

Course Outline

Scanning Probe Microscopy: From Fundamentals to Advanced Applications

June 14-17, 2010

5:00-8:00 **Sunday, June 13 (evening)**
Registration (Whitaker Lobby)

Day One Monday, June 14
8:30-8:40 Welcome
8:45-9:00 Course Outline
9:00-10:15 Introduction to Principles of SPM:
Viewing the Nanoworld
10:15-10:30 Break
10:30-12:00 Scanning Tunneling Microscopy and
Spectroscopy
12:00 Lunch
1:15-3:00 A Survey of Surface Analysis Techniques
3:00-3:15 Break
3:15-5:15 Touching the Surface without Breaking
Something
5:15 Dinner
7:15-10:00 Lab 1: Overview of Instrumentation

Day Two Tuesday, June 15
8:30-10:30 Choosing a Probe Shape
10:30-10:45 Break
10:45-12:00 Implementing AFM: Force Distance
Mechanical Measurements, Contact and
AC-Imaging, System Calibration, and
Nanolithography
12:00 Lunch
1:15-3:00 Lab 2: Topographical Imaging and
Surface Roughness Analysis
3:00-3:15 Break
3:15-5:15 Topography Data Analysis: From Atomic
Structure to Large-Scale Roughness
5:15 Dinner
7:15-9:15 Advanced AFM Modes: Atomic
Resolution, MFM, EFM, PFM, Torsional
Imaging, Acoustic Imaging, and High
Speed Imaging

Day Three Wednesday, June 16
8:30-10:00 Lab 4: MFM and Computer Disc Drives
10:00-10:15 Break
10:15-12:00 SPM in Liquids: Reactions and Biological
Systems
12:00 Lunch
1:15-3:15 Lab 5: Liquid an Bio/Agilent Technologies
3:15-3:30 Break
3:30-5:00 Advanced SPM of Soft Materials and
Biological Systems
6:30 Banquet

Day Four Thursday, June 17
8:30-10:00 Lab 6: Advanced Techniques: PFM,
SSPM, Electrochemistry
10:00-10:15 Break
10:15-12:00 Lab 6: Continued
12:00 Lunch
1:45-2:45 Mechanical Properties: Elastic and Plastic
Behavior
2:45-3:30 Nanoindentation
3:30-3:45 Break
3:45-5:00 Lab 7: Nanoindentation
7:15-9:15 Individual Appointments with Specialists

Note: All classes and labs will be held in Whitaker Lab.

Disclaimer: The organizers reserve the right to change the instrumentation or sequence of lecture topics and to cancel lectures or substitute lecturers if necessitated by circumstances beyond their control. Updated 9/15/09.