



The University of Arizona

Chemical and Environmental Engineering Department – Seminar

®“Improving Access to Blood-Based Diagnostics with Paper-Based Microfluidic Devices”

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Monday, November 30, 2020 – 3:00-3:50 PM

Zoom: <https://arizona.zoom.us/j/99357350715>

Stick around for more Q&A after the seminar



ABSTRACT

Sample processing is a widely acknowledged but underappreciated challenge in analytical sciences. Significant resources—including time, space, and instrumentation—are often required to concentrate, extract, or purify target species from complex matrices like blood prior to performing assays. While a well-equipped laboratory with trained personnel can be prepared to handle these challenges, gaps in analytical capabilities exist (i) when sampling occurs in remote locations and requires transport to the laboratory or (ii) when analysis must be performed outside of the laboratory. In this seminar, we will discuss how paper-based microfluidic devices can be applied to solve these challenges. When specimen transport is required to enable centralized testing of samples collected remotely, we will show how paper devices can permit quantitative testing via metering of applied samples and on-card sample processing. When specimens must be tested on-site, away from a standard infrastructure, we will show how paper devices can be designed to permit processing of blood and detection of target analytes. These examples highlight applications of paper-based microfluidics in point-of-care diagnostics and establish new opportunities for innovation and real-world impact.

BIOSKETCH

Charlie earned his BS from Le Moyne College in 2003, followed by an MS (2006) and PhD (2008) from the University of Rochester in the laboratory of Prof. Benjamin Miller. He was then a postdoctoral research assistant in the laboratory of Prof. George Whitesides at Harvard University from 2008–2011. Prior to joining the faculty at Tufts in 2013, where he is now an Associate Professor, he was a senior scientist at Diagnostics For All where he focused on the intersection between the development of low-cost prototypes and their translation into field settings.