

DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
SEMINAR SERIES
SPRING 2018

DATE: THURSDAY, JANUARY 18, 2018

WHERE: TIERNAN HALL 373

TIME: 10:00AM

GUEST SPEAKER

XiuJun (James) Li,
Ph.D., Associate Professor
Department of Chemistry
Border Biomedical Research Center (BBRC)
Biomedical Engineering (BME),
Environmental Science & Engineering (ESE), Material Science & Engineering (MASE),
University of Texas
El Paso, Texas

TOPIC

Microfluidic Lab-on-a-Chip and nanotechnology for biochemical & environmental analysis

ABSTRACT

Recently, fast growing microfluidic lab-on-a-chip and nanotechnology have caused significant impacts on modern analytical chemistry. Herein, I will highlight several paper/polymer hybrid microfluidic devices and nano-biosensing technology that we recently developed for biochemical and environmental analysis, with a focus on low-cost disease diagnosis especially for resource-poor settings. Different chip substrates have different advantages as well as limitations. Paper/polymer hybrid microfluidic devices can draw more benefits from both substrates. Integrated graphene oxide nano-biosensors, on-chip DNA amplification and immunoassays, and nanoparticle-mediated photothermal immunosensing will also be discussed toward their applications in point-of-care infectious disease diagnosis and cancer biomarker detection. For instance, the limit of detection of a few DNA copies of multiple meningitis-causing pathogens have been readily achieved without using any specialized instruments; cancer biomarkers such as prostate-specific antigen (PSA) can be quantified simply by a thermometer.

Committee members:

Dr. Nancy Jackson, Dr. Mengyan Li, Dr. Som Mitra