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INTERNATIONAL REPORT

2016 Denver X-ray Conference (DXC)

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Location, Dates, and Attendance

The Denver X-ray Conference (DXC) visited Rosemont, Illinois, USA, for its 65th Annual Conference on Applications of X-ray analysis. The conference took place 1–5 August 2016 at the Westin O'Hare Hotel. The move to the mid-west proved to be successful as attendance at the conference exceeded 300 attendees presenting over 250 technical presentations. The exhibit hall was sold out of space as 45 companies shared their displays of various software, instruments, and products for XRD and XRF analysis, with the number of exhibit personnel reaching over 160 people. The combination of attendees and exhibitors brought the total attendance to nearly 500 X-ray scientists, with 30% from outside the USA.

Workshops

Conference week began with 19 half-day workshops held on Monday and Tuesday of conference week. Subjects focused on both beginner and advanced levels, with 42 specialists invited to participate as workshop instructors.

Plenary Session

Technical sessions ran Wednesday through Friday of conference week, starting with the Plenary Session on Wednesday morning, "Imaging at Current and Next Generation Synchrotrons." The session was chaired by Brian Toby of Argonne National Laboratory, Advanced Photon Source, and included a presentation of awards and four invited talks. The awards presented during the Plenary Session were:

- The 2016 Birks Award had two recipients. Alan C. Huber of Amptek, Inc., received the honor in recognition of his breakthrough innovations in practical X-ray detectors that have revolutionized X-ray spectrometry and propelled it out of the laboratory into much wider use. Jacob (Nate) Sherman (awarded posthumously – formerly of the Naval Shipyard, Philadelphia, PA), received the award as a mathematician and spectroscopist who developed the equations and theory of fluorescent X-ray intensities in mixtures, the foundation for quantitative X-ray Fluorescence Spectroscopy.
- The 2016 Hanawalt Award was presented to Matteo Leoni and Paolo Scardi, University di Trento, Trento, Italy in recognition of their recent contribution to the field of powder diffraction, *Powder-diffraction-pattern Modeling and Microstructure Analysis of Nanocrystalline Materials.* Dr. Leoni was present to receive the award; however, Dr. Scardi will accept his award and present his Hanawalt Award Lecture at the XTOP2016 Conference, Brno, Czech Republic, 4–8 September 2016.
- The 2016 Robert L. Snyder Student Travel Awards were announced; nine recipients received awards for the following works:

  Valentina Aguilar, Universidad Nacional Autonoma de Mexico
  ADIS: A New X-ray Diffraction & X-ray Fluorescence System for In Situ Material Characterization for Cultural Heritage

  Quan Kuang, South China University of Technology
  Structural Design and Characterization of Vanadium-based Phosphates as Cathode Materials for Li-Ion Batteries

  Yifeng Ling
  Iowa State University
  Microstructural Characterization of Fly Ash-based Geopolymer

  Lara Maldanis
  University of São Paulo
  Micro-XRF Spectroscopy in Fossil Samples Providing Information about Preservation, Paleoecology and Evolution of Specimens

  Scott McCormack
  University of Illinois at Urbana-Champagin
  In Situ Crystallographic Thermal Expansion Measurements of Compounds in the HfO_2–Ta_2O_5–TiO_2 Ternary System Using CTEAS

  Adelita Mendoza
  Northwestern University
  Zinc Dynamics Regulate Germline Development in Caenorhabditis Elegans

  Sixberth Mlowe
  University of Zululand
  High Temperature Phase Transformation of Iron Sulfide

  Jing Zhang
  Central South University
  2 Crystal Structures and Properties of New Compounds in Mgo-In_2O_3-P_2O_5 Ternary Systems

  He Zhang
  Illinois Institute of Technology
  XAFS Observation of Nucleation Mechanism in Deposition of WS_2

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Photo 1. Francesco De Carlo, speaks at the Plenary Session.
Gold Sponsor Chemplex Industries.
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Mary Ann Zaitz presents the 2016 Birks Award to Alan C. Huber, Amptek, Inc.
Plenary Session Speaker, Stefan Vogt.
Robert L. Snyder Student Grant Award Winners.
Scott Misture presents the 2016 Hanawalt Award to Matteo Leoni.
XRD Poster Session Winners.
XRF Poster Session Winners.

The awards presentation was followed by four keynote speakers, the first being Timothy Fawcett of the International Centre for Diffraction Data, whose talk "100 Years of Powder Diffraction" celebrated the anniversary of the science.

The next two talks focused on the theme of the Plenary. Francesco De Carlo, Argonne National Laboratory, gave his lecture on, "X-ray Imaging at the Advanced Photon Source (APS) from Data Intensive to Data Driven: Opportunities with the APS Upgrade" and Stefan Vogt, also from Argonne National Laboratory, presented his talk, "X-ray Fluorescence Microscopy: Advances and Unique Opportunities."

The fourth and final talk was the Hanawalt Award Lecture, presented by Matteo Leoni, University of Trento, "Detailed Microstructure Information from Powder Data: A Maze or Amazing?" As mentioned, Paolo Scardi would present his Hanawalt Award Lecture at the XTOP 2016 – 13th Biennial Conference on High-Resolution X-Ray Diffraction and Imaging, scheduled 4–8 September 2016 in Brno, Czech Republic.

Special Sessions

Nineteen half-day special sessions (nearly 160 oral presentations) filled the remainder of the week. Thirty-six of the presentations were given by invited speakers – experts in their respective fields.

A unique group of sessions were also held at the DXC that specialized in Biological Applications of X-ray Fluorescence Microscopy. Lead by Stefan Vogt of Argonne National Laboratory, the group ran three half-day sessions on Wednesday and Thursday of conference week:

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Poster Sessions and Best Poster Awards

Over 90 posters were presented on Monday and Tuesday evening during the XRD and XRF poster sessions. Judges had a difficult time choosing the Best Poster Awards, as the competition was intense. Ultimately, the following presenters were named winners:

Monday XRD Best Poster Awards presented to:

X-ray Analysis for Quantifying Various Components in Poly(vinyl chloride) Plastics
P. Ricou, R. Smith, Arkema Inc., King of Prussia, PA, USA

Crystal Structures and Properties of New Compounds in Mgo-In2O3-P2O5 Ternary Systems
J. Zhang, G. Cai, Z. Jin, Central South University, Changsha, China

Best Student Poster: *High Temperature Phase Transformation of Iron Sulfide*
S. Mlowe*, N. Revaprasadu, University of Zulaland, kwa zulu natal, South Africa
S.S. Garje, University of Mumbai, Mumbai, India

Tuesday XRF Best Poster Awards presented to:

Developments in Equilibrium and Time-Resolved Small Angle X-ray Scattering
S. Chakravarthy, T. Irving, BioCAT/Illinois Institute of Technology, Chicago, IL, USA
S. Kathuria, O. Bilsel, U Mass. Medical School, Worcester, MA, USA

Combined Synchrotron X-ray Microprobe Analysis of Corrosion Deposits in Fuel Rods of Pressurized Water Reactors
V.A. Samson*, D. Grolimund, Swiss Light Source (SLS) Paul Scherrer Insitute, Villigen, Switzerland
M. Martin, H.D. Potthast, Nuclear Energy and Safety Department (NES) Paul Scherrer Insitute, Villigen, Switzerland

Best Student Poster: *Investigation of Heavy Metal Deposition in Zebrafish by Total Reflection X-ray Fluorescence*
M. Schmeling, J. Arroyo, R. Dale, E. Jamka*, K. Niaz, Loyola University Chicago, Chicago, IL, USA.

Students

Over 40 students attended the DXC. In addition to the Robert L. Snyder Student Travel Awards (please see section on the Plenary Session awards for details), students also received reduced registration, reduced housing, and a student pizza lunch with the Organizing Committee.

Social Event and Sponsorships

The premier sponsor at the DXC was Bruker AXS. Their sponsorship had attendees dancing the night away on Tuesday evening, as they hosted a Chicago-themed party with the popular band, Blooze Brothers. If you haven't seen pictures of the event, make sure to visit Bruker's Facebook page, and see the merriment for yourself.

Chemplex Industries, Inc. and Premier Lab Supply both gave generous donations to the conference, earning them each Gold sponsorship. Their gift to the conference helps the DXC provide attendees with a top-rate experience, and we are very grateful for their continued support.

DXC Website, Abstracts and Proceedings:

To view the complete DXC Program, including abstracts, please visit the Program page of the conference website, http://www.dxcicdd.com/16/program.htm. The conference proceedings, *Advances in X-ray Analysis*, Volume 60, will be published in the summer of 2017. Select papers will also be published in *Powder Diffraction*. Please also visit our website for free full access to manuscripts published in Volumes 40 through 57: http://www.icdd.com/resources/axasearch/search_based_on_vol.asp.

2017 DXCs

The 66th Annual Conference will be held 31 July–4 August 2017 in Big Sky, Montana, USA. Please be sure to monitor our website for tentative program information, and the *Call for Papers*, which will begin in January.

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