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

PLEASE NOTE CHANGE IN ROOM FOR THIS SEMINAR

TUESDAY – APRIL 17, 2012
4:00pm
Barus & Holley, Room 158
Refreshments will be served in the Lobby of Barus & Holley following the seminar

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Microscopic Filter Feeders near Boundaries: Feeding Restrictions and Strategies Due to Eddies

Microscopic sessile filter feeders are an important part of aquatic ecosystems and form a vital link in the transfer of carbon in marine food webs. This link is critical in cleaning up sewage, oil, and other contaminants from oceans and lakes. These filter feeders live attached to boundaries, consume bacteria and small detritus, and are in turn eaten by larger organisms. Such filter feeders survive by creating a feeding current that draws fluid towards them, and from which they filter their food of interest. I will discuss theory, simulations, and experiments that show that eddies form near these feeders as a result of fluid forcing near a boundary. The extent of these eddies, and their effect on the nutrient uptake of the organism depend on the angle of fluid forcing relative to the boundary. I will also show calculations that reveal that feeding at an angle greatly increases the feeding efficiency of model filter feeders for foods with varying diffusivities. I will also discuss experiments that show cultured filter feeders feeding at an angle to the substrate.