



**2024-2025 CHARLES S. BARRETT SILVER MEDAL and LECTURE**  
**Presented by the Rocky Mountain Chapter of ASM International**

ASM Rocky Mountain leaders and sustaining members kindly invite you to join us for an evening of celebrating exemplary work in the fields of metallurgy and materials science. In 1984 this award was established to honor Dr. Charles S. Barrett, a long-time member of the Rocky Mountain ASM Chapter and a pioneer in the study of the structure of metals and the application of x-ray diffraction techniques. Please join us for the 2024 - 2025 Charles S. Barrett Silver Medal and Lecture as we recognize Professor Chris Schuh.

**Date:** Thursday April 3rd, 2025

**Location:** Green Center on the Colorado School of Mines Campus (924 16th St, Golden, CO 80401)

**Check-in Time:** 6:00 pm - 6:30 pm

**Buffett dinner:** 6:30 pm (Friedhoff Hall)

**Program:** To begin after dinner (Metals Hall)

**Cost:** Professionals - \$30 Students - free\* (\*supported by Mines MME Department)

**Registration:** Please RSVP using this [Google Doc Link](#)

**Questions:** If you have any questions, please contact us as [asmrockymountain@gmail.com](mailto:asmrockymountain@gmail.com)

*Recipient:*

**Prof. Chris Schuh**

**Dean, Robert R. McCormick School of  
Engineering and Applied Science  
Northwestern University**

*Lecture:*

**“The Coming Age of Computationally  
Designed Grain Boundary Chemistry”**



Learn more about Prof. Schuh and his research here, <https://schuh.northwestern.edu/>

**ABSTRACT:** We have known for many decades that grain boundaries (GBs) not only affect, but often dominate, the properties of polycrystals. And yet, our understanding of structure-chemistry-property connections for GBs has largely focused on individual cases, specific alloys, and certain high-symmetry boundaries. Through that focused effort, GB science has come a long way in its ability to explain specific observations. The premise of this talk, however, is that we are now entering the age of GB design, in which the tools of computation and data science allow us, for the first time, to rigorously address the “inverse problem”: designing polycrystalline materials from a blank slate to achieve GB networks with desired structures and properties. The key to this paradigm shift is the ability to treat all the diverse atomic environments in the GB network as a quantifiable spectrum, producing a so-called “spectral model” connecting GB structure, chemistry, and properties. This talk will review what is now a complete first draft of the GB spectral model for GB chemistry in metal alloys, including all the thermodynamic elements needed to make predictions of GB configuration and energetics across the full span of an alloy phase diagram. Applications to experiments, to materials design, and to the commercialization of new alloys will be discussed.

**BIOGRAPHY:** Christopher A. Schuh is the dean of the Robert R. McCormick School of Engineering and Applied Science at Northwestern University where he is also John G. Searle Professor of Materials Science and Engineering. Schuh was previously POSCO Professor of Materials Science and Engineering at the Massachusetts Institute of Technology, where he served as Head of the Department of Materials Science and Engineering from 2011 to 2020. Schuh earned his BS at the University of Illinois at Urbana-Champaign and PhD from Northwestern. He is a member of the National Academy of Engineering and the National Academy of Inventors. Prof. Schuh has received numerous professional society awards including being recognized as the recipient of the 2024 Edward DeMille Campbell Memorial Lecture and being named an ASM Fellow. He is also a Coordinating Editor and Governor of Acta Materialia.

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