

Role of Multiscale Materials Modeling in Integrated Computational Materials Engineering

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The past five years have witnessed the emergence of the field of Integrated Computational Materials Engineering (ICME) as a subdiscipline of materials engineering aimed at the use of multiscale materials modeling as a framework for accelerating the timescale and reducing the cost of materials development and manufacturing. Progress in the development of the scientific and algorithmic frameworks underlying multiscale modeling of materials remains critical to advancing the goals of ICME. This talk will provide a basic introduction to the goals of ICME, as defined in the original National Academies report, and review outstanding challenges as identified in the recent implementation study by TMS. The synergistic relationship between ICME and the Materials Genome Initiative will also be discussed.