College of Engineering
Summer Research Experience for Undergraduates Program

Request for an Engineering Student for Summer 2012 Research

Faculty Name __Prof. Christopher Salthouse______________________________

Phone ___413-577-4308___________________

Department ____ECE______Email: ____salthouse@ecs.umass.edu___

Brief description of Summer Research Project (please explain the interdisciplinary nature of this project).

We fabricated a set of aluminum microelectrodes on a CMOS integrated circuit this fall. As an extension of the work performed by “C” in my lab last summer, the student will develop a micropotentiostat using these electrodes. In last year’s experiments, commercial electrodes optimized for electrochemistry were used. The use of aluminum microelectrodes presents additional challenges because of the close proximity of the electrodes and the requirement that any processing be performed without damaging the underlying electronic circuits.

Brief description of what the student will be doing:

The student will begin by measuring the electronic properties of the electrodes. Then, they will plate the electrode with a less reactive metal. Next, the three electrodes will be coated with different materials. Finally, the electrodes will be used to repeat the redox measurements performed last summer.

Is this a CASA-related project? Yes ___ No _X_

Preferred background of student (major(s), class, GPA, pre-requisites, etc.): Chemical Engineering, Mechanical Engineering, or Electrical Engineering majors Juniors, GPA above 3.5

Did you mentor a student last summer in the College REU Program? Yes _X_  No ____

If yes, please describe the outcomes for that student (i.e. Honor’s thesis, conference presentations, manuscripts, papers, etc. Describe accomplishments to date as well as plans for the spring semester if the work has continued):

I mentored two COE REU’s last summer, Chibueze “C” Nwokeji and Kevin Okiah. “C” performed preliminary electrochemistry experiments using macro electrodes and a source meter. Kevin developed a system for tracking cells in microfluidics. Kevin continued his research in my group during the semester as an independent study project. He is a co-author of a conference paper that was recently accepted for a conference this May. We hope that his work will continue to develop in to a journal paper.

Please return this form to: lrobidou@ecs.umass.edu by February 3, 2012