

# **22nd International Congress on X-Ray Optics and Microanalysis 2013**

**Journal of Physics: Conference Series Volume 499**

**Hamburg, Germany  
2 - 6 September 2013**

**ISBN: 978-1-63266-724-3  
ISSN: 1742-6588**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© by the Institute of Physics  
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## INSTRUMENTS AND TECHNIQUES

<b>Maia X-Ray Microprobe Detector Array System</b> .....	1
<i>D. Siddons, R. Kirkham, C. Ryan, G. Geronimo, A. Dragone, A. Kuczewski, Z. Li, G. Carini, D. Pinelli, R. Beuttenmuller, D. Elliott, M. Pfeffer, T. Tyson, G. Moorhead, P. Dunn</i>	
<b>Maia X-Ray Fluorescence Imaging: Capturing Detail in Complex Natural Samples</b> .....	11
<i>C. Ryan, D. Siddons, R. Kirkham, Z. Li, M. Jonge, D. Paterson, A. Kuczewski, D. Howard, P. Dunn, G. Falkenberg, U. Boesenberg, G. Geronimo, L. Fisher, A. Halfpenny, M. Lintern, E. Lombi, K. Dyl, M. Jensen, G. Moorhead, J. Cleverley, R. Hough, B. Godel, S. Barnes, S. James, K. Spiers, M. Alfeld, G. Wellenreuther, Z. Vukmanovic, S. Borg</i>	
<b>Wavefront Preserving Channel-Cut Optics for Coherent X-Ray Scattering Experiments at the P10 Beamline at PETRAIII</b> .....	23
<i>A. Zozulya, A. Shabalin, H. Schulte-Schrepping, J. Heuer, M. Spiwek, I. Sergeev, I. Besedin, I. Vartanyants, M. Sprung</i>	
<b>Focusing XFEL SASE Pulses by Rotationally Parabolic Refractive X-Ray Lenses</b> .....	30
<i>F. Seiboth, A. Schropp, R. Hoppe, V. Meier, J. Patommel, H. Lee, B. Nagler, E. Galtier, B. Arnold, U. Zastrau, J. Hastings, D. Nilsson, F. Uhlen, U. Vogt, H. Hertz, C. Schroer</i>	
<b>Setup of an 8 ke V Laboratory Transmission X-Ray Microscope</b> .....	40
<i>S. Baumbach, B. Kanngießer, W. Malzer, H. Stiel, S. Bjeoumikhova, T. Wilhein</i>	
<b>Edge Illumination X-Ray Phase-Contrast Imaging: Nanoradian Sensitivity at Synchrotrons and Translation to Conventional Sources</b> .....	44
<i>P. Diemoz, M. Endrizzi, C. Hagen, C. Rau, A. Bravin, R. Speller, I. Robinson, A. Olivo</i>	
<b>X-Ray Full Field Microscopy at 30 ke V</b> .....	53
<i>F. Marschall, A. Last, M. Simon, M. Kluge, V. Nazmov, H. Vogt, M. Ogurreck, I. Greving, J. Mohr</i>	
<b>Spatial Characterization of the Focus Produced by an EUV Schwarzschild Objective</b> .....	59
<i>J. Ewald, M. Wieland, T. Nisius, L. Henning, T. Feigl, M. Drescher, T. Wilhein</i>	
<b>Time-Resolved Soft X-Ray Microscopy of Magnetic Nanostructures at the P04 Beamline at PETRA III</b> .....	62
<i>P. Wessels, J. Ewald, M. Wieland, T. Nisius, G. Abbati, S. Baumbach, J. Overbuschmann, A. Vogel, A. Neumann, J. Viehhaus, H. Oepen, G. Meier, T. Wilhein, M. Drescher</i>	
<b>Design of Sample Holder for in Operando XAS of Oxidation State Changes in <math>\text{La}_{1-x}\text{Sr}_x\text{MnO}_{3\pm\delta}</math> Electrodes</b> .....	68
<i>M. Traulsen</i>	
<b>Palm-Top Size X-Ray Microanalyzer Using a Pyroelectric Focused Electron Beam with 100-Micrometer Diameter</b> .....	74
<i>J. Kawai, I. Ohtani, A. Imanishi, S. Imashuku</i>	

## APPLICATIONS

<b>Retrieving Past Geodynamic Events by Unlocking Rock Archives with <math>\mu</math>-XRF and <math>\mu</math>-Spectroscopy</b> .....	78
<i>V. Andrade, J. Ganne, B. Dubacq, C. Ryan, F. Bourdelle, A. Plunder, G. Falkenberg, J. Thieme</i>	
<b>Non-Negative Factor Analysis Supporting the Interpretation of Elemental Distribution Images Acquired by XRF</b> .....	91
<i>M. Alfeld, M. Wahabzada, C. Bauckhage, K. Kersting, G. Wellenreuther, G. Falkenberg</i>	
<b>Emerging Patterns in the Distribution of Trace Elements in Ovarian, Invasive and In-Situ Breast Cancer</b> .....	101
<i>A. Al-Ebraheem, E. Dao, K. Geraki, M. Farquharson</i>	
<b>Influence of Depositional Environment in Fossil Teeth: A Micro-XRF and XAFS Study</b> .....	109
<i>I. Zougrou, M. Katsikini, F. Pinakidou, L. Papadopoulou, E. Tsoukala, E. Paloura</i>	
<b><math>\mu</math>-SRXRF Characterization of Brazilian Emeralds</b> .....	120
<i>J. Curado, M. Radtke, G. Buzanich, U. Reinholz, H. Riesemeier, R. Guttler, M. Rizzutto</i>	
<b>Ageing Effects on Exhaust Gas Catalysts: Microscopic Changes Captured by X-Ray Tomography</b> .....	125
<i>G. Hofmann, A. Rochet, S. Baier, M. Casapu, S. Ritter, F. Wilde, M. Ogurreck, F. Beckmann, J. Grunwaldt</i>	

<b>Phase Contrast X-Ray Synchrotron Microtomography for Virtual Dissection of the Head of Rhodnius Prolixus</b> .....	136
<i>G. Sena, A. Almeida, D. Braz, L. Nogueira, M. Colaco, J. Soares, S. Cardoso, E. Garcia, P. Azambuja, M. Gonzalez, S. Mohammadi, G. Tromba, R. Barroso</i>	
<b>Synchrotron Radiation X-Ray Microtomography and Histomorphometry for Evaluation of Chemotherapy Effects in Trabecular Bone Structure</b> .....	142
<i>R. Alessio, L. Nogueira, A. Almeida, M. Colaco, D. Braz, C. Andrade, C. Salata, S. Ferreira-Machado, C. Almeida, G. Tromba, R. Barroso</i>	
<b>Ptychographical Imaging of the Phase Vortices in the X-Ray Beam Formed by Nanofocusing Lenses</b> .....	149
<i>D. Dzhigaev, U. Lorenz, R. Kurta, F. Seiboth, T. Stankevic, S. Mickevicius, A. Singer, A. Shabalin, O. Yefanov, M. Strikhanov, G. Falkenberg, C. Schroer, R. Feidenhans, I. Vartanyants</i>	
<b>Structural Properties of <math>\pi</math>-<math>\pi</math> Conjugated Network in Polymer Thin Films Studied by X-Ray Cross-Correlation Analysis</b> .....	154
<i>R. Kurta, L. Grodd, E. Mikayelyan, O. Gorobtsov, I. Fratoddi, I. Venditti, M. Sprung, S. Grigorian, I. Vartanyants</i>	
<b>Author Index</b>	