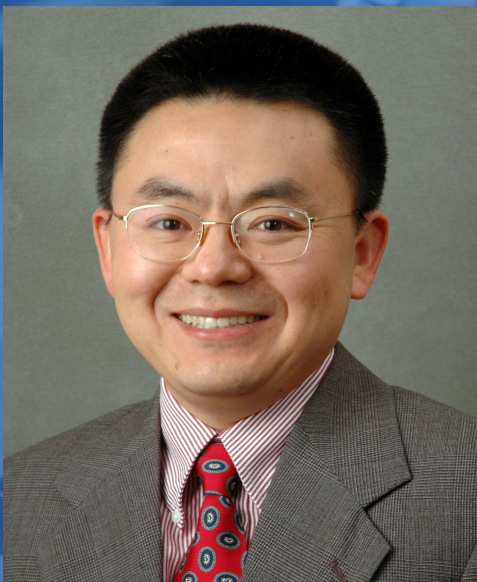


FALL 2019 COLLOQUIUM SPEAKER

High-Throughput Methodologies for Accelerated Alloy Design

This talk will review some recent advances in 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 newly developed forward-simulation analysis allows accurate measurement of impurity (dilute) diffusion coefficients from regular diffusion couple profiles without using isotope tracer experiments. The impurity diffusion coefficients together with interdiffusion coefficients are essential to the establishment of diffusion (mobility) databases for modeling the creep properties of materials and precipitation processes. 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.

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OCT. 30, 2019 | WINSTON CHUNG HALL 205/206 | 1 PM - 2 PM



Dr. Ji-Cheng "JC" Zhao

Minta Martin Professor of Engineering
and Chair, Department of Materials
Science and Engineering, University of
Maryland, College Park

Dr. Ji-Cheng "JC" Zhao joined the University of Maryland (UMD) on July 1, 2019 as the new Chair of the Department of Materials Science and Engineering (MSE). He arrived from The Ohio State University (OSU) where he served as an MSE Professor for about a decade and Associate Chair for about four years. Prior to that, Zhao was a materials scientist and project leader at GE Global Research in Schenectady, New York for 12 years (1995-2007). From 2014 - 2017, he took a leave from OSU to serve as a Program Director at the Advanced Research Projects Agency-Energy (ARPA-E). Dr. Zhao is a Fellow of ASM International and the Materials Research Society (MRS). His research focuses on high-throughput methodologies, determination of phase diagrams and other materials properties, computational thermodynamics, and design of advanced alloys and coatings. Zhao also pioneered the development of a diffusion-multiple approach and co-developed a few materials property microscopy tools for accelerated materials discovery and development. The invention of ultrafast laser materials property microscopy by the Zhao-Cahill team was a finalist for the 2018 Berthold Leibinger Innovationspreis. Zhao holds 48 issued US patents and was the 2001 winner of the prestigious Hull Award from GE Global Research. An alloy he co-invented is widely used in GE gas turbines. Dr. Zhao serves on the Board of Trustees of ASM International for the 2019-2021 term.

Please visit the MSE website for the 2019/20 Speaker Lineup