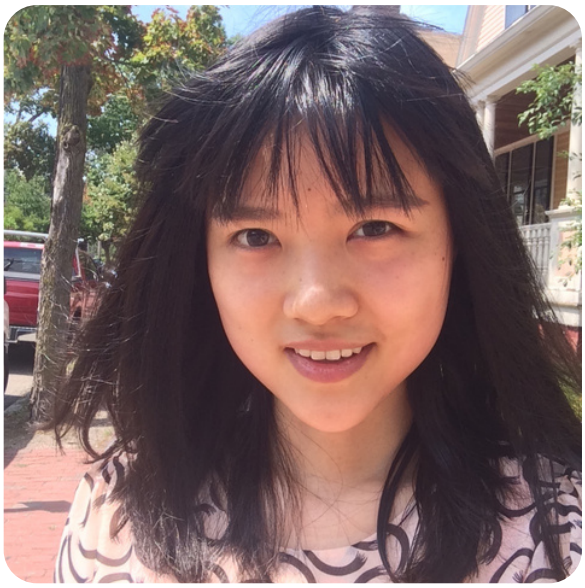
Penn Engineering
University of Pennsylvania
Chemical and Biomolecular Engineering

Spring 2024 Seminar Series

# ANQI ZHANG

## "Minimally Invasive Neuroelectronics"



Wednesday
February 21, 2024
3:30 PM
Wu and Chen Auditorium
Levine Hall

Postdoctoral Scholar
Chemical Engineering and Bioengineering
Stanford University

**ABSTRACT**

Neuroelectronic interfaces have enabled significant advances in both fundamental neuroscience research and the treatment of neurological disorders. However, current neuroelectronic devices have a clear trade-off between invasiveness and spatial resolution, and are unable to achieve seamless integration into the nervous system with cell-type specificity. In this talk, I will first introduce an ultra-small and flexible endovascular neural probe that can be implanted into sub-100-micron scale blood vessels in the brains of rodents without damaging the brain or vasculature. Second, I will describe a biochemically functionalized electronic probe that enables cell type- and neuron subtype-specific targeting and recording in the brain. Third, I will present a bottom-up approach for constructing neural interfaces from the cell surface, where neurons are genetically programmed to express membrane-localized enzymes that catalyze in situ assembly of functional materials. Finally, I will discuss future advances toward clinical translation of minimally invasive neuroelectronic interfaces capable of long-term monitoring and treatment of neurological disorders.

**BIO**

Dr. Anqi Zhang is currently an American Heart Association (AHA) postdoctoral fellow advised by Professor Karl Deisseroth in the Department of Bioengineering and Professor Zhenan Bao in the Department of Chemical Engineering at Stanford University. She received her PhD degree in Chemistry under the supervision of Professor Charles M. Lieber in the Department of Chemistry and Chemical Biology at Harvard University in 2020, and her BS degree in Materials Chemistry at Fudan University in 2014. She is interested in combining novel electronic, chemical, and genetic tools to monitor and modulate neural circuits in a minimally invasive manner.