

## Seminar

Date: 20 May 2009 (Wednesday)  
Time: 11:00 am - 12:00 pm  
Venue: Y 943, The Hong Kong Polytechnic University

### Morphological evolution and instability of solid thin films

*Dr. Harris Wong*

Department of Mechanical Engineering,  
Louisiana State University, Baton Rouge

#### Abstract:

Solid films are the basic components in many microelectronic and optoelectronic devices. Most of these devices use multiple layers of films of different materials. For a device to function properly, a film may need to be of a particular shape, which does not necessarily minimize the global surface energy of the system. The film will tend to alter its morphology in an effort to reach the minimum energy state. As the size of solid-film products decreases, it is becoming increasingly important to understand the morphological evolution of solid films. In this talk, I will review some previous work from my group on the capillarity-driven evolution of film shapes commonly encountered in micro devices, such as strips, holes, wedges, rods, and steps. I will also present results of coupled thermal grooving and migration of slightly inclined grain boundaries. Finally, I will show an analytic solution for three-dimensional axisymmetric crystals, in which the surface energy is highly anisotropic.

#### Biosketch:

Dr. Harris Wong earned his B. Eng. Degree from McGill University and Ph.D. degree from University of California at Berkeley, both in Mechanical Engineering. After continuing briefly at Berkeley as a postdoctoral fellow, he joined the Levich Institute for Physicochemical Hydrodynamics at the City College of CUNY as a research associate. He moved to Northwestern University and took a research associate position jointly appointed by the departments of Engineering Sciences & Applied Mathematics and Materials Science & Engineering. He came to LSU in 1997. He is a recipient of the NSF CAREER Award in 2000. His research interests focus on surface-tension dominated phenomena, including foam flow in porous media, hydrodynamics of the human tear film, surfactant-induced interfacial dynamics, morphological instabilities and evolution of solid thin films, and micro heat pipes. His research work has been supported by NSF, NASA, the Louisiana Board of Regents, Louisiana Space Consortium, and American Chemical Society.

\* Refreshment will be served after the seminar.