

**Department of Chemistry**  
**COLLEGE OF Arts and Sciences**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2014**

*The Department of Chemistry is pleased to offer the following research project for the summer of 2013. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.*

**PROJECT TITLE: Novel Nanoparticle Arrays For Biosensing**

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**Project Description**

Arrays of gold and silver nanoparticles are often used in localized surface plasmon resonance (LSPR) biosensing where the binding of a biological analyte of interest is measured through a visible color change. LSPR biosensing, in general, has emerged as a leader among biosensing technologies because of its low cost fabrication and detection, high sensitivity, and amenability to on-chip devices. However, the technology relies on our ability to generate gold and silver nanoparticles of complex shapes, amenable to interface with biology and produce maximum signal response. In addition, the nanoparticles used for biosensing are generally made via solution-phase chemistry, and making ordered arrays on a surface that can interface with on-chip devices have been problematic. In this project, the student will make novel nanoparticle arrays on glass substrates by using various nanostructures in solution as colloidal templates. This project will involve surface fabrication in a clean room environment, using spin coating and reactive ion etching techniques, and characterization of the samples using Scanning Electron Microscopy (SEM). A background in chemistry or engineering is desirable, but not a necessity.