



Materials and Construction Research Division Seminar

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An information-theoretic approach to multiscale modeling and design of materials

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Abstract

We will address the development of viable solutions to multiscale modeling and design of materials through a combination of computational techniques for microstructure representation and classification, stochastic modeling of microstructure evolution, statistical learning tools over meso- and micro-scale databases for identifying synergies between processing/structure/properties, statistical information transfer between length scales, and stochastic deformation process simulation.

We will emphasize the use of information-theoretic concepts for analysis of materials. Such approach is essential to quantify information at various length scales and to provide a consistent mathematical framework for modeling information loss across length scales in a multiscale stochastic simulation.

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