

SMS Spring 2024 Seminar Series

Friday April 12 | 3pm | ZOOM

Engineering Iron Enzymes to Reprogram Biological Signaling and Chemical Catalysis

From respiration to nitrogen fixation, iron containing enzymes drive key biological processes in all forms of life. Bhagi-Damodaran lab seeks to uncover the structural and mechanistic basis of iron enzyme function, and design small-molecule and computational protein design approaches to engineer their biological activity. Such enzyme engineering studies, while fundamentally relevant to the fields of biological and inorganic chemistry, are poised to have significant implications on biological redox signaling and chemical catalysis. In this talk, Prof. Bhagi-Damodaran will discuss her lab's research towards (A) reprogramming heme and non-heme iron enzyme driven oxygen signaling pathways in human cells and microbes, and (B) developing non-heme iron enzyme based bio-catalysts that enable direct and modular C-H halogenation reactions. The research talk will be of broad interests to Biological, Inorganic, Computational, and Inorganic Chemists.

Ambika Bhagi-Damodaran

Assistant Professor, University of Minnesota

Ambika Bhagi-Damodaran is an Assistant Professor of Chemistry at the University of Minnesota, Twin Cities. Ambika completed her Ph.D. at the University of Illinois, Urbana-Champaign in 2016 focusing on structure-function relations of metalloenzymes involved in respiration and denitrification processes. Ambika's postdoctoral work at University of California, San Francisco focused on understanding structural basis of protein-protein interactions in an enzymatic cancer drug target. In 2018, Ambika started her independent career at the University of Minnesota. She leads the Bhagi-Damodaran lab which aims to change the landscape of metalloenzymes towards sustainable catalysis and new therapeutics. Throughout her career, Ambika has received numerous awards. Most notable amongst them are the Young Investigator Award from American Chemical Society, NIH Ruth L. Kirschstein postdoctoral fellowship, Faculty for the Future award from Schlumberger foundation, NIH MIRA award, NSF CAREER Award, 3M NTF Award, Cottrell Scholar Award, McKnight Land-Grant Professorship, and ACS Jon Sessler Fellowship.



Ambika grew up in India and is the first from her family to complete a four-year undergraduate program. She came to the US to pursue Ph.D. in Chemistry and was so fascinated by the wonders of biology and chemistry that she decided to stay in the US and pursue research at the forefront of biological and inorganic chemistry. If not a chemistry faculty, Ambika would have pursued a career in dance and theater. She was part of a Bollywood dance team during her graduate school. In her "free" time, Ambika likes watching sitcoms and cooking. Ambika is mom of a six year old, and her best science ideas come while spending time with her daughter and partner.