College of Engineering
Summer Research Experience for Undergraduates Program

Request for an Engineering Student for Summer 2012 Research

Faculty Name __David P. Schmidt________________________________________

Phone _______5-1393___________________________________________

Department __MIE___________________Email: __schmidt@acad.umass.edu

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

The student will be working to support a project to develop more environmentally-friendly rocket fuel. This project is an interdisciplinary collaboration between the MIE and ChE departments. Our goal is to reduce the danger from the toxic, carcinogenic hypergols that are currently employed. We want to use gelling agents to diminish leaks, yet still allow the fuels to be useful in rocket engines. The key is to achieve fast fuel/oxidizer mixing. We are doing computer simulations of the collision and mixing, in order to predict the fuel’s performance.

Brief description of what the student will be doing:
The student will assist with the setup, running, and post-processing of computational fluid dynamics simulations. She will use Linux workstations to run the simulations and then she will extract information about mixing rates between colliding droplets. This post-processing of the computational results will provide the physical insight required to design better rocket engines. She will work with graduate students to document the results and write a journal article.

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

Preferred background of student (major(s), class, GPA, pre-requisites, etc.):
The student should be an MIE undergrad with a high GPA and a working knowledge of Linux. The student should be very proficient in programming as indicated by a good grade in MIE 124. Because the student will assist in the writing of a journal article, she should have excellent writing skills.

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