

# MAE Seminar SERIES

TUESDAY,  
MARCH 8  
3:30 PM

206 FURNAS & [ZOOM](#)

MEETING ID:  
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PASSCODE:  
823267



**Dr. Mohsen Taheri Andani**  
University of Michigan, Ann Arbor

## ON THE FUTURE OF METALS: RAPID DISCOVERY OF THE PROCESSING- PROPERTIES-MICROSTRUCTURE RELATIONSHIP FOR NEXT GENERATION MATERIALS"

### ABSTRACT

Complex applications in modern technology urgently call for advanced structural materials that are high-strength and lightweight, and yet tolerant to damage from extreme temperature, particle radiation, or environmental exposure. To swiftly fulfill these emerging demanding material requirements, we must develop a multi-scale understanding of the relationship between processing, microstructure, and properties of metallic materials. Toward these goals, I present two examples of my recent findings on (i) how functional behavior of shape memory alloys made by additive manufacturing correlates with the manufacturing history and (ii) how the macroscopic strength of magnesium alloys is governed by local microstructure (grain boundary parameters). I will conclude my talk by discussing how such understandings can be captured in multi-scale modeling tools to predict the deformation of the material and accelerate the development of next-generation structural materials.

### BIO SKETCH

Mohsen Taheri Andani is a Postdoctoral Fellow at the University of Michigan, Ann Arbor working with Prof. Amit Misra. His research focuses on establishing the inter-relationship between processing, microstructure, and properties in structural metallic materials. His research brings together cutting-edge multi-scale experimental and computational modeling tools to accelerate the design of advanced structural materials for demanding engineering applications. Mohsen has worked on several projects throughout his graduate studies and has published 28 journal articles, including ten first-authored papers. He has received several awards and honors for his outstanding doctorate research, including the "Richard and Eleanor Towner Prize for Outstanding Ph.D. Research" (by College of Engineering, University of Michigan), "Ephraim Garcia Best Paper Award" (by ASME), and "Ivor K. McIvor Award for demonstrating excellence in research and scholarship in applied mechanics" (by College of Engineering, University of Michigan). He was awarded a Ph.D. in mechanical engineering from University of Michigan in 2021.



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