

# AEROSPACE & MECHANICAL ENGINEERING



## 2012 COLLOQUIUM 2013 SEMINARS ARE OPEN TO THE PUBLIC

UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

**SPEAKER:** **Dr. Rouzbeh Amini**  
National Institute of Health  
University of Pittsburgh  
Pittsburgh, Pennsylvania

**TOPIC:** **BIOMECHANICS OF SOFT TISSUE FROM MACRO TO MICRO LEVELS**

**DATE:** Tuesday, February 26, 2013

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

**PLACE:** Lower Level Auditorium, Geddes Hall

**RECEPTION:** 3:00 – 3:30 p.m. – Coffee House, Geddes Hall

### *ABSTRACT*

Identifying the mechanical strains and stresses in biological tissues is one of the essential steps in understanding physiology and pathophysiology of living organs. Mechanical analysis of tissue has been used to better study phenomena such as embryogenesis, growth, degeneration, injury, and wound healing. In addition, mechanical loading, directly or indirectly, is an etiological factor for many diseases. Biological tissues, unlike most of manmade materials, have extremely complex structures. They are composed of many constituent components that contribute to the overall mechanical properties of the tissue. In my talk, I will show how complexity of the biomechanical models of the soft tissue is driven by the overall circumstances for which they are used. For example, I will demonstrate how at the organ and tissue level, simple neo-Hookean models of the ocular tissues could provide interesting insights into the pathophysiology of glaucoma. If, however, we wish to understand the cellular and extracellular matrix responses to the mechanical loading, more microstructurally accurate models are necessary. I will discuss the application of such models in the context of cardiac valve durability following surgical procedure.

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