

AEROSPACE & MECHANICAL ENGINEERING



2009 COLLOQUIUM 2010
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INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365, ENGR. BLDG.
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

- SPEAKER:** **Dr. Adam Abate**
Department of Physics and Astronomy/SEAS
Harvard University
Cambridge, Massachusetts
- TOPIC:** **STUDIES OF COMPLEX SYSTEMS
WITH EMULSION MICROFLUIDICS**
- DATE:** Tuesday, January 19, 2010
- TIME:** 3:30 p.m.
- PLACE:** 138 DeBartolo Hall

ABSTRACT

Emulsions consist of drops surrounded by a carrier liquid. They are usually made in bulk by shaking or shearing two immiscible liquids, with surfactants present; however, this creates drops over a wide range of sizes, which are of limited usefulness. I have developed microfluidic methods to create emulsions consisting of drops of exactly one size. These drops are useful for creating micro-particles and micro-capsules, which can be used to encapsulate active materials, such as drugs, nutrients, and pesticides. The drops can also be used as tiny "test tubes" for chemical and biological reactions. This allows reactions to be performed at thousands per second, while using minuscule amounts of total reagent. I will describe how I am using this approach for directed evolution, genetic sequencing, and the study of microbial populations.

NOTE: *If you are interested in meeting individually with
Dr. Abate, please contact Evelyn at 631-5431*