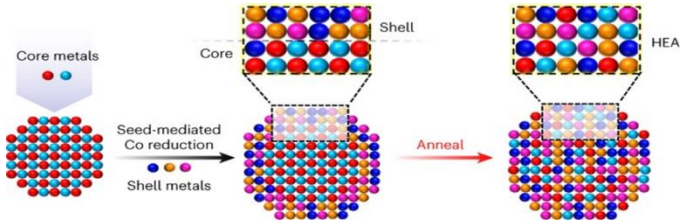
School of Molecular Sciences
Arizona State University

SMS Fall 2024 O'Keeffe Lecture Seminar

September 27, 2024 | 3pm | Biodesign Auditorium

"Multimetallic Nanocrystals by Design"



The importance of molecular structure to molecular function is a central tenet in modern chemistry and materials science, with the lock-and-key model of enzyme activation representing a classic example. Likewise, the function of inorganic nanomaterials depends on structural parameters that include crystallite size and shape as well as architecture (e.g., hollow versus solid). To realize the function of such materials, these structural parameters must be precisely controlled, and the Skrabalak group is creating the synthetic toolkit to achieve such advanced nanostructures. This seminar will highlight the use of seed-mediated co-reduction as a route to shape-controlled alloy nanoparticles including high entropy alloy materials as well as hierarchical nanocrystals. These synthetic advances, in turn, are enabling previously unimagined nanostructures to be accessed with new functions for applications in chemical sensing and electrocatalysis. Ultimately, understanding the relationship between nanostructure form and function will allow this relationship to be inverted to achieve materials by design. Still, the synthetic toolkit must exist to realize this vision and achieve desired nanomaterials on demand.

Sara Skrabalak, PhD

Professor & Robert Marjorie Mann Chair

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Department of Chemistry

Sara Skrabalak received her B.A. in chemistry from Washington University in St. Louis in 2002 where she conducted research with Professor William E. Buhro. She then moved to the University of Illinois at Urbana-Champaign where she completed her Ph.D. in chemistry in fall of 2006 under the tutelage of Professor Kenneth S. Suslick. After conducting postdoctoral research at the University of Washington – Seattle with Professors Younan Xia and Xingde Li, she began on the faculty at Indiana University – Bloomington in 2008. She is currently a James H. Rudy Professor at Indiana University. She was appointed Editor-in-Chief for the ACS journals *Chemistry of Materials* and *ACS Materials Letters* in 2020.

She is a recipient of both NSF CAREER and DOE Early Career Awards. She is a 2012 Research Corporation Cottrell Scholar, a 2013 Sloan Research Fellow, a 2014 Camille Dreyfus Teacher-Scholar and 2017 Guggenheim and Fulbright Fellows. In 2014, she received the ACS Award in Pure Chemistry and in 2017 was the recipient of the Frontiers in Research Excellence & Discovery Award from Research Corporation. She served as an Associate Editor for the RSC journals *Nanoscale* from 2017-2020 and *Nanoscale Horizons* from 2018-2020. Her group is developing new synthetic methods to solid materials with defined shapes and architecture then studying the properties of the materials as they are applied to applications in energy science, chemical sensing, and secured electronics.

*ZOOM Available: https://asu.zoom.us/j/85024524438