Center for Fluid Mechanics, Division of Applied Mathematics
Fluids and Thermal Systems, School of Engineering
Joint Seminar Series

TUESDAY – DECEMBER 4, 2012
3:00pm
Barus & Holley, Room 190
Refreshments will be served in the lobby of Barus & Holley following the seminar

Michelle Driscoll
University of Chicago
Chicago, IL

Viscous Splashing: Where is the Air?

A drop impacting on a solid surface with sufficient velocity will splash. Despite over 100 years of study, this phenomena is still poorly understood. Surprisingly, it has been shown that the ambient air pressure is a crucial control parameter in liquid splashing - lowering the pressure can completely suppress a splash. However, the mechanism underlying how the surrounding gas affects splashing remains unknown. One suggestion has been that upon impact the liquid spreads outwards over a thin layer of gas that has been trapped beneath it at the instant of impact. In a sufficiently viscous liquid, splashing occurs at the edge of the drop several tenths of a millisecond after impact. This large separation between impact and splashing, in both time and space, creates an ideal system in which to test whether the initial air pocket remains to influence splashing dynamics in viscous liquids. We use high-speed interference imaging to measure the air beneath all regions of a spreading viscous drop.

Host: Shreyas Mandre (Shreyas_Mandre@brown.edu)