WHAT IS NANOTECHNOLOGY & NANOSCIENCE?

• Nanoscience & nanotechnology are found in all areas of science: physics, chemistry (all sub-disciplines), biochemistry, biology, materials
• It focuses on matter that is ca. < 500 nm: e.g. inorganic nanoparticles, organic polymers, enzymes, films, layers, devices, biomotors, etc.
• Physical properties of materials on this scale are often quite different than molecules or materials

• http://www.kqed.org/quest/television/view/189?gclid=CKml-rPqhZUCFQpzHgodBC4aqw
Overall Goals of the NMC Program

- **Flexibility:** tailored courses to meet the interests & research needs of the students
- **Focused:** all courses & training aimed at facilitating research
- **Interdisciplinary:** research is often conducted in more than one lab, with a co-mentor (not necessarily at CUNY)
- **Collaborative:** adds expertise to research
NMC FACULTY AT CUNY

• Interdisciplinary and cross disciplinary faculty

• Faculty are in chemistry, physics, biology, engineering

• Involving most research areas and science departments

• at most CUNY campuses

• Co-mentors can be from other divisions, schools
THINGS TO NOTE

- Nobody gets a job based on coursework or rotations.... Only on published research
- So everything you do should be to further your research agenda
- Keep in mind potential applications, but these are not the primary objective
- Interdisciplinary/collaborative research facilitates networking and opens opportunities for future (e.g. employment)
NMC: REQUIREMENTS

OVERVIEW

1. Pass qualifying exams or first level (700) courses in organic, inorganic, and physical chemistry, no more than one “conditional pass” allowed
2. 1-3 rotations defined by faculty and student (usually 3 weeks to 3 months)
3. Introduction to Nanotechnology (or equivalent)
4. 2-3 elective from any discipline (chemistry, physics, math, biochemistry, biology, engineering) with approval from executive officer or head of the NMC discipline
NMC: RECOMMENDATIONS

- Do your homework – look at web sites, attend (some) campus science days, talk to faculty as soon as possible
- Choose mentor as soon as possible to get a jump start on research because ..... 
- Your CUNY/College “scholarship” will consist of teaching up to 4 labs a year the remaining 4 years
NMC: SAMPLE DOCTORAL DEGREE PLAN

1st semester (15 credits): two distribution courses [e.g. organic (3) and inorganic (3), rotations + research (7), project teach (1), seminar (1), choose mentor

2nd semester (15 credits): third distribution course [e.g. physical (3), Intro. to Nanotech (3), 1 elective (3), seminar (1), rotations + research (5), choose committee

3rd semester (15 credits): remaining elective(s) (3), seminar (1), research (11)

4th semester (15 credits): seminar (1), research (14), defend research proposal (3rd level exam)
5th to 10th semester: RESEARCH

Beginning second year, at least one committee meeting per year to present research progress (Recommend 4 people on committee (1 must be from different campus and/or different institution)

Students must give 2 seminars: One must be on their research given at the Graduate Center (e.g. a practice for the dissertation defense); one can be on any topic, including research. One can be at the graduate center or be given at a scientific meeting (if the latter, the meeting, abstract, and agenda must be provided, and the talk must be 20 minutes or greater)