

International Union of Crystallography

Early History of the Union

Dr R. C. Evans, the first General Secretary of the Union, is preparing a history covering the first few years of the Union's existence and the events which led up to the establishment of the Union. He would be very pleased to hear from anyone who has recollections or correspondence of this period, prior to 1950, and may be contacted at 55 Boxworth Road, Elsworth, Cambridge CB3 8JQ, England.

Radiation Leakage around X-ray Tube Shields

The Union's Commission on Crystallographic Apparatus recommends that the radiation level around X-ray tube shields should be carefully checked, because considerable leakage has been detected in some laboratories. Particular care should be taken when high-energy tubes are used and when tubes made by one manufacturer are enclosed in shields made by a different manufacturer.

Book Reviews

Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

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Advances in X-ray analysis. Vol 21. Proceedings of the 26th annual conference on the applications of X-ray analysis, Denver, Colorado, 3–5 August 1977. Edited by *Charles S. Barrett, Donald E. Leyden, John B. Newkirk and Clayton O. Ruud*. Pp. xvi + 325. New York: Plenum Press, 1978. Price US \$ 47.40.

This volume provides a broad perspective on X-ray spectrometric and X-ray diffraction techniques, reviewing a year in which the use of X-ray methods in characterizing substances of scientific and industrial interest has increased enormously. In recent years, a trend has developed for the conference to alternate emphasis annually between X-ray diffrac-

tion and X-ray spectrometry. This volume contains thirty five papers of which thirty one are devoted to topics in X-ray spectrometry and the remainder deal with X-ray diffraction.

The contents of the book are divided into six headed sections. The first section deals with X-ray techniques in chemical analysis and includes invited papers from the opening session of the conference. These papers represent a broader scope than the usual classification. The topics range from an excellent state-of-the-art review of the advances in X-ray laser research to the advantages of combined uses of X-ray fluorescence and diffraction, especially for the identification of material from powder diffraction data. It really is a pity that the invited paper by V. A. Fassel on the use of X-ray photons as an energy source for the excitation of optical emissions from aromatic organic compounds – a paper that is often referred to in the foreword and preface – was not published in the volume.

Of special interest to those working in the metal and mining industries is section two of this volume devoted to the applications of X-ray spectrometry in metals and mining, dealing with existing techniques and new developments in these fields. Some of the topics discussed here are the XRF analysis of steel-making slags by using special sample preparation techniques; the determination of uranium in carbonate solutions by extraction onto a chemically modified surface; X-ray fluorescence minor- and trace-element analyses of silicate rocks in the presence of large interelement effects; and an X-ray fluorescence coating gauge for paint thickness which results in significant improvements in paint film uniformity and raw material savings.

Energy-dispersive XRF analysis of low-alloy steels, agglomerate and slag as well as bauxites is also described in three additional papers in this section, again stressing the advantages of this rapid and accurate analytical X-ray technique.

Section three deals with calculations and parameters in X-ray spectrometry and absorptiometry and includes six papers, while section four is devoted to X-ray fluorescence instrumentation and application considerations. Some of the topics discussed here are: X-ray fluorescence analysis applied to small samples; a theoretical study of the effects of dead layers on low-energy X-ray detectors; verification of stability and precision for energy-dispersive XRF systems; and

how to get accurate intensity values from energy-dispersive X-ray spectra using fixed energy windows.

In section five, two papers on proton-induced X-ray emission analysis (PIXE) are presented, namely the relevance of PIXE to the study of separate mineral phases – an article which emphasises the usefulness of this powerful and rapid, non-destructive technique for the analysis of small single-grain mineral samples. This paper is followed by a note on elemental analysis of biomedical samples by proton-induced X-ray emission analysis in which an attempt is made to correlate human diseases with the presence or absence of trace elements and for the changes in their concentration in healthy and diseased tissues.

For those interested in X-ray powder diffraction, the sixth and last section has something to offer in the form of five papers. The first deals with the use of automated X-ray diffraction analysis in studies of natural hydrothermal systems. The next paper is concerned with the qualitative analysis of complicated mixtures by profile-fitting X-ray diffractometer patterns. In paper three, the optical calibration curves for Guinier-type focusing cameras are described. The next paper is concerned with measuring triaxial stresses in embedded particles by diffraction while the last paper discusses a versatile position-sensitive X-ray detector.

All in all, volume 21 of *Advances in X-ray Analysis* is, just as its predecessors, a must for those interested in developments in X-ray techniques, instrumentation and application of X-ray methods.

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Scientific information transfer: the editor's role. Edited by *Miriam Balaban*. Pp. xxxii + 686. Dordrecht: Reidel, 1978. Price, Dfl 70.00, US \$34.50.

A review of this book, by A. J. C. Wilson, has been published in the September issue of *Acta Crystallographica*, Section B, pages 2285–2286.