

Connecting the global minerals, metals, and materials community.



Plan Now to Attend:

Neutron and X-Ray Studies of Advanced Materials VIII: Diffraction Limit and Beyond

The aim of this symposium is to provide a forum for discussion of using state-of-the-art neutron and X-ray scattering techniques for probing advanced materials. These techniques have been widely used to characterize materials structures across all length scales, from atomic to nano, meso, and macroscopic scales. With the development of sample environments, in-situ experiments, e.g., at temperatures and applied mechanical load, are becoming routine. The development of ultra-brilliant third-generation synchrotron X-ray sources, together with advances in X-ray optics, has created intense X-ray microbeams, which provide the best opportunities for in-depth understanding of mechanical behavior in a broad spectrum of materials. Important applications include ultra-sensitive elemental detection by X-ray fluorescence/absorption and microdiffraction to identify phase and strain with submicrometer spatial resolution. X-ray microdiffraction is a particularly exciting application compared with alternative probes of crystalline structure, orientation and strain. Advances in neutron sources and instrumentation also bring new opportunities in neutron scattering research.

Some of the areas to be explored include:

- Crystallography and diffraction in the 21st century
- Deformation and fracture
- Texture and recrystallization
- Analyses of complex, nano-crystalline, and disordered materials
- Spatially resolved measurements at different length scales and three-dimensional methods
- Time-resolved measurements of materials processing
- Characterization of surfaces, interfaces, and thin films
- Theoretical modeling and simulations
- Phase transition, evolution, and critical scattering
- Diffuse scattering studies of fundamental materials properties
- Mechanical property characterization, with an emphasis on nano- and micro-scale
- Industrial applications
- New experimental and analysis methods

The full length papers are planned to be published in *Metallurgical and Materials Transactions A*.

Sponsored by:

- TMS Structural Materials Division
- Mechanical Behavior of Materials Committee

Organized by:

- Rozaliya Barabash, Oak Ridge National Laboratory (USA)
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For more information on how to participate, visit:

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Questions? Contact programming@tms.org