



JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Friday, November 30, 2018
3:00 PM, 132 Gilman Hall

***"Nonspherical Particles in Turbulent Flow:
Influence of Shape, Size, and Density Distribution"***

Presented by Prof. Margaret Byron
Pennsylvania State University

The complex interactions between suspended particles and turbulent fluid flow are scale-dependent: very small particles are nearly-passive tracers, and very large particles are relatively unaffected by surrounding turbulent structures. Intermediate-size particles are situated in the midst of the range of characteristic turbulent length and time scales, and therefore experience nonlinear forcing. Furthermore, many particles of interest are nonspherical and nonuniform in composition, increasing the complexity of their interactions with the surrounding flow. Many small aquatic animals face the same spatiotemporal heterogeneity, and must navigate through a stochastic environment to meet the challenges of daily life. This talk will explore the rotational and translational kinematics of non-spherical particles of small and intermediate size which are suspended in homogeneous isotropic turbulence, as well as direct measurements of particle slip velocity and its apparent anisotropy. Further preliminary results on nonspherical particles of nonuniform mass density will also be discussed, as well as the implications of these results for living organisms which inhabit turbulent environments.