

# Foreword

## Symposium: Approaches for Investigating Phase Transformations at the Atomic Scale

Multiple characterization techniques, such as transmission electron microscopy, scanning-transmission electron microscopy, three-dimensional atom probe microscopy, and X-ray/neutron diffraction techniques, as well as modeling and simulation tools, such as first principles calculations, Monte Carlo methods, cluster expansions, and molecular dynamics, are used to investigate phase transformations at the atomic scale. The complementary nature of these experimental techniques, as well as the combination of experimental techniques with modeling and simulation, can provide powerful synergies for these investigations. This successful symposium, which concentrated on studies where multiple techniques and/or computational materials science tools have been coupled for the study of phase transformations at the atomic scale, was held at The Minerals, Metals & Materials Society (TMS) 2011 Annual Meeting & Exhibition (San Diego, CA, February 27–March 3, 2011).

The symposium was sponsored by both TMS and ASM International: TMS Materials Processing and Manufacturing Division, TMS/ASM: Computational Materials Science and Engineering Committee, and TMS/ASM: Phase Transformation Committee. There were 42 presentations given, including 16 invited talks and 2 keynote addresses during the meeting. We also had the distinct pleasure of hosting the 2011 Institute of Metals Lecturer and Robert Franklin Mehl Award winner, Professor David N. Seidman, who presented his lecture, “The Ubiquitous Interfacial Free Energy in Phase Transformations.”

The topics covered within the symposium included transformation kinetics and mechanisms, specific transformations in Fe-, Ni-, and Al-based systems, as well as other transformations.

As the organizers of the symposium, we would like to thank all those who chose to present their research, as well as all those who attended the presentations and added to it through their questions and comments. We acknowledge with gratitude the financial support provided by CAMECA Instruments.

From this symposium, three papers were submitted to and appear in this issue of *Metallurgical and Materials Transactions A*. As these manuscripts were subjected to the standard peer-review procedures of the journal, we thank the journal's key readers, reviewers, editor, and staff for their efforts in the preparation and approval of the symposium publication.

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