Winter 2005 2-3:20 TU TH
Class Room: SSPA 1165
(Building # 211)

MAE 252: Fundamentals of Microfabrication

Instructor:
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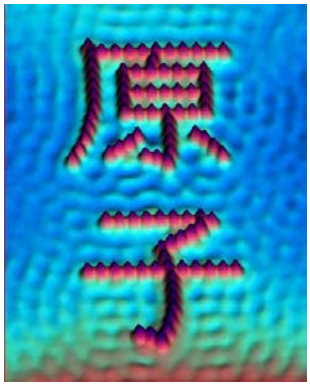
A compact disc as a diagnostic tool (M.Madou UCI)

This graduate/senior undergraduate course introduces engineering and science students to the science of miniaturization. Different options to make very small machines (micro and nano size) are reviewed, materials choices are discussed, scaling laws are analyzed and many practical applications are reviewed. This introductory MEMS/NEMS course is running in parallelwith y a more in-depth Bio-MEMS course (MAE 253).

Prerequisites: *This course has no prerequisites and it is open for graduate and senior undergraduate students. For enrolment, schedule an appointment with Dr. Madou at X 4-6585.*

Classes:
Class I. Introduction
Class II. UV Lithography
Class III. Advanced Lithography
Class IV. Dry Etching - General Principles
Class VI-VII. Si Crystal Growth, Crystal Orientation, Oxidation and Interface Defects
Class VII. Wet Bulk Micromachining
Class VIII. Physical and Chemical Vapor Deposition
Class IX. Doping and Hybrid Thick Film Techniques
Class X. Surface Micromachining
Class XI. LIGA
Class XII. Alternative Miniaturization Methods (I)
Class XIII. Alternative Miniaturization Methods (II)
Class XIV. Scaling Laws/Actuators (I)
Class XV. Scaling Laws/Actuators (II)
Class XVI. Biomimetics (I)
Class XVII. Biomimetics (II)
Class XVII. Applications

Textbook: *Fundamentals of Microfabrication,*
By Dr. Marc Madou
The Science of Miniaturization, Second Edition, CRC Press 2002 (see attached)



The Kanji character for the word atom written with an STM (IBM Almaden).