College of Engineering
Summer Research Experience for Undergraduates Program

Request for an Engineering Student for Summer 2011 Research

Faculty Name _____Peter Monson_______________________________________________

Phone _______5-0661____________________________________________________

Department ___Chem. Eng.____________Email: _____monson@ecs.umass.edu_________

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

The project is about modeling the molecular behavior of fluids confined on porous materials. In particular we are modeling the dynamics of fluid uptake into porous materials. The goal is to understand how the structure of the porous material and the molecular interactions determine the relaxation processes in the system.

Fundamental issues studied in this project are multidisciplinary, making use of fundamental knowledge from Chemical Engineering, Chemistry, Physics and Mathematics. The applications of this project are also multidisciplinary. It has applications in the design of separations and catalysis systems for chemical process engineering. It is also relevant to the use of porous materials for applications in bioengineering, for example in sensors and diagnostics. It is also relevant to problems like groundwater contamination and remediation in civil and environmental engineering.

Brief description of what the student will be doing:

The student will learn the essential features of the thermodynamics and dynamics of confined fluids and carry out a set of calculations that illustrate the behavior of a given system. The student will learn the basics of scientific computing including the use of computer graphics to represent the state of the system. The student will work jointly with Professor Monson and John Edison, a Ph.D. student.

Is this a CASA-related project? Yes ____ No ___x___

Preferred background of student (major(s), class, GPA, pre-requisites, etc.):

I have a preference in working with a transfer student from a community college.

Did you mentor a student last summer in the College REU Program?  
Yes_____  No ___x___

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):