

CAS Associates and Fellows Noonhour Presentations

Bring your lunch for a noonhour exploration of some of the best scholarship produced at the University of Illinois.

12:00 Noon

Music Room

Levis Faculty Center, Suite 200
919 West Illinois Street, Urbana
University of Illinois at Urbana-Champaign

Free and open to the public.
cas.illinois.edu

TUESDAY, FEBRUARY 5, 2019

Dallas R. Trinkle

Department of Materials Science and Engineering,
Associate 2017-18

A Variational Principle for Mass Transport Calculations



Mass transport in solids, where different chemical species diffuse in a material due to random motion with or without a driving force, is a fundamental kinetic process for a wide variety of materials

problems. Professor Trinkle will present an alternative derivation of the transport coefficients, and show that it can be recast as a variational problem, where the true transport coefficients are minimal against variations in state position. These new developments will lead to significant new modeling capabilities with unprecedented accuracy and computational efficiency to computationally predict mass transport, capable of impacting the development of advanced alloys, battery materials, control of corrosion, and new processing methods.