

## **Graduate Program in Functional Materials**

### **ABSTRACT**

This proposal requests fellowships for twelve U.S. graduate students, with outstanding ability and financial need, to pursue PhD degrees in Chemical Engineering at the University of Colorado at Boulder. An additional three fellowships will be provided through new institutional matching funds. The Fellows will be trained in interdisciplinary science and engineering principles and practices to prepare them for teaching and research careers which address critical national needs in functional materials.

The Department of Chemical Engineering is uniquely positioned to meet the identified need, having research expertise in various aspects of organic and inorganic functional materials, defined broadly to include applications in biomaterials, electronic materials, polymeric materials, interfacial materials, membranes, ceramics, and self-assembled systems. Collectively, the faculty have published over 700 research articles in this area. The Department is also host to four related research and training centers important to this effort, each of which provides research opportunities and industrial interactions in this area. The proposed project addresses the national need for specialized training in functional materials, with the general objective of providing a unique educational and research program in functional materials for 15 fellows from a diverse background, having outstanding qualifications, which will be sustained beyond the duration of the requested support. The program will be multifaceted, including the following features: a multifaceted recruitment plan, a diverse group of students, an integrated program of courses, a broad offering of functional materials research opportunities that continue beyond the duration of Department of Education support, industry and international internships, supervised teaching experiences, and involvement of Fellows in outreach activities: The program will increase the pool of well-trained chemical engineering PhD students in the functional materials area ready to enter research and teaching jobs in academia and industry. Students will have each had academic exposure through supervised teaching, industrial exposure through industrial and/or international internships, and community exposure through outreach experience to K-12 and/or the community.