RESEARCH SEMINAR IN SPRING '23

Wednesday, January 25, 2023 from 12PM - 1 PM PST, RGL 215

Zoom link:
https://usc.zoom.us/j/95849028492

RVSP via Google Form link:
https://forms.gle/wLFwiaNMRXyYWoJQ6

RECYCLING DIESEL SOOT PARTICLES FOR USE AS ACTIVATED CARBON IN LITHIUM ION BATTERIES

Presented by **Stephen Cronin, Ph.D. in Physics**

ABSTRACT

The wide acceptance of the serious health effects associated with combustion-derived air pollutants has led to an extensive range of nanotoxicology studies of the environmental emissions from the combustion of fossil fuels. Particular matter (PM) is a major air pollutant, which has been linked to premature cardiovascular and respiratory deaths in metropolitan areas, as well as lung cancer. Since the recycling of these highly concentrated hazardous carcinogenic materials is not yet financially viable, tons of these air pollutants are released into air every day. The uncontrolled release of PM into the environment is the second largest contributor to human-induced climate warming, after carbon dioxide. Our study provides a viable pathway towards a sustainable energy environment by converting an abundant toxic pollutant into a valuable electrode material for Li-ion batteries. Our recent efforts to develop carbon-free combustion using ammonia fuels will also be discussed.

DR. STEPHEN CRONIN received his B.S. in physics from NYU and PhD in physics from MIT in 2002 under supervision of Professor Mildred Dresselhaus followed by post-Doctoral research in Professor Michael Tinkham's lab at Harvard University. Professor Cronin joined the Ming Hsieh Department of Electrical Engineering-Electrophysics at the University of Southern California in August 2005 and has earned several awards for his research accomplishments, including the NSF CAREER Award in 2009, the AFOSR Young Investigator Award in 2008, the Charles Lee Powell Foundation Research Award in 2006, and the James H. Zumberge Research and Innovation Award. His research spans a broad range of interrelated topics in physics, chemistry, materials science and nanotechnology.