School of Molecular Sciences
Arizona State University

SMS Fall 2022 O'Keeffe Lecture

Friday Oct 14 | 2:30pm | PSF-166

Finding New Materials – A Chemical Perspective

Finding new materials that are of interest to materials physicists is, in my view, best done by using the insights and tools of solid-state chemistry to direct exploratory synthesis towards finding materials with potentially new electronic and magnetic properties. Unfortunately, however, most solid-state chemists do not feel comfortable with the language of physics, and on the other side, materials physicists do not in general understand the complexities of chemistry and its language. I intend in this talk to describe some of the specific examples of new materials that we have found in recent years with a physics-chemistry connection in mind, with a particular emphasis on the ones we found on doing syntheses at moderate pressures. Theoretical physicists, who I personally find to be lots of fun, seem even further in research culture from "bench chemists", making connections with them even harder - although it is the theorists who most often live in gardens of untested ideas. Some of the materials described in this talk you may find interesting and others not so interesting. The main idea is to keep trying, propose and find new materials to see what sticks, welcome collaborations, and never give up.

Robert J. Cava, Ph.D.

Russell Wellman Moore, Professor of Chemistry, Princeton University

Prof. Cava received a Ph.D. in ceramics from MIT in 1978. After a one-year National Research Council postdoctoral fellowship with the National Bureau of Standards, he joined Bell Labs in 1979 and was made distinguished member of the technical staff in 1985. He has been a member of the chemistry faculty and the Materials Institute at Princeton since 1996. His specific research interests lie in the structure, characterization, and synthesis of new intermetallic and transition-metal oxide compounds with unusual electronic and magnetic properties. He also studies high-temperature superconductors, transparent conducting materials, dielectrics, and thermoelectrics, working to improve understanding of the quantum-level physics that gives these materials their special properties.

**ZOOM option available: https://asu.zoom.us/j/87081218152*