

**Department of Mechanical and Materials Engineering
COLLEGE OF ENGINEERING AND APPLIED SCIENCE**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2014

The Department of Mechanical and Materials Engineering is pleased to offer the following research project for the summer of 2014. 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.

A NOVEL APPROACH TO 3D PRINTING OF METAL PARTS

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Project Description

3D Printing of metal parts has the potential to revolutionize manufacturing, as functional parts in their final size and shape can be created directly from CAD models. We at the Micro and Nano Manufacturing Laboratory are currently working on 3D printing of metal structures at room temperatures using electrochemical methods. Being a non-thermal process, parts made by this method will be free of inevitable thermal damages by the existing metal additive manufacturing methods.

Learning opportunities for students

This research is multidisciplinary in nature and offers tremendous opportunity for undergraduate students to be exposed to **interdisciplinary research**. The project will also introduce students to the various aspects of academic research from literature review and experimentation to report preparation and publication of research findings. The system development and experimentation involved will provide **hands-on** experience in research. Students will be provided necessary training on the electrochemical process and can acquire hands-on experience to (1) understand the 3D printing using in-house built experimental setup, (2) use simulation software's like ANSYS and Matlab to interpret the findings.