

Introduction to a Special Issue on Electron Backscatter Diffraction

Arguably one of the most significant microscopy techniques of the past decade, electron backscatter diffraction (EBSD) has provided scientists and engineers with tremendous insight into the structure of crystalline materials. What started with basic observations of electron diffraction in the middle of the 20th century has grown into a mature technology that bridges the gap between the macro and micro length scales. EBSD has found a home in both the materials science and geological communities characterizing crystallographic texture and preferred orientations, residual strain, grain boundary character and networks, and identifying constituent phases. Advancements in computational power, camera technology, indexing algorithms, sample preparation, and dynamical simulations have made this possible.

As EBSD interest and usage grows, microscopists seek to expand the capabilities and applications of the technique. To facilitate this effort, last year the Microanalysis Society (MAS, formerly the Microbeam Analysis Society) sponsored its second topical conference on EBSD, held May 24–26, 2010 at the University of Wisconsin, Madison. Attendance at EBSD 2010 was well-rounded, representing three continents and including professors and students from prominent universities, national laboratory scientists, industrial researchers, and equipment manufacturers. The technical program covered a broad range of EBSD topics that spurred excellent dialog among the participants.

This special issue of *Microscopy and Microanalysis* is a product of EBSD 2010, its organizers, and, most importantly, its participants. The mission is to provide *Microscopy and Microanalysis* readers access to some of the original research presented at EBSD 2010, in a formal peer-reviewed setting. Subjects include strain analysis, calibration, engineering applications, fundamental studies, and post-processing. They represent active areas of EBSD research and practice that continue to push the boundaries of the technique. Readers who benefit from these articles or have significant interest in EBSD and its applications are welcome to attend EBSD 2012 at Carnegie Mellon University next June, sponsored by MAS, where collaboration in this exciting field will continue.

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