

PLEASE NOTE THE CHANGE IN DAY AND TIME FOR THIS SEMINAR

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

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Tohoku University
Japan**

Transport Phenomena in Suspensions of Swimming Microorganisms

Microorganisms play a vital role in many biological and engineering phenomena. Some recent research efforts have demonstrated the importance of biomechanics in understanding certain aspects of microorganism behavior such as locomotion and collective motions of cells. In this talk, we first introduce some of our recent studies on interactions between a pair of swimming microorganisms, as a two-body interaction is the simplest many-body interaction. We show that interactions between two nearby swimming microorganisms are described well by mathematical models. Then, collective motions formed by a group of swimming microorganisms are discussed. We show that some collective motions of microorganisms, such as coherent structures of bacterial suspensions, are satisfactorily explained by fluid dynamics. Lastly, we discuss how macroscopic suspension properties are changed by the microscopic characteristics of the cell suspension. The fundamental knowledge we present will be useful in obtaining a better understanding of complex behaviors of swimming microorganisms.

**THURSDAY – NOVEMBER 17, 2011
2:30pm
Barus & Holley, Room 190**