



## “Working towards robust, portable, point-of-need diagnostics using silicon photonic biosensors, microfluidics design, and immunoassay development”

Date & Time: Wednesday, August 21 | 1:00PM - 2:00PM PT  
Hybrid: LSC3 & Zoom

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Diagnostics at the point-of-need remain an important goal in the post-pandemic world. In applications like infectious disease testing, at-home hormone monitoring for women’s health, and at-home monitoring of a suite of other conditions, the availability of portable, rapid, accurate, quantitative, data-rich tests would help to reduce disease transmission and support healthcare decision-making. One promising technology to meet this open need is based on silicon photonic (SiP) integrated circuits. This technology leverages semiconductor manufacturing economies of scale and enables development of miniaturized compact biosensing devices with multiple sensors integrated within a single chip, with each sensor having its own chemistry for multiplex detection. In this presentation, we will describe our team’s recent interdisciplinary work towards point-of-need diagnostics using silicon photonic sensors. We will describe approaches for microfluidic integration, sample preparation, and sensor functionalization for specific detection (including covalent functionalization approaches using polydopamine and silane-mediated bioreceptor immobilization). We will also describe our team’s development of immunoassays and signal amplification approaches for silicon photonic sensors. Through this work, we hope to demonstrate how silicon photonic biosensors can address important unmet needs in decentralized diagnostics.

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