

**MULTISCALE MODELING, ANALYSIS AND NUMERICAL METHODS OF  
MATERIAL DEFECT AND INHOMOGENEITIES**

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Materials defects and inhomogeneities, such as point defects, dislocations and grain boundaries play essential roles in the mechanical and dynamical behaviors of the materials. The complexity due to the multiscale and stochastic nature of the structures and the evolutions of these defects and inhomogeneities present challenges for mathematical modeling, analysis and numerical calculations. New models based on multiscale approaches and data-driven methods are required to describe the complicated phenomenon associated with defects and inhomogeneities in materials accurately and efficiently. Detailed analysis and advanced numerical algorithms are also important to guarantee the convergence, consistency and efficiency of these new models. Speakers in this mini-symposium will discuss recent advances in modeling approaches, analysis techniques and numerical methods in the understanding of material defects and inhomogeneities