

# Harnessing Size Effects: Where Nanostructures Meet Additive Manufacturing

Monday, February 19<sup>th</sup>, 2024  
12:00 PM

Maeder Hall Auditorium

PMI/MAE Special Seminar



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Nanostructured materials promise to unlock new functionality that can address modern challenges in electronics, health, and infrastructure. However, to fully harness the power of size-based effects, we need to develop new methods for designing microstructurally complex and heterogeneous nanostructures. Furthermore, deep fundamental understanding of designed nanoscale materials is critical for bringing these tools to the materials engineers of tomorrow. Using nanoscale additive manufacturing, we will explore new pathways for nanoscale materials design and investigate the emerging materials behaviors that arise at the intersection of geometric and microstructural size-effects. Insights from studies on nanocrystalline nano-architected ZnO and nanoporous Ag will begin to untangle the intricate roles of processing and microstructure in advancing nanoscale materials performance.

Rebecca Gallivan is a materials scientist and engineer focusing on understanding micro- and nano-scale material phenomena using nanoscale additive manufacturing techniques. Her work looks to push new frontiers in advanced functional and structural materials for future nanotechnologies. Gallivan received her S.B. in Materials Science and Engineering from MIT and her Ph.D. in Materials Science from Caltech. She is currently working as a Postdoctoral Scholar at ETH Zurich in Switzerland. She has received recognition for her work through an MRS Graduate Student Award, the Caltech Demetriades-Tsafka-Kokkalis Prize in the field of Nanotechnology, and appointment as an Amazon AI4Science Fellow. For her commitment to building diverse, equitable, and inclusive communities, Gallivan received the Catalyst Award from the Kavli Nanoscience Institute.

