Abstract
This short-course in nanotechnology will likely be unlike any other course that you have taken. While you have probably taken courses in the basic sciences such as chemistry or biology, each typically taught at the molecular length scale, you may have also taken a course in the applied sciences such as pre-engineering, which is taught from the macroscopic (or at best microscopic) length scale. This short-course will then be the first time that you have examined nanoscale materials. Nanotechnology involves the study of matter at length scales that are intermediate between the molecular and the bulk. Thus, just as an individual metal atom has vastly different properties compared to the bulk material, a nanoscale structure composed of roughly 1000 to one billion atoms/molecules offers properties distinct from both molecules and bulk materials. In this course, you will learn how to control the properties of materials on the nanometer scale, referred to as nanoparticles, as well as how these nanoparticles can be synthesized. Day 1 will overview the basic theory of nanotechnology, while Day 2 will occur in the lab and have you synthesize and measure the size of gold nanoparticles.

Faculty Biography
Associate Professor Ted Lee is a faculty member in the Mork Family Department of Chemical Engineering and Materials Science at USC. His research interests are in the area of photo-responsive surfactants for control of biomacromolecule structure and function, including protein folding, enzymatic catalysis, DNA compaction, and gene delivery. Dr. Lee is also passionate about chemical engineering education and currently serves as the Associate Chair for Undergraduate Programs in the Mork Family Department. In that role he has modernized the chemical engineering undergraduate curriculum in the form of degree projects, four-year projects consisting of hands-on laboratory experiments in every core chemical engineering course (an NSF-funded effort). Additionally, Dr. Lee is the co-creator of the Chemical Engineering (Nanotechnology) and Chemical Engineering (Sustainable Energy) degree options in the Mork Family Department. These novel programs incorporate the modern concepts of nanotechnology and clean energy into traditional chemical engineering subjects. Dr. Lee received the 2008 Northrop Grumman Excellence in Teaching Award for the application of the nanotechnology and biotechnology degree projects in the undergraduate chemical engineering
curriculum. This award is presented annually to one faculty member in the Viterbi School of Engineering to recognize outstanding achievement in undergraduate education.