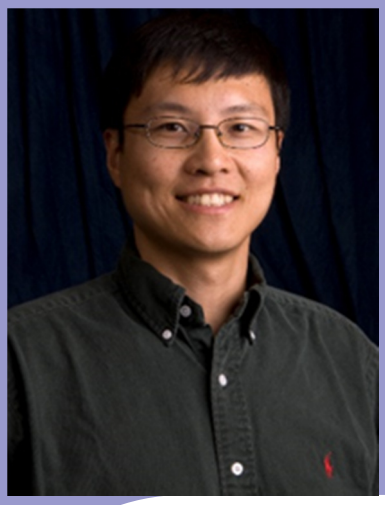

PROFESSOR HONGRUI JIANG

UW-Madison

Electrical & Computer Engineering

Controlled Microfluidic Interfaces for Microoptics and Microsensing

Surface tension profoundly affects fluid behavior at the microscale. Through careful engineering, controlled liquid-liquid or liquid-gas interfaces at the microscale can be formed and used in many interesting applications. In this talk, I will present our work on applying such interfaces to microoptics and microsensing. I will first introduce a few types of microlenses and microlens arrays, including "smart" and adaptive liquid microlenses actuated by stimuli-responsive hydrogels, liquid microlenses *in situ* formed within microfluidic channels via pneumatic control of droplets, and liquid microlenses based on electrowetting and dielectric force. I will subsequently give a few examples of these microlenses in biomedical applications, such as endoscopy, laparoscopy, accommodative contact lens for presbyopia correction, and microscopy. In the next topic, I will discuss about a few microsensing techniques including chemical and biological sensing at liquid crystals interfacing either air or aqueous solutions, collection of gaseous samples and aerosols through air-liquid microfludic interfaces, and debubbler for microfluidics.

Thursday

Jan. 28, 2016

12:15 pm

Room 1315

Chemistry Bldg.