Faculty Project: Physics

Title of Project: Studying the Structural and Electronic Properties of Cuprous Oxide Nanocube Surfaces

Main Contact: Michael Boyer, mboyer@clarku.edu, 508-793-7470

Deadline: April 1, 2017

Duration: 180 hours over the course of the LEEP project term, ~ 20 – 25 hrs per week for a 8 – 10 week duration.

Location: Clark University Physics Department, Biophysics / Sackler Buildings of Clark

Position Description:
The selected student(s) will take the lead in a well-defined interdisciplinary research project and be exposed to three cutting edge experimental techniques: 1) scanning tunneling microscopy, 2) atomic force microscopy, and 3) scanning electron microscopy. Each experimental technique is utilized in industrial and research environments to study material properties on the microscopic and atomic scale.

The project aim is to understand the origin of the catalytic properties of cuprous oxide (Cu2O) nanocube catalysts. Specifically, the student(s) will use three different microscopy techniques to study how the surface properties of the nanocubes compare to bulk material properties. By examining different nanocube morphologies (shapes), the student(s) will help determine optimal shapes to aid in catalytic processes.

On completion of the project, the student(s) will have learned experimental and analysis skills highly valued in research and industrial environments. They will be exposed to concepts of material design processes which involve manipulating and optimizing material properties to enhance specific properties. Finally, they will have an opportunity to engage in interdisciplinary research by working with me (in the physics department) on a project which is done in collaboration with members of the chemistry department at Clark.

Qualifications:
Preferred: Students anticipating a physics or chemistry major.

Housing: Housing will not be provided. Students are responsible for finding their own housing.

For more info: Please, visit: http://wordpress.clarku.edu/mboyer/

Funding: $2500 Available through the LEEP Fellows Program.

How to Apply:
Interested applicants should submit a cover letter and a resume to mboyer@clarku.edu.

To apply for LEEP Funding and to be considered as a LEEP fellow, students must secure the position and complete the LEEP Fellows Application Process by March 3 (for early decision) or April 14th.
Students will be required to submit a resume, cover letter, and a proposal outlining how they will complete their project.

Additional position information is available through Clark Recruiter. Recommendation letters should be emailed directly to rmaddox@clarku.edu.

About the Organization:
Clark's academic community has long been distinguished by the pursuit of scientific inquiry and humanistic studies, enlivened by a concern for significant social issues. Among many other scholarly endeavors, Clark contributes to understanding human development, assessing relationships between people and the environment, and managing risk in a technological society.

Clark is dedicated to being a dynamic community of learners able to thrive in today’s increasingly interrelated societies. The University maintains a national and international character, attracting high-caliber students and faculty from all quarters of the globe.