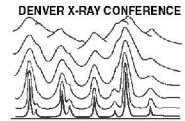


Advances in X-ray Analysis
Volumes 1- 39 (1957 – 1995)



**Volume 35B. First Pacific-International
Congress on X-ray Analytical Methods
(PICXAM). Fortieth Annual Conference on
Applications of X-ray Analysis, August 7-16,
1991**

[Table of
Contents](#)

[View
Document](#)

PART B

X. MATHEMATICAL METHODS IN X-RAY SPECTROMETRY (XRS)

MATHEMATICAL CORRECTION PROCEDURES IN XRF - THE LONG AND THE SHORT	693
G. R. Lachance	
NEW DEVELOPMENTS IN FP-BASED SOFTWARE FOR BOTH BULK AND THIN-FILM XRF ANALYSIS	703
L. Feng, B. J. Cross and R. Wong	
SOFTWARE PACKAGES FOR THE AUTOMATIC ASSESSMENT OF XRF DATA FOR QUALITATIVE AND SEMI-QUANTITATIVE ANALYSIS	711
P. L. Warren, A. E. Smith, J. D. v Aalten and N. Hodgkinson	
A FAST ALGORITHM FOR FUNDAMENTAL PARAMETER CALCULATIONS	715
Ch. Pöhn and H. Ebel	
AN ALGORITHM FOR THE DESCRIPTION OF WHITE AND CHARACTERISTIC TUBE SPECTRA ($11 \leq Z \leq 83$, $10\text{keV} \leq E_0 \leq 50 \text{keV}$)	721
H. Ebel, H. Wiederschwinger, J. Wernisch and P. A. Pella	
NCSXRF: A GENERAL GEOMETRY MONTE CARLO SIMULATION CODE FOR EDXRF ANALYSIS	727
T. He, R. P. Gardner and K. Verghese	
UNIFICATION OF "STANDARD BACKGROUND" TECHNIQUE USING SCATTERED RADIATION IN X-RAY FLUORESCENCE ANALYSIS (XRF)	737
V. I. Smolniakov	
DECOMPOSITION SPECTROMETRIC DATA OF ENERGY DISPERSIVE X-RAY FLUORESCENCE ANALYSIS (EDXRF)	743
V. I. Smolniakov and I. A. Koltun	
X-RAY FLUORESCENCE ANALYSIS OF NONHOMOGENEOUS MATERIALS BY $\Delta\mu$ -CORRECTION METHOD	749
V. I. Karmanov and V. V. Zagorodny	
THEORETICAL CALCULATION OF BACKGROUND IN X-RAY SPECTROMETRY FOR THE DETERMINATION OF SOME HEAVY TRACE ELEMENTS	755
J.-J. Gruffat	

SYSTEMATIC COMPUTATION OF SCATTERING CORRECTIONS WITH THE CODE SHAPE	757
J. E. Fernández and V. G. Molinari	
XI. THIN-FILM AND SURFACE CHARACTERIZATION BY XRS AND XPS	
RECENT DEVELOPMENTS IN SURFACE AND THIN FILM ANALYSIS USING LOW-ENERGY ELECTRON INDUCED X-RAY SPECTROMETRY (LEEIXS)	767
M. J. Romand, F. Gaillard and M. Charbonnier	
DEPTH PROFILING BY MEANS OF X-RAY FLUORESCENCE ANALYSIS	783
H. Ebel, R. Svagera and S. R. Afshar	
GRAZING INCIDENCE X-RAY FLUORESCENCE ANALYSIS USING SYNCHROTRON RADIATION	795
A. Iida	
GRAZING INCIDENCE X-RAY SPECTROSCOPY FOR THIN LAYER ANALYSIS	807
H. Hashimoto, H. Nishioji and H. Saisho	
LAYER THICKNESS DETERMINATION OF THIN FILMS BY GRAZING INCIDENCE X-RAY EXPERIMENTS USING INTERFERENCE EFFECT	813
K. Sakurai and A. Iida	
X-RAY STUDIES OF CHROMIUM NITRIDE (Cr_xN_y) THIN FILMS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING	819
M. Charbonnier, M. Romand, A. Roche and J. P. Terrat	
MULTI-LAYER XRF CALCULATIONS	829
M. Sumini and J. E. Fernández	
MULTIPLE SCATTERING CONTRIBUTIONS OF THIN FILMS IN REFLECTION GEOMETRY	835
J. E. Fernández and R. Sartori	
THE USE OF THE CONVENTIONAL ISOLATED ATOM MODEL FOR THE THEORETICAL CALCULATION OF THE DEPENDENCE OF $L\beta/L\alpha$ INTENSITY RATIO ON THE SAMPLE EXIT ANGLE FOR UNOXIDIZED AND OXIDIZED TRANSITION METAL ALLOY THIN FILMS	845
F. Fujiwara and G. Andermann	
X-RAY PHOTOELECTRON AND FLUORESCENCE SPECTRA OF SEVERAL ZIRCONIUM OXIDE COMPOUNDS	851
T. Maruyama, G. Sasaki, S. Fukushima, K. Kuchitsu and N. Koshizaki	
DEPTH PROFILING BY MEANS OF X-RAY PHOTOELECTRON SPECTROMETRY	857
M. F. Ebel, H. Ebel and F. Olcaytug	
THE USE OF X-RAY PHOTOELECTRON SPECTROSCOPY IN MATERIALS SCIENCE	869
J. Castle	
SURFACE AND THIN FILM ANALYSIS OF METALS AND SEMICONDUCTORS USING X-RAY PHOTOELECTRON SPECTROSCOPY	883
S. Hofmann	

XII. TOTAL REFLECTION XRS

TRACE ELEMENT ANALYSIS USING TOTAL-REFLECTION X-RAY FLUORESCENCE SPECTROMETRY	899
A. Prange and H. Schwenke	
TXRF WITH VARIOUS EXCITATION SOURCES	925
P. Wobrauschek, P. Kregsamer, C. Strelt, R. Rieder and H. Aiginger	
INSTRUMENTATION FOR TOTAL REFLECTION FLUORESCENT X-RAY SPECTROMETRY	933
T. Utaka and T. Arai	
CHARACTERIZATION OF NEAR SURFACE LAYERS BY MEANS OF TOTAL REFLECTION X-RAY FLUORESCENCE SPECTROMETRY	941
H. Schwenke, R. Gutschke and J. Knoth	
LIGHT ELEMENT ANALYSIS WITH TXRF	947
C. Strelt, P. Wobrauschek and H. Aiginger	
APPLICATION OF TXRF IN ENVIRONMENTAL RESEARCH	953
W. Michaelis, R. Pepelnik and A. Prange	
DETERMINATION OF HEAVY METALS IN ENVIRONMENTAL WATER BY TOTAL REFLECTION X-RAY FLUORESCENCE METHOD USING OPTIMIZED ROENTGEN OPTICS CUT-OFF FILTER	959
A. I. Egorov, L. P. Kabina, I. A. Kondurov, E. M. Korotkikh, V. V. Martynov, A. F. Shchebetov and P. A. Sushkov	
URANIUM CONCENTRATION MEASUREMENT IN WATER SAMPLES WITH TXRF	965
F. Hegedus and P. Winkler	
APPLICATION OF TOTAL REFLECTION X-RAY FLUORESCENCE SPECTROMETRY TO DRUG ANALYSIS	969
S. Nomura, T. Ninomiya, K. Taniguchi and S. Ikeda	
AN INTEGRATED X-RAY TUBE - POLARIZER EDXRF-SPECTROMETER IN CARTESIAN GEOMETRY	975
R. Rieder, P. Wobrauschek and H. Aiginger	

XIII. XRS TECHNIQUES AND INSTRUMENTATION

VARIABILITY OF CRYSTAL PERFORMANCE IN X-RAY FLUORESCENCE SPECTROMETERS	981
J. V. Dubrawski and K. E. Turner	
AN X-RAY SPECTROMETER FOR PIXEL ANALYSIS OF ART OBJECTS	987
M. Mantler, M. Schreiner, F. Weber, R. Ebner and F. Mairinger	
MICRO-X-RAY FLUORESCENCE ANALYSIS ON A SYNCHROTRON RADIATION WIGGLER BEAM LINE	995
J. V. Gilfrich, E. F. Skelton, S. B. Qadri, N. E. Moulton, D. J. Nagel and J. Z. Hu	
THE COMPARISON OF THREE EXCITATION MODES IN THE ENERGY DISPERSIVE X-RAY FLUORESCENCE ANALYSIS	1001
B. Kanngieser, B. Beckhoff, J. Scheer and W. Swoboda	

GEOMETRIC CONSIDERATIONS IN EDXRF TO INCREASE FLUORESCENCE INTENSITIES AND REDUCE BACKGROUND	1009
I. Tolokonnikoff	
X-RAY MICROBEAM SPECTROSCOPY WITH THE USE OF CAPILLARY OPTICS	1019
S. Larsson and P. Engström	
SYNCHROTRON RADIATION X-RAY FLUORESCENCE ANALYSIS WITH A CRYSTAL SPECTROMETER	1027
K. Ohashi, M. Takahashi, Y. Gohshi, A. Iida and S. Kishimoto	
A NEW USER ORIENTED INTELLIGENT XRF SPECTROMETER SYSTEM	1035
Y. Kataoka, N. Masukawa and K. Toda	
A HIGH RESOLUTION PORTABLE XRF Hg _L SPECTROMETER FOR FIELD SCREENING OF HAZARDOUS METAL WASTES	1047
M. Bernick, P. F. Berry, G. R. Voots, G. Prince, J. B. Ashe, J. Patel and P. Gupta	
EXPERIMENTAL XRF CALCULATION METHOD WITH CORRECTION FOR A POLYDISPERSE MATERIAL PARTICLE SIZE	1055
V. V. Zagorodny and V. I. Karmanov	
FABRICATION AND SELECTED APPLICATIONS OF A NIST X-RAY MICROFLUORESCENCE SPECTROMETER	1063
P. A. Pella and L. Feng	
PROBLEMS IN THE USE OF MULTILAYERS FOR SOFT X-RAY SPECTROSCOPY AND ANALYSIS: A COMPARISON OF THEORETICALLY AND EXPERIMENTALLY DETERMINED REFRACTION EFFECTS	1069
E. Martins and D. S. Urch	
A METHOD FOR IN-SITU CALIBRATION OF SEMICONDUCTOR DETECTORS	1079
J. Wernisch, H. J. August and A. Lindner-Schönthaler	
THE USE OF BRAGG REFLECTION ON SINGLE CRYSTALS FOR THE PRODUCTION OF POLARIZED EXCITATION RADIATION IN THE EDXRF	1083
B. Beckhoff, B. Kannigieser, J. Scheer, W. Swoboda	
X-SPECTRUM DETERMINATION APPLIED TO FLASH RADIOGRAPHY	1091
L. Le Dain and J.-M. Dinten	
ANALYTICAL X-RAY ANALYSIS TECHNIQUES: A PANORAMA OF SOME OF THE APPLICATIONS IN LATIN AMERICA	1097
C. Vazquez, D. V. de Leyt and J. J. LaBrecque	
BACKSCATTER/FUNDAMENTAL-PARAMETERS ANALYSIS OF UNWEIGHED SAMPLES USING MULTI-TARGET, MULTI-CRYSTAL REGIONS OF INTEREST FROM WDXRF AND EDXRF	1101
R. J. Arthur and R. W. Sanders	
XIV. XRS APPLICATIONS	
L X-RAY LINE SHAPE OF COPPER(II) COMPOUNDS AND THEIR COVALENCY	1107
J. Kawai, K. Nakajima, K. Maeda and Y. Gohshi	

A XANES STUDY OF SQUARE COPPER(II) COMPLEXES	1115
H. Wakita, T. Yamaguchi, H. Adachi, M. Fujiwara and S. Yamashita	
COMPARISON OF ELEMENTAL SENSITIVITIES INDUCED BY RADIOISOTOPE AND SECONDARY TARGET EXCITATION FOR SIMULTANEOUS MULTIELEMENT X-RAY ANALYSIS	1121
J. J. LaBrecque	
THE STUDY OF VALUABLE MEDALS USING X-RAY ANALYSIS	1127
D. Creagh	
X-RAY FLUORESCENCE ANALYSIS OF OXIDE MAGNETIC TAPE USING THIN LAYER FUNDAMENTAL PARAMETER ANALYSIS	1133
K. Kimura, H. Wakamatsu, T. Kitamura, R. Maęda and K. Fujiwara	
XRF SPECTROMETRIC DETERMINATION OF YBCO SYSTEM, BPSCCO SYSTEM, AND TBCCO SYSTEM HIGH T _c OXIDE SUPERCONDUCTORS	1139
K. Kaneko, H. Kaneko, H. Ihara, M. Hirabayashi, N. Terada and M. Jho	
MEASUREMENTS OF LOW CONCENTRATION COMPONENTS IN IRON ORES USING FUSION METHOD	1147
K. Yamada, H. Kohno and T. Arai	
A NEW INSTRUMENT FOR THE ENERGY DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF OBJECTS OF ART AND ARCHAEOLOGY	1157
M. Schreiner, M. Mantler, F. Weber, R. Ebner and F. Mairinger	
PROVENANCE OF KANJERA FOSSILS BY X-RAY FLUORESCENCE AND ION MICROPROBE ANALYSES	1165
A. M. Kinyua, T. Plummer, N. Shimizu, W. Melson and R. Potts	
FAST AND SIMPLE ROUTINE DETERMINATION OF BROMINE BY XRF IN WET BLOOD SERUM MICROSAMPLES. EVALUATION OF ERRORS	1175
C. Shenberg, J. Gilat and M. Mantel	
X-RAY MICROPROBE STUDIES OF HUNGARIAN BACKGROUND AND URBAN AEROSOLS	1183
Sz. Török, Sz. Sándor, C. Xhoffer, R. Van Grieken, K. W. Jones, S. R. Sutton and R. L. Rivers	
STATISTICAL COMPARISON OF ANALYTICAL RESULTS OBTAINED BY PRESSED POWDER AND BORATE FUSION XRF SPECTROMETRY FOR PROCESS CONTROL SAMPLES OF A LEAD SMELTER	1189
J. G. H. Metz and D. E. Davey	
THE LOCAL STRUCTURE OF CHROMIUM(III) IN THE MIXED GLYCEROL AQUEOUS SOLUTION	1197
T. Watanabe, K. Taniguchi, T. Ninomiya and S. Ikeda	
USING A <i>PRIORI</i> INFORMATION IN ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS OF COMPLEX SAMPLES	1205
I. A. Kondurov, P. A. Sushkov, T. M. Tjukavina and G. I. Shulyak	
IN-PROCESS COATING LAYER ANALYSIS OF GALVANNEALED STEEL SHEETS WITH MONOCHROMATIC INCIDENT X-RAYS	1211
H. Kato, K. Imai and H. Tanabe	

XV. X-RAY IMAGING AND TOMOGRAPHY

IMAGING THE THREE-DIMENSIONAL MICROSTRUCTURE OF MATERIALS	1219
J. C. Russ	
X-RAY OPTICS FOR SCANNING FLUORESCENCE MICROSCOPY AND OTHER APPLICATIONS	1227
R. W. Ryon and W. K. Warburton	
EVALUATION OF A COMBINED TRANSMISSION AND SCATTERING APPROACH TO COMPOSITION IMAGING OF INDUSTRIAL SAMPLES	1235
T. H. Prettyman, R. P. Gardner, J. C. Russ and K. Verghese	
A NEW NONDESTRUCTIVE QUANTITATIVE COMPOSITION DEPTH PROFILING TECHNIQUE BASED ON X-RAY EXCITED ELECTRON EMISSION	1243
L. A. Backaleinickov, S. G. Konnikov, K. Ju. Pogrebitsky, Y. N. Yuriev, A. A. Vereninov, R. Svagera, R. Kaitna and G. Barnegg-Golwig	
SOFTWARE DEVELOPMENT FOR X-RAY MICROBEAM SPECTROSCOPY	1247
A. Rindby, P. Voglis, G. Nilsson and B. Stocklassa	
LARGE-AREA X-RAY MICRO-FLUORESCENCE IMAGING OF HETEROGENEOUS MATERIALS	1255
B. J. Cross, R. D. Lamb, S. Ma and J. M. Paque	
COMPARISON OF SYNCHROTRON X-RAY MICROANALYSIS WITH ELECTRON AND PROTON MICROSCOPY FOR INDIVIDUAL PARTICLE ANALYSIS	1265
K. H. Janssens, F. van Langevelde, F. C. Adams, R. D. Vis, S. R. Sutton, M. L. Rivers, K. W. Jones and D. K. Bowen	
A NOVEL SCANNING X-RAY DIFFRACTO-MICROSCOPE/X-RAY POWDER DIFFRACTOMETER USING CONVERGED X-RAY BEAM	1275
K. Yukino, F. P. Okamura, H. Nozaki, Y. Kobayashi and Y. Yamada	
DEVELOPMENT OF A HIGH SPATIAL RESOLUTION X-RAY FLUORESCENCE ELEMENT MAPPING SPECTROMETER AND ITS APPLICATION TO QUANTITATIVE ANALYSIS OF BIOLOGICAL SYSTEMS	1285
N. Fukumoto, Y. Kobayashi, M. Kurahashi and A. Kawase	
SCANNING X-RAY ANALYTICAL MICROSCOPE USING X-RAY GUIDE TUBE	1289
S. Shimomura and H. Nakazawa	
GAMMA RAY AND X-RAY IMAGING STUDIES OF THE LOCATION AND SHAPE OF THE MELT-SOLID INTERFACE DURING BRIDGMAN GROWTH OF GERMANIUM AND LEAD-TIN-TELLURIDE	1295
R. T. Simchick, S. Sorokach, A. L. Fripp, W. J. Debnam, R. F. Berry and P. G. Barber	
MEASUREMENT OF MACROSEGREGATIONS OF STEELS BY X-RAY MICRO- FLUORESCENCE	1301
J. Welfringer, P. Benoit and M. Guyon	
APPLICATION OF SR-XRF IMAGING AND MICRO-XANES TO METEORITES, ARCHAEOLOGICAL OBJECTS AND ANIMAL TISSUES	1307
I. Nakai and A. Iida	
Author Index	1317
Subject Index	1321