

AEROSPACE & MECHANICAL ENGINEERING



2006 COLLOQUIUM 2007

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INFORMAL COFFEE PERIOD BEFORE THE SEMINAR IN ROOM 365, ENGR. BLDG.

UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA 46556

- SPEAKER:** **Professor Haim H. Bau**
Department of Mechanical Engineering and Applied Mechanics
University of Pennsylvania
Philadelphia, Pennsylvania
- TOPIC:** **MICROFLUIDICS FOR FUN AND PROFIT**
- DATE:** Tuesday, April 17, 2007
- TIME:** 3:30 p.m.
- PLACE:** 138 DeBartolo Hall

ABSTRACT

The talk describes some of the ongoing projects in the micro and nano fluidics lab at the University of Pennsylvania. In the first part of the talk, I will describe our work on determining the dielectric forces acting on small particles when the electric double layer is relatively thick compared to the particles' size, on using dielectric forces to position macromolecules at predetermined locations, and on observing and interpreting the effects of electric fields on actin filaments' thermal vibrations and apparent stiffness.

In the second part of the talk, I will introduce a fabrication method for and applications of carbon nanopipe-based devices with bore diameters ranging from 10's to 100's of nanometers. These nano-pipes are used for exploring fluid physics at small scales and as cellular probes and nano-electrodes for studying and modifying cell biology.

Finally, I will describe our effort to develop fully integrated, lab-on-chip, diagnostic devices for detecting pathogens in oral fluids at the point of care. These devices accept saliva samples, lyse cells and viruses, isolate nucleic acids, carry out DNA amplification, and detect pathogens to provide timely diagnosis.

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