

**FIRST OFFERING NEW COURSE at AUBURN  
Spring 2006**

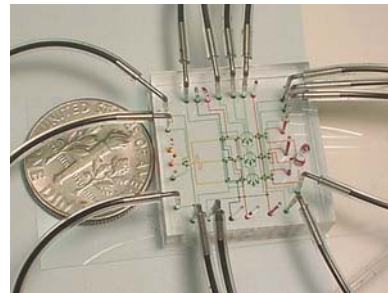
# **NANO/MICROFLUIDICS**

**NANO/MICROSCALE FLUIDIC SYSTEMS**

MATL 7970: Special Topics in Materials Engineering

**A nanoliter is one billionth of a liter!!!**

Nano/Microfluidics is a multidisciplinary field comprising [physics](#), [chemistry](#), [engineering](#), and [biotechnology/medicine](#) dealing with tiny volumes, nanoliters or picoliters even femtoliter, of liquid.



- What is Nano/Microfluidics?
- Basic Fluid Mechanics
- Molecular Approaches: Electrokinetics
- Design of Microfluidic Systems
- Microfluidic Chip Fabrication: Silicon, Glass, Polymer
- Experimental Flow Characterization:  $\mu$ PIV
- Flow Control: Microvalve, Micropump, Microflow Sensors
- Integrated Microfluidic Systems: Microfluidic VLSI
- Microfluidics for Biotechnology/Medicine:
  - DNA, RNA Isolation, PCR, Cell culture, Cell sorting
- Microfluidics for Materials/Chemical Engineering:
  - Microreactors, Nanodroplets, Nanoparticle Processing
- Extreme Applications: Space & Deep Sea Explorations

The course examines basic theory of nano/microfluidics and practical applications in interdisciplinary fields of engineering and science.

**Open to All Science and Engineering Majors!!!**

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