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TMS 2026

155th Annual Meeting & Exhibition

March 15–19, 2026
San Diego Convention Center
and Hilton San Diego Bayfront
San Diego, California, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING SYMPOSIUM

DATA-DRIVEN AND COMPUTATIONAL MATERIALS DESIGN

Artificial Intelligence Applications in Integrated Computational Materials Engineering (AI-ICME)

This symposium highlights the start-of-the-art advancements at the intersection of artificial intelligence (AI) and Integrated Computational Materials Engineering (ICME), emphasizing targeted, high-impact applications. Novel AI frameworks, such as machine learning algorithms, multimodal foundational (LLMs), explainable, and generative models, are given priority, and they directly enhance multi-scale materials modeling and prediction of process-structure-property relationships. We will explore AI-driven automation in microstructure characterization, accelerated discovery of new alloys and composites, and tailored processing parameter selection to achieve desired material performance. Special attention will be placed on strategies for integrating experimental data with computational models, ensuring robust validation and interpretability of AI predictions in real-world manufacturing environments. Automated collaborative robotic systems, powered by AI, are transforming material discovery by enabling adaptive experimentation and real-time data collection. Presentations will also address best practices for data quality, standardized workflows, and domain-specific model development. By showcasing case studies and breakthroughs in deploying AI within ICME pipelines, this symposium aims to inspire closer collaboration among materials scientists, computational engineers, and AI experts to drive the next generation of predictive, data-centric materials design.

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