INTERNATIONAL REPORT

2012 Denver X-ray Conference (DXC) Summary

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LOCATION, DATES AND ATTENDANCE

The 61st Annual Denver X-ray Conference (DXC) was held in Denver, Colorado at the Denver Marriott Tech Center Hotel from 6 to 10 August 2012. The meeting attracted close to 300 registered attendees and well over 100 exhibit staff, all gathering to discuss applications, state-of-the-art techniques and future developments in X-ray analysis. Twenty-eight percent of the attendees were from outside the United States representing the following countries: Australia, Austria, Belarus, Belgium, Canada, China, Cyprus, Czech Republic, Denmark, France, Germany, Hungary, India, Italy, Japan, Korea, Malaysia, Poland, Portugal, Sweden, Switzerland, Netherlands, United Kingdom, and Venezuela. We are grateful to those attendees and exhibitors who traveled a great distance so that we could all share a wonderfully unique international experience.

WORKSHOPS

Sixteen half-day tutorial workshops were held on Monday and Tuesday, with participation from 43 instructors. Various subjects were covered to satisfy the needs of both the beginner and advanced attendee. Topics included:

- 3D Imaging
- X-ray Reflectivity
- Cultural Heritage
- Residual Stress
- Nanostructures (full day)
- Two-Dimensional Detectors
- Rietveld Analysis (full day)
- Phase Identification
- Basic XRF
- Energy Dispersive XRF
- Quantitative Analysis (full day)
- Trace/TXRF Analysis
- XRF Sample Preparation

The instructors were a mix of leaders in industry and academics, and graciously volunteered their time to work with the attendees and answer their questions. We thank the instructors for their valuable time.

SESSIONS

Nearly 200 presentations were made during the oral and poster sessions at DXC. Fifteen half-day oral sessions were held on Wednesday afternoon, Thursday, and Friday morning. The Chairs were experts in their respective field of X-ray analysis, and worked hard to invite cutting-edge speakers to kick off their sessions. Session topics included:

- Cultural Heritage
- New Developments in XRD and XRF Instrumentation
- Improved Fundamental Parameters
- X-ray Imaging
- Stress Analysis
- Rietveld Analysis (full day)
- Industrial Applications and Energy Materials (full day)
- Line Profile Analysis
- Fusion and Industrial Applications of XRF
- Handheld XRF Applications
- Trace Analysis
- Quantitative Analysis
- Micro XRF

Poster sessions were held on Monday and Tuesday evening in conjunction with the evening receptions. XRD posters were displayed on Monday and XRF posters were shown on Tuesday. Each evening offered the authors a full 2 hours to show their work and network with their peers.

PLENARY – A Dedication to Robert L. Snyder

The Plenary Session, *New Frontiers in X-ray Analysis – Dedicated to the life and work of Robert L. Snyder*, was held on Wednesday morning, and was organized by Scott Misture, NYS College of Ceramics at Alfred University, Alfred, NY. Photo 1: Three invited talks were given during the plenary session:



Photo 1. In memory, Bob Snyder at the 2004 DXC.

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Photo 2. DXC Organizing Committee Chairman, Tim Elam welcomes the Plenary crowd.

"Diffraction Analysis and Atomistic Modeling of the Real Structure of Nanocrystalline Materials"

Paolo Scardi, L. Gelisio, University of Trento, Trento, Italy

"Milestones That Gave Momentum to XRPD"

Herbert E. Goebel, LabXA, Munich, Germany

"New Dimensions in X-ray Microscopy"

Janos Kirz, Lawrence Berkeley National Lab, Berkeley, CA, USA

The Plenary Session was a bitter sweet event. For many of us, this was our first DXC without our fearless leader, Bob Snyder. A slide show of Bob ran throughout the plenary and conference week, and various posters were displayed with pictures of Bob attending the DXC through-out the years. The Plenary talks celebrated the many contributions that Bob made to the X-ray community as a scientist, mentor, and friend. Bob's wife, Sheila, continued the tradition of attending the conference, and was welcomed warmly by the attendees. We thank Sheila for being there with us and making the dedication all the more special (Photos 2 and 3).

AWARDS

At the Plenary Session, the 2012 Birks Award was bestowed posthumously to John Criss. John's wife, Judy, was present to accept the award, and gave a beautiful acceptance speech in which she shared the history between John and Laverne Birks, his mentor (Photo 4).

The 2012 Jerome B. Cohen Student Award was given to Magnus Menzel, University of Hamburg, Hamburg, Germany, for his work, "Confocal μ-XRF XANES Analysis of the Cathode Electrolyte Interface of Lithium-ion Batteries". Photo 5: When the work was submitted, the Denver X-ray Conference Organizing Committee was so impressed, they asked Magnus to present the work as an invited talk during the Micro XRF session.



Photo 3. Scott Misture, Plenary Session chair, shares fond memories of Bob Snyder.

The Best Poster Awards were also named:

XRD Best Poster Awards

Quantitative Analysis of Room Temperature Grain Growth Kinetics in Copper Thin Films through High Resolution X-ray Diffraction

M. Treger, I.C. Noyan, Columbia University, New York, NY, USA

C. Witt, Global Foundries, Yorktown Heights, NY, USA

C. Murray, R. Rosenberg, C. Cabral, J. Jordan-Sweet, IBM, Yorktown Heights, NY, USA

E. Eisenbraun, The University at Albany-SUNY, Albany, NY, USA

Tilt-A-Whirl: A Texture Analysis Package for 3D Rendering of Pole Figures Using MATLAB

M.A. Rodriuguez, M.H. Van Benthem, J.J.M. Griego, Sandia National Laboratories, Albuquerque, NM, USA



Photo 4. Judy Criss (left) accepts the Birks Award from Mary Ann Zaitz (right).

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Photo 5. Magnus Menzel (left) receives the Jerome B. Cohen Student Award from Cev Noyan (right).

X-ray Diffraction Analysis of the Dislocation Structure of Cu–Nb Interfaces

G. Csiszar, T. Ungar, Materials Physics Department, Eotvos University Budapest, Hungary

A. Misra, D.W. Brown, Los Alamos National Lab, Los Alamos, NM, USA

XRF Best Poster Awards

Application of Micro-XRF for Locating and Extracting Trace Plutonium Particles on Filters and Swipes

C.G. Worley, L. Tandon, P.T. Martinez, D.L. Decker, D.S. Schwartz, Los Alamos National Laboratory, Los Alamos, NM, USA



Photo 6. Tim Elam (left) congratulates Best Poster winner, Shintaro Hirano.

Confocal Micro-XRF Setup Optimized for Light Element Analysis

S. Smolek, C. Streli, P. Wobrauschek, TU Wien, Atominstitut, Vienna, Austria

Application of Confocal Micro-XRF to Solid-Liquid Interface Analysis and Ancient Chinese Ceramics

S. Hirano, T. Yoshioka, A. Tabe, T. Nakazawa, K. Tsuji, Osaka City University, Osaka, Japan (Photo 6)

EXHIBITS

Forty companies exhibited at the conference, displaying various products and services for X-ray diffraction and X-ray fluorescence. Non-USA countries were Austria, Canada, Germany, Italy, United Kingdom, and Ukraine. Companies participating as exhibitors were:

Amptek, Inc.
Angstrom, Inc.
Anton Paar GmbH
AXO DRESDEN-Huber Diffraction Equipment
Blake Industries, Inc.
Bruker
Cambridge University Press
Chemplex Industries, Inc.
Claisse Corporation Scientifique
Elvatech Ltd
Herzog Automation Corp.
Incoatec GmbH
Inel, Inc.
International Centre for Diffraction Data
Ketek GmbH
Kitco Metals, Inc.
Materion Electrofusion
MDI Materials Data, Inc.
Micro Photonics, Inc.
Micromatter
Mikron Digital Instruments
Moxtek, Inc.
nanoXRF
Olympus Innov-X
PANalytical
PNDetector GmbH
Premier Lab Supply
Proto Manufacturing Inc.
Rigaku Americas Corporation
Rigaku Innovative Technologies
SGX Sensortech
SII NanoTechnology USA, Inc.
Solid Sealing Technology, Inc.
Spectro Analytical Instruments, Inc.
SPEX SamplePrep, LLC.
Thermo Fisher Scientific
VSG – Visualization Sciences Group
XGLab SRL
XIA, LLC.
XOS

Complete exhibit details including contact information and a description of products and services can still be viewed on the exhibit page of the Denver X-ray Conference web site: www.dxcicdd.com.

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SPONSORSHIPS

Nine companies contributed to DXC as sponsors, Bruker AXS, Inc.; Chemplex Industries, Inc.; Incoatec GmbH; IOS Press; Materials Today; Mikron Digital Instruments; PANalytical; Premier Lab Supply, and Rigaku Americas Corp.

The premier sponsor was Chemplex Industries, Inc., who was the sole sponsor of the Tuesday evening XRF poster session. PANalytical and ICDD also deserve a special thank for co-hosting the Monday evening XRD poster session. The poster sessions were enhanced by the food and libations offered by our gracious hosts and we thank them for their continued generosity and support of the DXC.

DXC GOES GREEN AND MOBILE!

DXC went green this year, and for the first time, hard copy abstracts were not distributed to attendees; rather a USB stick was provided with an electronic copy of the *Book of Abstracts*. Attendees could also use a mobile App to enhance their experience by planning their day with a personalized schedule, browse the exhibitors, view maps, and learn all the latest announcements and updates.

SAVE THE DATE FOR 2013, NEW LOCATION!

The 62nd Annual DXC will be held from 5 to 9 August 2013 at The Westin Westminster, Westminster, CO, USA. This is the first time that the conference will be held at this site, and we are looking forward to a fun and eventful week. We invite you to explore the hotel's web site so you can see the many attractions and activities within walking distance that are available to attendees and their families. 2013 is a year NOT to be missed! www.westindenverboulder.com

CONNECT WITH US!

Stay connected with DXC and ICDD by following us on Twitter, Facebook, and LinkedIn. Visit our web site or contact our Conference Coordinator, Denise Flaherty. We are here to help you with any questions or concerns you may have, and hope to see everyone again next year in Westminster, Colorado.

Web: www.dxcicdd.com; E-mail: flaherty@icdd.com; Phone: 610–325-9814.

ACKNOWLEDGEMENTS

ICDD is very grateful and appreciative to the Denver X-ray Conference Organizing Committee for their year-round service, volunteering their time and expertise to help make the DXC a huge success. The conference could not survive without their efforts, and we thank them whole-heartedly.

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