

NEW COURSE FOR SPRING 2004

Nanoscience/Novel Materials Chemistry (Special Topics in Organic Chemistry Series)

Chemistry 241I (Listed on URSA as 241D-1 – Course ID: 542257201)

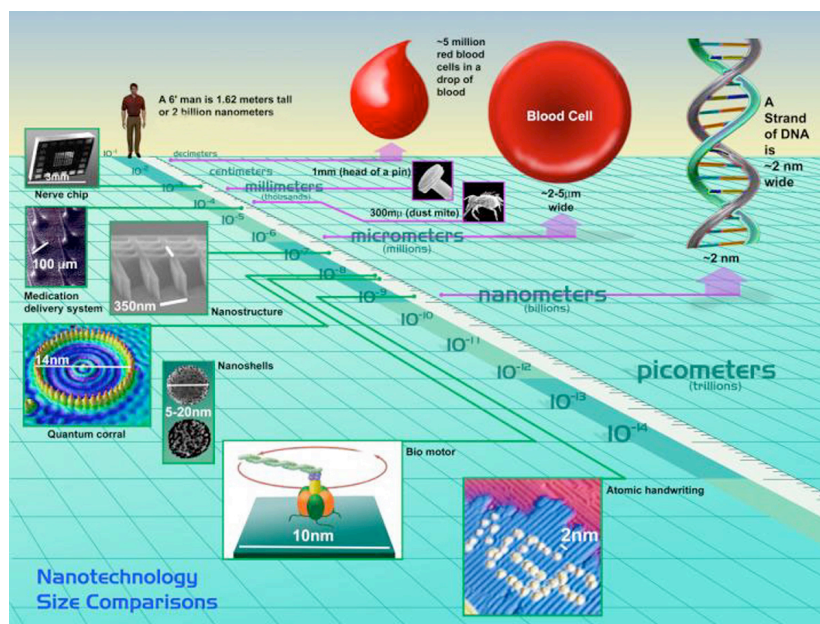
MWF 1:00–1:50 pm; Young Hall 1044

Instructor: Stuart Cantrill (cantrill@chem.ucla.edu)

Nano – a small word, with big consequences. Perhaps. Like many other four-letter words, this one is quite controversial, even more so when tacked on the front of other words such as ‘science’ or ‘technology.’ Once a simple descriptor of scale, ‘nano’ has evolved into a highly emotive prefix, that conjures-up many different things for many different people; from tiny nanobots that will chart courses through our veins, to the revolution of computation and beyond! This course will take a broad look at the nano world with a chemistry perspective, and explore a subject that inspires and fascinates many scientists.

Topics include: Introduction to the nanoscale – *the scale, why bother, who’s interested*; the bottom-up approach to nanostructures – *lessons from nature, covalent and noncovalent assemblies and their implications*; the top-down approach – *many flavors of lithography and their limitations*; visualizing (and manipulating) the nano world – *scanning probe microscopies and interrogating nanostructures*; molecular machines and devices – *putting nanostructures to work*; molecular electronics – *logic operations with nanostructures and the wiring issue*; the future of nanotechnology – *just how far have we got, and where next?*

Assessment will be based upon homework exercises and an in-class presentation. Attendance at the CNSI NanoSystems seminar each Tuesday is required, as the class on the next day will involve a student presentation based around the topic of the seminar, followed by a student-led discussion. Based upon interest and scheduling, a field trip to the Nano exhibit at LACMA will be arranged.



National Science Foundation – Office of Legislative and Public Affairs
(http://www.nsf.gov/od/lpa/priority/nano/nanthumb_images.htm)