

Crystallography in materials science: Novel methods for novel materials (EMRS-Fall Meeting Symposium N, Warsaw, Poland, Sept. 15-19 2014)

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Crystal structure is one of principal factors determining the material properties. X-ray, neutron and electron diffraction methods of crystal and defect structure investigation are continuously developing, leading to new opportunities in materials investigation. Diffraction methods have been developing rapidly during last decades. They can be used for solving a variety of problems including crystal structure solution, defect structure determination, understanding of thin film structure and quality, structure variation mapping, structure dynamic changes, chemical reactions. The symposium will be a forum of presentation of such methods and their applications.

Hot topics to be covered by the symposium:

structure solution: methods and applications, structure refinement: methods and applications, defect structure of single crystals and thin films: methods and applications, use of specular reflectivity for film analysis, new instruments, use of X-ray, neutron and electron diffraction, including a combined use, use of classical and synchrotron beams, study of phase diagrams by diffraction methods, chemical reactions on very short time scale, in-situ studies at extreme conditions, nanocrystals, polycrystals, bulk single crystals, materials of various dimensionality including quantum dots, thin films, heterostructures, semiconductors, superconductors, ferroelectrics etc., energy related materials, biological materials.

Invited speakers:

- Andre Authier** (Paris, France) - Early days of X-ray crystallography - first applications to materials science
Izabela Sosnowska (Warsaw, Poland) - Fifty years of Time-of-Flight (TOF) neutron diffraction at pulsed neutron sources
Krzysztof Woźniak (Warsaw, Poland & Cambridge, UK) - X-ray structural analysis century after the Braggs - success or failure?
Wladek Minor (Charlottesville, USA) - Structural Biology - Next 100 Years of X-rays
Angela Altomare (Bari, Italy) - Recent advances in crystal structure solution
Bill David (Didcot, UK) - To be confirmed
Matteo Leoni (Trento, Italy) - Progress in microstructure analysis by diffraction
Louisa Meshi (Beer Sheva, Israel) - Strategies for solution of atomic structure of aluminides using Precession Electron Diffraction
Sven Lidin (Lund, Sweden) - A periodic materials: Why and how
Walter Steurer (Zürich, Switzerland) - Quasicrystal structure analysis - goals and limits
Manfred Burghammer (Grenoble, France) - Reciprocal space meets real space - looking at the structure of matter with scanning diffraction
Jung Ho Je (Pohang, South Korea) - Diffraction and phase contrast imaging of defects in crystals
Dénes L. Nagy (Budapest, Hungary) - Synchrotron Mössbauer reflectometry: A tool for magnetic thin film analysis
Marek Stankiewicz (Kraków, Poland) - SOLARIS synchrotron facility in Kraków – a state-of-the-art tool for materials scientists and solid state physicists and chemists
Alex Hannon (Didcot, UK) - Title to be announced
Jarek Majewski (Los Alamos, USA) - X-ray and neutron scattering studies of bio-relevant structures: from model lipid membranes to living cell cultures under flow stress

Zuzanna Liliental-Weber (Berkeley, USA) - Determination of growth polarity by Convergent Beam Electron Diffraction in III-V semiconductors

Pierre Ruterana (Caen, France) - The combined topological analysis, atomistic modelling and HRTEM of grain boundaries in wurtzite materials

Daniel Errandonea (Valencia-Burjassot, Spain) - Exploring the properties of materials using high-pressure x-ray diffraction: Recent advances and future challenges

Andrzej Katrusiak (Poznań, Poland) - Paving the way to unexplored Universe and gaining profits from high-pressure conditions

David Rafaja (Freiberg, Germany) - Crystallography of nanomaterials

Kenny Stahl (Lyngby, Denmark) - Zeolitic materials

Janez Dolinsek (Ljubljana, Slovenia) - Physical properties of complex metallic alloys in relation to crystal structures

Wiesław Lasocha (Kraków, Poland) - New hybrid organic-inorganic materials: Synthesis, structure, applications

Laura Leon-Reina (Málaga, Spain) - Quantitative XRD analysis, a tool for the quality control of clinker and cements

Yuri Grin (Dresden, Germany) - Crystallographic features and chemical bonding in thermoelectric materials

Magali Morales (Caen, France) - Combined refinement of GIXRF, XRR and XRD data in a global approach: analysis of textured ITO/Ag/ITO/Si architectures and III-V based heterostructures

Michael Knapp (Karlsruhe, Germany) - In-situ synchrotron studies on Li-battery cathode materials

Matteo Bianchini (Grenoble, France) - In-situ and ex-situ neutron diffraction experiments on electrode materials for Li-ion batteries

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Sponsors:



International Union of Crystallography will sponsor a limited number of young participants.



Polish Academy of Sciences

Symposium organizers:

Wojciech Paszkowicz (Institute of Physics, PAS Warsaw, Poland, **CONTACT: paszk@ifpan.edu.pl, +48 221163301**), Radovan Cerny (Univ. Genève, Switzerland), Irene Margiolaki (Univ. Patras, Greece), Hartmut Fuess (Univ. Technology, Darmstadt, Germany), René Guinebretiere (ENSCI, Limoges France)