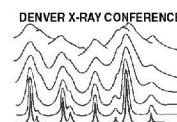


**Advances in X-ray Analysis**  
Volumes 1- 39 (1957 – 1995)



---

**Volume 19. Twenty-fourth Annual Conference  
on Applications of X-ray Analysis, August 6-8,  
1975**

[Table of  
Contents](#)

[View  
Document](#)

TABLE OF CONTENTS

	<u>PAGE</u>
FOREWORD. . . . .	xi
PREFACE . . . . .	xiii
MATHEMATICAL CORRECTION PROCEDURES FOR X-RAY SPECTROCHEMICAL ANALYSIS	
A SURVEY OF MATHEMATICAL CORRECTION PROCEDURES IN X-RAY SPECTROMETRY. . . . .	1
R. Jenkins	
QUANTITATIVE X-RAY FLUORESCENT ANALYSIS USING FUNDAMENTAL PARAMETERS . . . . .	19
C. J. Sparks, Jr.	
STATISTICAL CONSIDERATIONS IN X-RAY FLUORESCENCE ANALYSIS . .	53
M. A. Short	
EMPIRICAL APPROACHES FOR THE TREATMENT OF INTERELEMENT EFFECTS . . . . .	75
K. F. J. Heinrich	
AN ACCURATE COEFFICIENT METHOD FOR X-RAY FLUORESCENCE ANALYSIS . . . . .	85
R. Tertian	
QUANTITATIVE MICROPROBE ANALYSIS WITH ENERGY DISPERSIVE DETECTORS--A STATUS REPORT . . . . .	113
E. Lifshin	
ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRY AT HIGH COUNT RATES: PULSED TUBE EXCITATION AND RECOVERY OF RESOLUTION BY COMPUTER PROCESSING. . . . .	153
J. E. Stewart, H. R. Zulliger, and W. E. Drummond	

ERRONEOUS PEAKS IN ENERGY DISPERSIVE X-RAY SPECTRA. . . . .	161
J. C. Russ	
SIX MODELS FOR INTERELEMENT CORRECTION IN X-RAY ANALYSIS. . . . .	167
H. E. Marr	
A NEW APPROACH TO QUANTITATIVE MULTIELEMENT X-RAY FLUORESCENCE ANALYSIS . . . . .	181
F. H. Chung	
A SCHEME FOR FULLY QUANTITATIVE ENERGY DISPERSIVE MICROPROBE ANALYSIS . . . . .	191
D. G. W. Smith and C. M. Gold	
SOME APPLICATIONS OF A COMPUTER-CONTROLLED X-RAY SPECTROMETER IN A STEEL RESEARCH LABORATORY . . . . .	203
W. T. Harter	
ANALYSIS OF PORTLAND CEMENT, CLINKER, RAW MIX, AND ASSOCIATED CERAMIC MATERIALS USING AN ENERGY DISPERSIVE X-RAY FLUORESCENCE ANALYZER WITH INTERELEMENT CORRECTIONS . . . . .	213
J. A. Cooper, B. D. Wheeler, D. M. Bartell, and D. A. Gedcke	
MODEL, EQUATIONS, AND CORRECTING FACTORS FOR THE X-RAY FLUORESCENCE ANALYSIS OF GEOLOGICAL MATERIALS . . . . .	227
L. de Pablo	
X-RAY FLUORESCENCE PHENOMENA AND APPLICATION	
APPLICATION OF THE SOLID STATE DETECTOR IN THE X-RAY FLUORESCENCE ANALYSIS OF STEEL PRODUCTS IN PRODUCTION LINES. . . . .	239
T. Shiraiwa and N. Fujino	
ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRY USING PULSED X-RAY EXCITATION. . . . .	253
J. M. Jaklevic, D. A. Landis and F. S. Goulding	

## Contents

v

RAPID PHOTON-EXCITED ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS FOR SOLID AND LIQUID MINERALOGICAL SAMPLES. . . . .	267
W. Ratynski, J. Parus, J. Tys and A. Ciszek	
QUANTITATIVE ANALYSIS OF SELECTED MINOR AND TRACE ELEMENTS THROUGH USE OF A COMPUTERIZED AUTOMATIC X-RAY SPECTROGRAPH. . . . .	273
B. P. Fabbi, H. N. Elsheimer and L. F. Espos	
THE USE OF PROTON-EXCITED X-RAY EMISSION TO STUDY: 1) ELECTRODEPOSITED $TiB_2$ COATINGS AND 2) GAS-TURBINE BLADE FAILURES . . . . .	293
B. D. Sartwell and P. B. Needham, Jr.	
X-RAY SPECTROMETRY IN ENVIRONMENTAL ANALYSIS	
APPLICATION OF A LOW ENERGY X-RAY SPECTROMETER TO ANALYSES OF SUSPENDED AIR PARTICULATE MATTER . . . . .	305
R. D. Giaouque, R. B. Garrett, L. Y. Goda, J. M. Jaklevic, and D. F. Malone	
MONTE CARLO SIMULATION OF SELF-ABSORPTION EFFECTS IN ELEMENTAL XRF ANALYSIS OF ATMOSPHERIC PARTICULATES COLLECTED ON FILTERS. . . . .	323
A. R. Hawthorne, R. P. Gardner, and T. G. Dzubay	
FILTER ABSORPTION CORRECTION FOR X-RAY FLUORESCENCE ANALYSIS OF AEROSOL LOADED FILTERS . . . . .	339
R. E. Van Grieken and F. C. Adams	
REX: A COMPUTER PROGRAM FOR PIXE SPECTRUM RESOLUTION OF AEROSOLS . . . . .	355
H. C. Kaufmann, K. R. Akselsson, and W. J. Courtney	
APPLICATION OF THE LEAST-SQUARES METHOD TO THE ANALYSIS OF XRF SPECTRAL INTENSITIES FROM ATMOSPHERIC PARTICULATES COLLECTED ON FILTERS. . . . .	367
F. Arinc, R. P. Gardner, L. Wielopolski, and A. R. Stiles	

ABSORPTION CORRECTIONS FOR X-RAY FLUORESCENCE ANALYSIS OF ENVIRONMENTAL SAMPLES. . . . .	381
F. Bazan and N. A. Bonner	
THE APPLICATION OF A MULTICHANNEL FIXED AND SEQUENTIAL SPECTROMETER SYSTEM TO THE ANALYSIS OF AIR POLLUTION PARTICULATE SAMPLES FROM SOURCE EMISSIONS AND AMBIENT AIR. . . . .	393
R. L. Bennett, J. Wagman, and K. T. Knapp	
AUTOMATIC TIME SEQUENCE FILTER SAMPLING OF AEROSOLS FOR RAPID MULTIELEMENT ANALYSIS BY PROTON-INDUCED X-RAY EMISSION . . . . .	403
J. W. Nelson, B. Jensen, G. G. Desaeleer, K. R. Akselsson, and J. W. Winchester	
X-RAY TECHNIQUES FOR AEROSOL SULFUR BASELINE ASSESSMENT ALONG AN URBAN FREEWAY . . . . .	415
K. R. Akselsson, K. A. Hardy, G. G. Desaeleer, J. W. Winchester, W. W. Berg, T. B. Vander Wood, and J. W. Nelson	
SULFUR ANALYSIS OF AIR POLLUTION SAMPLES CONTAINING SULFURIC ACID WITH A VACUUM X-RAY FLUORESCENCE SPECTROMETER. . . . .	427
K. T. Knapp, R. L. Bennett, and R. B. Kellogg	
ENRICHMENT PROCEDURES FOR WATER ANALYSIS BY X-RAY ENERGY SPECTROMETRY . . . . .	435
R. Van Grieken, K. Bresseleers, J. Smits, B. Vanderborgh and M. Vanderstappen	
A COMPARISON OF ENERGY DISPERSIVE XRF TO AA FOR SPECIFIC METALS IN NATURAL WATERS. . . . .	449
F. C. Smith, Jr., and O. H. Masi	
DEVELOPMENT OF A PARTICULATE REFERENCE SAMPLE ON MEMBRANE FILTERS FOR THE STANDARDIZATION OF X-RAY FLUORESCENCE SPECTROMETERS . . . . .	463
P. A. Pella, E. C. Kuehner, and W. A. Cassatt	

CALIBRATION OF AN ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETER. . . . . 473  
 A.R. Stiles, T.G. Dzubay, R.M. Baum,  
 R.L. Walter, R.D. Willis, L.J. Moore,  
 E.L. Garner, J.W. Gramlich, and L.A. Machlan

X-RAY FLUORESCENCE SPECTROSCOPY AS A TOOL FOR FISH STOCK DISCRIMINATION . . . . . 487  
 R. Kieser and T. J. Mulligan

X-RAY SPECTROMETRY IN BIOMEDICAL APPLICATIONS

MEDICAL APPLICATIONS OF A SMALL SAMPLE X-RAY FLUORESCENCE SYSTEM. . . . . 497  
 A. C. Alfrey, L. L. Nunnelley, H. Rudolph,  
 and W. R. Smythe

CALIBRATION AND CORRECTION METHODS FOR QUANTITATIVE PROTON-INDUCED X-RAY EMISSION ANALYSIS OF AUTOPSY TISSUES . . . . . 511  
 K. K. Nielson, M. W. Hill and N. F. Mangelson

AN INVESTIGATION OF THE CORRELATION BETWEEN HUMAN DISEASES AND TRACE ELEMENT LEVELS BY PROTON-INDUCED X-RAY EMISSION ANALYSIS . . . . . 521  
 R. D. Lear, H. A. Van Rinsvelt, and W. R. Adams

LASER ANALYSIS

X-RAY DIAGNOSTICS IN THE LASER-INITIATED FUSION PROGRAM . . . . . 533  
 R. P. Godwin

ADVANCES IN NPL X-RAY GRATINGS AND SPECTROMETERS . . . . . 571  
 M. Stedman and A. Franks

HIGH SPEED IMAGE CONVERTER X-RAY STUDIES . . . . . 577  
 V. Chamelton, G. Clement, J. P. Roux,  
 and J. P. Gex

DIRECT X-RAY RESPONSE OF SELF-SCANNING PHOTODIODE ARRAYS. . . . .	587
L. N. Koppel	
ABSOLUTE CALIBRATION OF PHOTOELECTRIC DIODES. . . . .	597
R. H. Day and E. J. T. Burns	
SOFT X-RAY AND SURFACE ANALYSIS	
SURFACE CHARACTERIZATION BY X-RAY TECHNIQUES. . . . .	607
R. L. Park	
VALENCE BAND SPECTROSCOPY IN THE ULTRASOFT X-RAY REGION (50 TO 100Å) . . . . .	627
B. L. Henke and K. Taniguchi	
THEORY AND PERFORMANCE OF HOLOGRAPHICALLY-FORMED STIGMATIC X-RAY GRATINGS. . . . .	643
R. J. Speer	
THE EFFECTS OF ERRORS ON THE CONVERGENCE OF AN ITERATIVE DECONVOLUTION METHOD. . . . .	657
H. H. Madden and J. E. Houston	
X-RAY DIFFRACTION APPLICATIONS	
X-RAY ANALYTICAL METHODS FOR EVALUATING LEVELS OF ENVIRONMENTAL PARTICULATES . . . . .	673
J. Leroux, A. B. C. Davey, and W. W. Reid	
EFFECT OF MILLING ON THE CRYSTAL STRUCTURES OF CHRYSOPILE AND OTHER SERPENTINE MINERALS . . . . .	685
A. E. Charola and S. Z. Lewin	
THE APPLICATION OF A POSITION-SENSITIVE X-RAY DETECTOR TO THE MEASUREMENTS OF RESIDUAL STRESSES . . . . .	695
M. R. James and J. B. Cohen	
A COMPARISON OF X-RAY DIFFRACTION RESIDUAL STRESS MEASUREMENT METHODS ON MACHINED SURFACES . . . . .	709
P. S. Prevey	

Contents

ix

ORIENTATION OF BACK REFLECTION LAUE PHOTOGRAPHS:  
A SEMI-AUTOMATED APPROACH. . . . . 725  
R. P. Goehner

PEAK HEIGHT APPROXIMATION FOR X-RAY DIFFRACTED INTEGRATED  
INTENSITY . . . . . 735  
C. P. Gazzara

APPENDIX

PARAMETERS FOR THE CALCULATION OF X-RAY ABSORPTION  
COEFFICIENTS FOR H (1) THROUGH Ge (32) IN THE  
100-1500 eV REGION . . . . . 749

AUTHOR INDEX. . . . . 769

SUBJECT INDEX . . . . . 773