JOHNS HOPKINS
Center for Environmental & Applied Fluid Mechanics

Weekly CEAFM Seminar: Fall 2013

Date: **Friday, November 1, 2013**

Time: 11:00 AM

Location: Gilman 50 (Marjorie M. Fisher Room)

Speaker: **Dr. Arezoo Ardekani** (University of Notre Dame)

Title: ***"Transport of Particles, Drops, and Small Organisms in Density Stratified Fluids"***

Abstract

Many aquatic environments are characterized by regions where water density varies over depth, often due to temperature or salinity gradients. These 'pycnoclines' are associated with intense biological activity and can affect carbon fluxes by slowing the descent of particles. Despite this, the fundamental fluid dynamics of settling and swimming in a stratified fluid have remained largely unexplored. I take first strides into this area by rationalizing the effects of stratification by conducting a broad, in-depth investigation on fundamental hydrodynamics of vertical migration of small organisms, settling particles, and rising drops. These results demonstrate an unexpected effect of buoyancy, potentially affecting a broad range of abundant processes at pycnoclines in oceans and lakes.

Bio

Dr. Ardekani is currently an assistant professor in the department of aerospace and mechanical engineering at the University of Notre Dame and is the director of the Complex Fluids and Multiphase Flows Laboratory. Her research interests are fluid dynamics, complex fluids, biofluids, micro/nanofluids, and multiphase flows that are relevant to biomedical devices, energy, and environmental applications. Prior to joining Notre Dame, she was a Shapiro Postdoctoral Fellow at the Massachusetts Institute of Technology. She graduated from University of California Irvine with an M.S. and Ph.D. in mechanical and aerospace engineering. She received the Society of Women Engineers and Amelia Earhart awards in 2007, Schlumberger Foundation faculty for the future grant in 2009, and NSF CAREER award in 2012.