Weekly CEAFM Seminar: Spring 2016

JOHNS HOPKINS
Center for Environmental & Applied Fluid Mechanics

Date: **Friday, April 29, 2016**

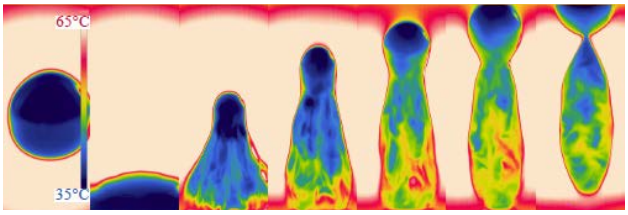
Time: 11:00 AM

Location: Gilman Hall # 50

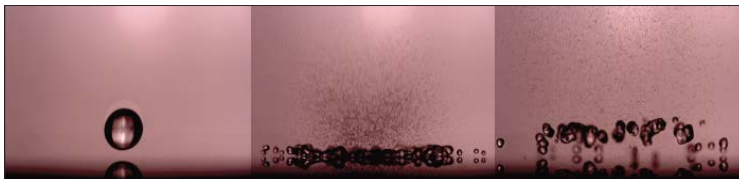
Speaker: **Prof. Julie Crockett** (Brigham Young University)

Title: ***"Bouncing and Boiling Droplets on Slippery Superhydrophobic Surfaces"***

Abstract



Superhydrophobic surfaces are everywhere around us. From leaves which repel water to keep pooling water from breaking their stems, to beetles which use their combined water repelling/attracting back to collect drinking water. For decades researchers have worked to recreate these highly water-repellant surfaces termed superhydrophobic. They are comprised of a combination of nano and/or micro structures of a natively (or coated) hydrophobic surface such that water sits atop the structures and a cavity of air exists between the structures. Such surfaces can have significant impact on self-cleaning surface design, enhanced condensation processes, and anti-icing mechanisms, to name a few. In our lab we create these surfaces through a micro-etching process resulting in well-organized micron scale rib or post structures smaller than the diameter of a human hair. I will introduce the fascinating fluid dynamics associated with these surfaces including droplet beading and rolling. Additionally I explore the accompanying heat transfer dynamics to both static and impinging water droplets on these surfaces. The results are intriguing and show significantly different dynamics both below boiling and within the usual nucleate boiling regime as the Leidenfrost point is approached.



Bio

Julie Crockett is an Associate Professor in the Department of Mechanical Engineering at Brigham Young University. She received her Bachelors from the University of Denver in 2002, her MS (2004) and PhD (2007) from the University of California, San Diego. Her research areas are based in fundamental fluid dynamics and include stratified flow dynamics, specifically internal wave energy propagation, and hydrodynamic and thermal properties of micro-structured substrates.