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TMS2019
 148th Annual Meeting & Exhibition

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March 10–14, 2019
 San Antonio, Texas, USA

JOIN US FOR THIS TMS2019 SYMPOSIUM:

CHARACTERIZATION

Characterization of Materials through High Resolution Imaging

This symposium will provide a venue for presentations regarding the use of coherent diffraction imaging techniques (x-ray and electron diffraction imaging, ptychography, holography) and phase contrast imaging techniques for high-resolution characterization in all classes of materials. Additionally, modeling and simulation methods that are relevant to nanoscale imaging techniques will be included.

The two methods that will be the focus of this symposium are coherent diffractive imaging (CDI) and phase contrast imaging (PCI) with both x-rays and electrons. Both explicitly take advantage of the coherence properties of the incident beams.

Increasingly, materials modeling at the atomistic and continuum scales is being used in conjunction with these imaging techniques to enhance their capability. Such combined imaging and modeling methods include building experimentally informed models, which are in turn used to make predictions at spatio-temporal scales inaccessible to the imaging technique, and the use of deep learning algorithms trained on synthetic data. These pre-trained deep learning algorithms are being used to improve the quality of acquired x-ray data, reduce experimental measurement times and also reduce compute time required to recover 3D images from raw data.

Areas of interest include, but are not limited to:

- All x-ray based techniques including Bragg CDI, Fresnel CDI, ptychographic CDI, propagation phase contrast imaging, interferometry imaging, and analyzer based phase-contrast imaging
- All electron based techniques including ptychography and electron CDI
- Computational and simulation efforts with overlap in high resolution imaging.
- Big data analytics and machine learning methods to accelerate data abstraction and improve image quality
- All structural and functional materials systems needing high resolution imaging
- Industrial applications
- Development of new techniques and new sources

ORGANIZERS

Ross J. Harder, Argonne National Laboratory, USA
Richard Sandberg, Los Alamos National Laboratory, USA
Xianghui Xiao, Argonne National Laboratory, USA
Brian Abbey, La Trobe University, Australia
Saryu Fensin, Los Alamos National Laboratory, USA
Ana Diaz, Paul Scherrer Institut, Switzerland
Mathew Cherukara, Argonne National Laboratory, USA

Nearly 4,000 presentations are planned
 at more than 80 symposia at TMS2019.

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