

Chemistry 801: *Nanostructured Materials and Interfaces*

Syllabus

Laboratory experiments are given in red. *** indicates laboratory experiments in which Physics 801 will also be participating.

1. What is special about nanostructures?

Tues. Jan 23	Overview
Thurs. Jan 25	Materials principles
Tues. Jan 30	Materials principles
Thurs. Feb 1	Materials principles

2. Synthesis

Tues. Feb 6	General principles
Thurs. Feb 8	***Lab: Preparation of ferrofluid
Tues. Feb 13	Nanoscale architecture
Thurs. Feb 15	***Lab: Preparation of gold nanoparticles
Tues. Feb 20	Nanoscale architecture
Thurs. Feb 22	Lab: PDMS

3. Characterization

Tues. Feb 27	Prof. Crone: Mechanical Properties
Thurs. Mar 1	In-Class Lab: Diffraction and Optical Transforms
Tues. Mar 6	Electron and scanning probe microscopies
Thurs. Mar 8	Lab visit

Spring break Mar 10-18

4. Properties and Applications

Tues. Mar 20	Chemical sensors
Thurs. Mar 22	Biosensors
Tues. Mar 27	Nanotubes
Thurs. Mar 29	Molecular electronics
Tues. Apr. 3	Molecular electronics

Thurs. Apr 5 Magnetic nanostructures
Tues. Apr 10 Magnetic nanostructures
Thurs Apr 12 Quantum dots
Tues. Apr 17 **Lab: Semiconductor quantum dots (lab held on Fri. 4/20)**
Thurs Apr 19 Amorphous metals and quasicrystals
Tues. Apr 24 **Lab: Electrolytic deposition of nanorods (lab held on Fri. 4/27)**
Thurs. Apr 26 Quantum computing

5. Student Projects and Reports

Tues. May 1
Thurs. May 3
Tues. May 8
Thurs. May 10