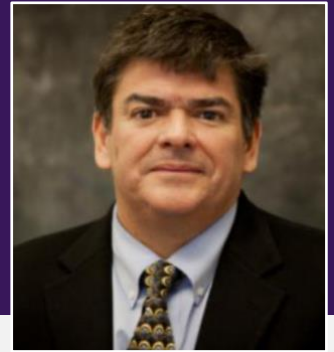


THE MATERIALS SCIENCE AND ENGINEERING DEPARTMENT  
SPRING COLLOQUIUM SERIES PRESENTS:

## Dow Lecture: Enrique J. Lavernia

Distinguished Professor of Department of Materials Science and  
Engineering

University of California, Irvine



### ***Strong and Ductile High-Entropy Alloys for Cryogenic to Elevated Temperature Applications***

The tunable properties of multi-principal element alloys, also commonly known as high-entropy alloys (HEAs), provide a remarkable opportunity for the development of superior materials for critical structural applications that involve extreme conditions. In this talk, an optimization approach for HEAs, at both low and high temperature ranges, will be described and related strengthening and deformation mechanisms will be discussed. Moreover, our latest work on the mechanical behavior and deformation of both FCC and BCC HEAs across a broad range of temperatures will be presented. In this lecture I will describe an alloy design strategy for super formability at ambient temperature and related mechanisms, in the case of BCC refractory HEAs. Finally, the influence of a heterogeneous microstructure on mechanical behavior of these HEAs, at both cryogenic and elevated temperatures, will be introduced.

**Dr. Enrique Lavernia** was elected as a Foreign Member of the Chinese Academy of Engineering in 2020. He also received the Acta Materialia Gold Medal in 2020. In 2019 Dr. Lavernia was awarded a Doctor of Science in Technology, honoris causa, by Aalto University, Helsinki, Finland. In 2018, he received the Distinguished Engineering Educator Award by the National Engineers' Council and in 2017, he became a member of the National Academy of Inventors. Dr. Lavernia was elected to become a Fellow of the National Academy of Inventors in November 2016. Also in 2016, he received the Alexander von Humboldt Foundation Research Award as well as the Leadership Award from the TMS Society. In 2015 he was inducted into the Hispanic Hall of Fame by the HEENAC Great Minds in STEM. In addition, he was appointed Distinguished Professor at UC Irvine. In 2014 he was awarded the TMS Fellows Award Class of 2014 by the Minerals, Metals and Materials Society. Elected to the National Academy of Engineering in 2013, Dr. Lavernia is also a fellow of the Minerals, Metals and Materials Society, the Materials Research Society, the American Society of Mechanical Engineers, the American Association for the Advancement of Science, and ASM International. He is recipient of the 2013 Edward DeMille Campbell Memorial Lectureship and the 2013 ASM International Gold Medal Award. Named Presidential Young Investigator by the National Science Foundation, Dr. Lavernia also received a Young Investigator Award from the Office of Naval Research. In 2011 he received the Hispanic Engineer National Achievement Award and the Society for the Advancement of Chicanos and Native Americans in Science Distinguished Scientist Award. Dr. Lavernia has published more than 600 journal and 200 conference publications and been awarded 11 patents on topics ranging from nano-materials to aluminum alloys.

**Tuesday, May 30 • 4 pm CT • Tech L211**

*In person only; no Zoom*

Reception and Refreshments at 5:00 PM CT in Willens Wing Atrium of Tech (2<sup>nd</sup> floor between B and C wings). The whole MSE Community is welcome to attend!

Questions? Contact [allison.macknick@northwestern.edu](mailto:allison.macknick@northwestern.edu) and [megan.ray@northwestern.edu](mailto:megan.ray@northwestern.edu)