



JOHNS HOPKINS  
Center for Environmental  
& Applied Fluid Mechanics

## Weekly CEAFM Seminar: Spring 2014

Date: **Friday, March 7, 2014**

Time: 11:00 AM

Location: Gilman # 50 (Marjorie M. Fisher Hall)

Speaker: **Dr. Sumedh R. Risbud** (Massachusetts Institute of Technology)

Title: ***"Motion of a suspended particle around an obstacle at zero Reynolds number"***

### Abstract

The effect of interactions experienced by a suspended particle and their influence on its trajectory around an obstacle in its path is investigated to gain an understanding of the motion of suspensions in porous media. Specifically, we have focused on a single spherical particle navigating around an obstacle of circular cross-section (a sphere or a cylinder). This can be thought of as the "dilute" limit of the problem under consideration. We will demonstrate that in this dilute limit, the distribution of particles around the obstacle is spherically symmetric. Furthermore, we show that the minimum separation with respect to the obstacle attained by the particle depends exponentially on the offset between the particle trajectory far upstream with respect to the obstacle and the obstacle centre. Finally, a model for effective surface roughness will be presented in terms of the aforementioned minimum separation and the net lateral displacement introduced in the particle trajectory downstream with respect to the obstacle.

### Winner of the 2013 Corrsin-Kovaszny Outstanding Paper Award

Dr. Sumedh R. Risbud is the 2013 Winner of the Corrsin-Kovaszny Outstanding Paper Award for his paper: *"Trajectory and distribution of suspended non-Brownian particles moving past a fixed spherical or cylindrical obstacle"* and published in the Journal of Fluid Mechanics with German Drazer. For more information, visit:

<http://www.jhu.edu/~ceafm/corrsin-kovaszny-award/>