductory section deals with the properties of the nucleus, modes of radioactive decay, decay laws and half-life, and units and definitions based on SI units as well as the current units of radioactivity. In section 2 the general availability of radioactive materials and how these are made are discussed in a basic elementary way with some discussion also comparing sealed and unsealed sources of radioactivity. In section 3 on so called "Practical Aspects", techniques for the detection and measurement of radioactivity are discussed including gas ionisation, proportional counters, Geiger-Müller counters and liquid scintillation counting. Semiconductors such as the Ge(Li) detectors for gamma rays and statistical analysis of the data are covered also in this section. The final part of section 3 very superficially discusses radiation protection and control. Some discussion of radioactive waste management could usefully have been included in this section as well as mention of urine analysis and breath measurements as part of personnel dosimetry. In section 4 on radioanalytical methods the principles of isotope dilution analysis, radioimmunoassay and activation analysis are highlighted together with elements for which the measurement

of natural radioactivity is possible. The final section 5 entitled "Newer Applications" is in fact mainly a discussion and interpretation of three published papers to illustrate neutron activation analysis (paper dated 1973), radioimmunoassay, and substoichiometric isotope dilution analysis. In keeping with other texts in this series, each section has a useful summary listing the objectives and what the reader should be able to accomplish, together with Self Assessment Questions (SAQ) on selected pages. These SAQs are repeated with responses in the 44 pages following section 5 and some readers may consider this an unnecessary duplication. The final 6 pages of text provides the reader with some useful tables of Units of Measurement with Table 5 especially focussed on the units and terms used in radiochemistry. The Modern Periodic Table of the elements is printed on the inside back cover.

The text is clearly written and printed for easy reading, as indeed are other texts in this series. Taking the objectives of the text as mentioned above, it does provide a useful introduction and learning experience for the non-specialist on the very basic techniques for anyone contemplating radiochemical methods of analysis. At a cost of less than £10 who can complain!

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