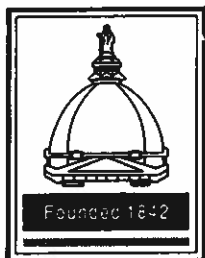


# AEROSPACE & MECHANICAL ENGINEERING



**2011 COLLOQUIUM 2012  
SEMINARS ARE OPEN TO THE PUBLIC**

**INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365 FITZPATRICK HALL  
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556**

## *MIDWEST MECHANICS SEMINAR*

**SPEAKER:** **Professor L. Gary Leal**  
Department of Chemical Engineering  
University of California, Santa Barbara  
Santa Barbara, California

**TOPIC:** **THE ROLE OF COMPATIBILIZERS IN POLYMER BLENDING  
(SURFACTANT EFFECTS ON DROP DEFORMATION AND BREAKUP)**

**DATE:** Tuesday, April 24, 2012

**TIME:** 3:30 p.m.

**PLACE:** 138 DeBartolo Hall

### *ABSTRACT*

In this talk, I summarize recent work aimed at understanding the role played by compatibilizers in the blending of two immiscible polymers to produce a composite material. Compatibilizers are typically di-block copolymers of the two constituent polymers, which adsorb preferentially at the interface and act as a surfactant (albeit a surfactant of fairly large molecular weight). In many cases, the blend is a dispersion of small drops of one polymer in a continuous matrix of the other, and in this case, the effect of the compatibilizer is to modify both the breakup and coalescence of droplets in the blending flow. We focus in this talk on the coalescence problem, and specifically on the mechanism by which the compatibilizer affects the coalescence process. Important clues come from studying a system that one would expect to be symmetric, in the sense that if the major and minor phases were reversed, there would be no change in the droplet size distribution (i.e. no effect on either breakup or coalescence). The "symmetric" system consists of two bulk fluids with identical viscosities, and a compatibilizer that has equal molecular weight components. Yet there are major changes observed in the rheology and drop sizes in the blend, and important changes also in the coalescence process.

---

**NOTE:** *If you are interested in meeting individually with  
Prof. Leal please contact Evelyn at 631-5431.*