

**MATERIALS SCIENCE AND ENGINEERING (MS&E) SEMINAR SERIES**  
**Friday November 5, 2021 at 3:00 pm in room ESB 251****“High-throughput experiments and holistic integration with computational data to accelerate alloy design”****Ji-Cheng “JC” Zhao**Minta Martin Professor and Chair, Department of Materials Science and Engineering,  
University of Maryland, College Park, Maryland, USA

**Abstract:** This talk will review high-throughput experimental techniques for rapid collections of materials property data for simulations of materials properties. Localized property measurements on composition gradients created in diffusion multiples allow effective collection of composition-dependent properties, including thermal conductivity, heat capacity, coefficient of thermal expansion, and elastic constants. A novel approach was developed to establish reliable diffusion coefficient (atomic mobility) databases by holistically integrating both experimental and computed data. This approach together with more reliable diffusion coefficient models will enable more reliable diffusion databases to be established rapidly for ICME simulations. Recent development of dual-anneal diffusion multiples (DADMs) allow rapid and systematic collection of phase precipitation kinetics and morphological evolution data across wide ranges of compositions as a function of time and temperature, creating large datasets for validation and testing of model simulations.

**Brief Bio of JC Zhao:** Dr. JC Zhao is Minta Martin Professor and Chair of the Department of Materials Science and Engineering at University of Maryland since July 2019. He was a Program Director at ARPA-E from 2014 to 2017 and was a Professor at Ohio State from 2008 to 2014 and also from 2017-2019. Before joining Ohio State, Dr. Zhao was a materials scientist at GE Global Research Center for 12 years (1995-2007). Zhao holds 49 US issued patents and was the 2001 winner of the prestigious Hull Award from GE. Dr. Zhao is a Fellow of both ASM and MRS, and received the 2021 TMS William Hume-Rothery Award that “is presented annually to recognize a scientific leader for exceptional scholarly contributions to the science of alloys” by the Minerals, Metals and Materials Society (TMS). A three-day symposium was held in his honor during the 150th TMS Annual Meeting in March 2021. Zhao served on the Subcommittee on the Materials Genome Initiative (MGI) of the White House Office of Science and Technology Policy (OSTP) from 2014 to 2017, and on the Board of Trustees of ASM International for the 2019-2022 term.

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