

Phase Transformation and Microstructure Evolution

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Computational Mechanics plays an important role in predicting materials performance. Because of the close relationship between microstructure and property, microstructure-based mechanical behavior modeling is an active research area. This symposium will address recent advances in microstructural modeling and microstructure - based property and performance modeling that integrates microstructural modeling into computational mechanics. Sectional keynote speakers will review the current status of both fields. Since many problems encountered in the two fields share the same mathematical and numerical challenges, the symposium is expected to bring a cross fertilization of new ideas that will inspire the development of innovative computational approaches to solve the problems, and foster collaborative interactions between computational materials scientists and computational mechanicians. The topics for presentations will include (a) Microstructural evolution during solidification, (b) Microstructural evolution during solid state phase transformations, (c) Microstructural evolution during recrystallization and grain growth, (d) Microstructural evolution and effects of crystal defects and external fields, (e) Microstructural evolution during deformation and (e) Microstructural based property and performance modeling.