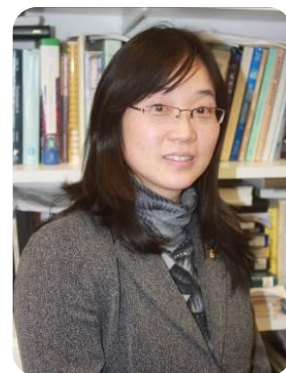


Next-Generation Real-Time Chemical and Biosensors: Meeting Needs for 21st-Century

Dr. Xiangqun Zeng

Professor of Chemistry
University of Missouri-Columbia



**Chemistry
Seminar on
Biosensors**

**Monday
Oct 5 at 4 pm
in 126
Schrenk**

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Abstract: Sensor technologies are entering a new era, enabling real-time, intelligence, and increasingly autonomous measurement systems that are reshaping health care, environmental stewardship, national security, energy, food safety, and advanced manufacturing. Yet, despite many advances, real-time chemical and biochemical sensing remains far less developed and widely available. One of the major research activities is to develop chemical sensor technologies for continuous real-time chemical and biosensing for extended periods. Chemical sensors with real-time and continuous sensing capability will provide immediate feedback of chemical and biological environment just like our own five senses of taste, sight, hearing, touch and smell. This presentation will discuss our strategies to develop robust and multifunctional chemical and biointerfaces that enable continuous chemical and biosensing. It will include a few topics: (1) general theory of chemical sensors; (2) basic characteristics and applications of chemical sensors; (3) design of multifunctional chemical and biointerfaces in our chemical and biosensing strategy to achieve in situ and real time detection of important chemical and bioanalytes with high temporal and/or spatial resolution. Our fundamental and applied research at solid/liquid/gas interfaces allows us to address many chemical sensors challenges, especially miniaturized, real-time and continuous sensing that are essential for their integration with engineering advancements such as portable electronics, networked sensing and next-generation monolithic implementation of autonomous chemical sensors with the performance, cost, power, and operational lifetime characteristics to suit a broad range of applications in health, environment and energy applications.

About the speaker: Dr. Xiangqun Zeng is currently a Professor of Chemistry with joint appointment as a Professor of Chemical and Biomedical Engineering at University of Missouri Columbia (<https://chemistry.missouri.edu/people/zeng>). She is also an emeritus distinguished professor at Oakland University (www.oakland.edu/~zeng). She obtained Ph.D. in Electrochemistry and Surface Chemistry at State Univ. of New York at Buffalo in 1997. Her research interests lie at materials and interface science. Currently, her lab studies fundamental interfacial phenomena at electrode interfaces for the development of next generation detection technologies, i.e., in vitro, ex vivo, in vivo, in situ detection and quantification of molecules and species of chemical and biological significance with high sensitivity and specificity at high temporal and/or spatial resolution for a broad range of applications including health, environment and energy applications. She has over 10 patents, published over 120 peer review publications and mentored over 80 students/postdocs/visiting scholars including a Fulbright scholar. She was selected and featured in a book "Women who changed the world The journey and joy" in 2015.