ICME GAP ANALYSIS: STRUCTURAL MATERIALS FOR AUTOMOTIVE APPLICATIONS

Using integrated computational materials engineering (ICME) to predict materials properties has reduced the number of iterations in the materials development process and thereby reduced the timeframe and cost requirements. Although there are a number of ICME success stories in automotive and aerospace sectors, gaps still exist in the integration between different length scales, the linkages along the processing chain, development of computational tools and advanced experimental techniques for engineering practice.

The focus of this symposium is evaluating the performance of existing ICME models, databases, simulation tools, and general infrastructure development to identify gaps that exist for automotive structural materials, including high-strength steel, aluminum, and magnesium alloys. The application of ICME approaches for aluminum and magnesium alloys will be highlighted.

Presentations in this symposium will include the following topics:

- A comparison of materials testing results with ICME predictions
- An assessment on the accuracy of current ICME models
- New approaches to bridge the currently identified ICME gaps
- High-throughput experiments to support database development
- Assessments and uses of current high-throughput ICME tools
- Identification of gaps at all levels of the integration

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