



MATERIALS SCIENCE & ENGINEERING DISTINGUISHED SEMINAR SERIES



Prof. John R. Scully

Head of Materials Science and
Engineering Department

Co-director of the Center for
Electrochemical Science and
Engineering

University of Virginia

Friday

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11:00AM — 12:00PM

Zoom

[Meeting Room](#)

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The College of Graduate Studies

Corrosion and Passivation of Multi-Principal Element Alloys in Aqueous Solutions

Multi-principal element alloys (MPEAs) offer the possibility of considerable degrees of freedom in the choice of alloying elements to produce either single or multi-phase solid solution alloys. A wide range of material properties, sometimes unique, have been observed based on the alloying elements selected and microstructures developed. However, a structure, composition, and processing paradigm governing the corrosion properties of MPEAs has not yet emerged. The quest for superior corrosion properties requires understanding of the fate of each element during corrosion and its subsequent functions. Gaps in knowledge exist regarding the (a) specific functions of each element, (b) effects of elements in unusual combinations, and (c) possible formation of complex protective oxides which regulate corrosion and breakdown. These issues are discussed with the goal of accelerating the understanding of the corrosion behavior in this class of materials.

Biography: Prof. John R. Scully is the Charles Henderson Named Professor, Head of the Material Science and Engineering Department and the Co-director of the Center for Electrochemical Science and Engineering at the University of Virginia. Professor Scully's field of research is corrosion often focusing on circumstances where metallurgy and composition are important governing factors. His research and educational efforts integrate materials science, corrosion-electrochemistry and surface science. He combines a variety of complementary characterization methods and, also, collaborates with computational modelers to understand corrosion processes across a range of length and time scales. He is the Technical Editor in Chief of CORROSION, The Journal of Science and Engineering.