

Contents

| | |
|-------------------|---|
| Preface | v |
|-------------------|---|

INDUSTRIAL APPLICATIONS

| | |
|--|-----|
| Progress in Industrial Application of Low Energy Radioisotope X-Ray Techniques, <i>J. R. Rhodes</i> | 3 |
| Applications of a Technique for Rapid Alloy Sorting with a Radioisotope Excited X-Ray Analyzer, <i>B. Sellers, J. M. Brinkerhoff, and F. A. Hanser</i> | 19 |
| PPM Measurements of Iron-in-Oil by Radioactive X-Ray Fluorescence Analysis, <i>R. J. Gehrke, L. L. Packer, B. A. Woody, and W. A. Bruton</i> | 33 |
| Portable, Laboratory and On-Line Measurements of Coating Thickness using Radioisotope X-Ray Fluorescence Techniques, <i>J. F. Cameron</i> | 49 |
| A Radioisotope X-Ray Fluorescence Analyzer for On-Line Process Control, <i>T. Tanemura and H. Saita</i> | 69 |
| On-Line Continuous Type Check for Welded Tubular Products, <i>A. D. Foley, J. P. Masterson, and N. M. Rice</i> | 81 |
| Industrial Applications of Low Energy Gamma Emitting Isotopes, <i>Y. M. Chen and B. B. Cahill</i> | 91 |
| A Pulsed Low Energy X-Ray Gauge, <i>B. Y. Cho, O. L. Utt, and R. J. Pfeifer</i> | 105 |
| Cadmium-109 X-Ray Absorption Technique for the Measurement of Sulfur Dioxide in Stack Gases, <i>R. J. Pfeifer, B. Y. Cho, and O. L. Utt</i> | 115 |
| Metallurgical Applications of the Mössbauer Effect, <i>P. A. Flinn</i> | 123 |

GEOLOGICAL APPLICATIONS

| | |
|--|-----|
| X-Ray Fluorescence Measurement of Light Elements in Ores, <i>F. A. Hanser, B. Sellers, and J. M. Brinkerhoff</i> | 137 |
| X-Ray Intensity Measurements from Ores Using Semiconductor Detectors and Radioisotopic Excitation, <i>P. G. Burkhalter</i> | 147 |

| | |
|---|-----|
| Measurement of Nickel in Ores Containing Large Amounts of Iron, <i>J. M. Brinkerhoff, B. Sellers, and F. A. Hanser</i> | 165 |
| Techniques for Enhancing Sensitivity of X-Ray Fluorescence Analysis of Rocks, <i>A. B. Tanner and J. M. Brinkerhoff</i> | 173 |
| The Application of Mössbauer Spectrometry to Lunar and Terrestrial Rock Samples, <i>C. L. Herzenberg, D. L. Riley, and R. B. Moler</i> | 187 |
| Combined X-Ray Neutron Experiment for the Exploration of Lunar and Planetary Surfaces, <i>J. I. Trombka, I. Adler, R. Schmadebeck, and F. Sentfle</i> | 205 |
| Radiogenic Heat Measurements in Rock by High Resolution Lithium-Drifted Germanium Spectroscopy, <i>I. J. Russell</i> | 221 |

BIOMEDICAL APPLICATIONS

| | |
|---|-----|
| <i>In Vivo</i> Flow Studies by Means of Excited X-Ray Characteristic Radiation, <i>M. M. Ter-Pogossian</i> | 241 |
| X-Ray Absorption in Bone and Muscle, <i>W. J. Veigle and E. M. Henry</i> | 249 |
| Mössbauer Spectroscopy of the Undecapeptide of Cytochrome c, <i>L. May, R. Nassif, and M. Sellers</i> | 257 |
| The Analysis of Biological Materials with the Electron Microprobe, <i>W. L. Robison</i> | 265 |
| The Potential Use of ^{109}Cd for Dual Absorption Measurements of Soft Tissue, <i>W. G. Schmonsees and L. E. Preuss</i> | 281 |
| <i>In-Situ</i> Determination of Lead on Painted Surfaces for the Prevention of Childhood Lead Poisoning, <i>G. R. Laurer, T. J. Kneip, R. E. Albert, and F. S. Kent</i> | 289 |

X- AND GAMMA RAY TECHNIQUES

| | |
|---|-----|
| A New Method for X-Ray Energy Selection Using a Scintillation Counter and Balanced Filters, <i>J. R. Rhodes, I. L. Morgan, and T. Furuta</i> | 305 |
| Application of a Si(Li) Spectrometer to X-Ray Emission Analysis of Thin Specimens, <i>J. R. Rhodes, A. Pradzynski, R. D. Sieberg, and T. Furuta</i> | 317 |
| Large Area Silicon X-Ray Detectors, <i>R. S. Frankel and D. W. Aitkin</i> | 335 |

Contents

ix

| | |
|---|-----|
| Recent Developments in Low Energy Photon Sources, <i>K. H. Ansell and E. G. Hall</i> | 357 |
| Design and Use of Low-energy Gamma and X-Ray Sources, <i>R. S. Pressly</i> | 373 |
| A Curved Position-Sensitive Detector for X-Rays, <i>R. A. Semmler</i> | 399 |
| An Energy-Flux Meter for 1 to 10 Å X-Rays, <i>J. H. McCrary, P. B. Lyons, and J. A. Baran</i> | 409 |
| Chemical Analysis from Photoelectron Spectroscopy, <i>J. K. Wood</i> | 417 |
| Particle Size Heterogeneity Phenomena in X-Ray Analysis, <i>P. F. Berry</i> | 429 |
| The Measurement of Density Profiles in Cylinders of Air Using Soft X-Ray Transport, <i>R. P. Couch and E. C. Battle</i> | 451 |
| Contributing Authors | 465 |
| Session Chairmen and Committees | 467 |