JOM MACHINE LEARNING SHOWCASE TOPIC:
Submit Your Manuscript by May 1, 2023

Michael Groeber and Victoria Miller

The *JOM* editorial team is pleased to announce that a call for manuscripts is now open for a new Machine Learning Showcase Series.

Traditionally, *JOM* special topics are organized by TMS technical committee volunteers. This series was planned to supplement the excellent work our committees are doing by exploring three specific areas of machine learning: additive manufacturing, materials development, and deformation processes. The topics will include a combination of invited and unsolicited manuscripts, so participation by our *JOM* audience is encouraged.

// ABOUT THIS TOPIC

Machine learning (ML) and artificial intelligence (AI) have become the focus of many research efforts across numerous scientific fields. As a result, there has been a rapid growth in the development and application of exciting new tools, with some beginning to percolate through the materials science and engineering fields. The field of materials science and engineering offers some interesting new problems for AI/ML to potentially impact, though there are challenges to application. Common AI/ML problems, such as image classification, have been shown to be directly applicable to the materials field. More recently, AI/ML methods have been applied to materials development, process design and control, and reduced order model development. In this series of special topics, we hope to both demonstrate what is currently possible and inspire new users of AI/ML techniques.

Machine Learning: Additive Manufacturing
This topic covers the use of ML and AI for the advancements of additive manufacturing (AM) processes. Specific topics of interest include approaches/tools for (1) developing new alloys tailored to AM, (2) analyzing/utilizing in-process monitoring data, (3) designing novel processing strategies, (4) predicting component performance, and (5) qualifying components.
Guest Editor: Michael Groeber

Machine Learning: Materials Development
The use of ML and AI for the development of new materials, material combinations, and microstructures is the focus of this topic. Specific areas of interest include new approaches or tools for (1) targeted design and optimization of alloy compositions, (2) microstructural engineering during processing, and (3) hierarchical or architectured materials.
Guest Editor: Victoria Miller

Machine Learning: Deformation Processes
The application of ML and/or AI methods to the development of novel applications in the area of deformation processes will be examined in this topic, Specific areas of interest include approaches/tools for (1) predicting microstructures that result from deformation pathways, (2) numerical design of thermomechanical processes, and (3) in-process control methods.
Guest Editor: Michael Groeber

How to Submit
To submit to any of these topics, first, prepare your manuscript according to the *JOM* Instructions for Authors found at **www.tms.org/jom**. Then, submit your manuscript through Editorial Manager at **www.editorialmanager.com/JOMJ**. All manuscripts will be reviewed by two qualified, objective experts in the field. When that process is complete you will receive a decision on your submission. Manuscripts will be published online as they are accepted and will appear in *JOM* issues beginning in October 2023. The deadline for manuscript submissions is May 1, 2023.

About the *JOM* Associate Editors
Michael Groeber is an associate professor, Mechanical and Aerospace Engineering, at The Ohio State University. He is a member of the following TMS committees: Additive Manufacturing; Advanced Characterization, Testing, & Simulation; Integrated Computational Materials Engineering (ICME); and Materials Innovation. His technical interests encompass additive manufacturing, 3D materials science, ICME, and data analytics

Victoria Miller is an assistant professor, Materials Science and Engineering, at the University of Florida. She is a member of the TMS Magnesium Committee, and is the Light Metals Division Representative to the TMS Membership, Diversity & Development Committee and the TMS Program Committee. Her technical interests are recrystallization, magnesium alloys, and recovery.