Characterization, Fabrication, and Manipulation at Nanometer Scale

Time: 14:10 – 17:00 (Th) Room: P101 Institute of Physics, AS

Syllabus (2016)

Week 01	(2/25)	Overview and Lab Tour
Week 02	(3/03)	STM: structure and working principles
Week 03	(3/10)	SPM: structure and working principles
Week 04	(3/17)	EM: structure and working principles (Prof. Chen, NTHU)
Week 05	(3/24)	EM: operations and examples (Prof. Chen, NTHU)
Week 06	(3/31)	Lithography: optical, e-beam (Prof. C.D. Chen, AS)
Week 07	(4/07)	Growth of thin films and nanomaterials
Week 08	(4/14)	Spectroscopy: optical and electronic
Week 09	(4/21)	Midterm Written Exam (40%)
Week 10	(4/28)	Quantum transport in nanostructures
Week 11	(5/05)	Atomic manipulations and optical tweezers
Week 12	(5/12)	Introduction to synchrotron radiation and neutron scattering
Week 13	(5/19)	Paper study and presentations
Week 14	(5/26)	Paper study and presentations
Week 15	(6/02)	Paper study and presentations
Week 16	(6/16)	Paper study and presentations
Week 17	(6/23)	Final report and evaluation (60%)

Grading of this course

1. Midterm Written Exam (40%)
2. Presentation and report (60%)
   A. Presentation (30minutes, 45%)

      Students should prepare power-point slides from the paper assigned at the beginning of this course, and present them in a way that is understandable to their classmates. The suggested format is 20 min for presentation and 10 min for answering questions from the audience.

   B. Report (at most two pages, 15%)

      Each student should write a report on:

      1) The paper assigned at the beginning of this course, including a) synopsis of the paper and b) what can be further studied from this paper.

      2) Afterthoughts and feedbacks about her/his presentation and the whole course.