

University of Cincinnati



National Science Foundation Research Experiences for Undergraduates Summer Site Program in Membrane Applied Science & Technology June 14 – August 20, 2004

**Co-Directors: Professor William B. Krantz
Professor Joel R. Fried**

Are you looking for a summer experience that is both professionally and personally rewarding?

The NSF Membrane Applied Science and Technology (MAST) Center at the University of Cincinnati will be conducting a ten-week summer research program for undergraduates in chemical engineering, chemistry, pharmacology, biochemistry, bioengineering, materials science, and related fields. Undergraduates will be selected via a competitive process based on their academic record, letters of recommendation, personal statement, and accomplishments. Each undergraduate will work with faculty and graduate student mentors on a research project in membrane technology or related applications in biomedical engineering, pharmacology, biotechnology, and materials science.

Research areas in membranes include:

- biological membranes
- biomimetics
- breathable garments
- cell membrane transport
- controlled drug release
- electrodialysis
- flavor encapsulation
- fuel cell membranes
- hemodialysis
- inorganic membranes
- islet-cell transplantation
- Langmuir-Blodgett films
- membrane biofilters
- membrane bioreactors
- membrane MEMS devices
- meniscal allograft healing
- membrane fouling
- membrane-lung oxygenators
- molecular sieve membranes
- nanostructured membranes
- polymeric membranes
- transdermal permeation
- vial sensors
- water purification

This program will include weekly seminars and discussions that focus on the following:

- research methods
- ethics in engineering
- problem-solving skills
- communication skills
- entrepreneurial skills
- post-graduate opportunities

An accompanying program consists of social events, cultural trip to the Cincinnati Art Museum, musical program at the world-renowned UC College Conservatory of Music, a river raft trip on the Little Miami River, a ballgame with the Cincinnati Reds, and visit to the U.S. Environmental Protection Agency for an overview of their research in membrane technology. The program will culminate in a technical poster competition in which award certificates and cash prizes will be given.

The financial provisions for this program represent a value of \$6,500 and include:

- a ten-week stipend of \$3,500
- travel expenses up to \$500
- laboratory supplies up to \$500
- room and board on campus
- sponsored group activities
- access to UC recreational facilities

REU students who have technical papers on their research accepted for presentations at regional or national meetings are also eligible for additional travel-fund awards.

This program is restricted to US citizens and permanent residents. Applications should be submitted by **March 20, 2004** to the address on the back of this flyer. The application is also available at <http://alpha.che.uc.edu/mast/>. Questions may be referred to Professor William B. Krantz at bkrantz@alpha.che.uc.edu or Professor Joel R. Fried at jfried@alpha.uc.edu.

Application – NSF Research Experiences for Undergraduates

June 14 – August 20, 2004

NSF Center for Membrane Applied Science and Technology
University of Cincinnati, Cincinnati, Ohio 45221-0012

Name: _____ (Last) (First) (Middle)		Date: _____
Permanent Address:	College Address:	
Street:	Street:	
City/State/Zip:	City/State/Zip:	
Phone:	Phone:	
E-Mail Address:	Overall GPA:	
College or University:	Expected Graduation Date:	
Current Major:	Social Security Number:	
How did you learn about this program?		
Do you expect to apply to a post-graduate program after completing your undergraduate studies? MS ____ PhD ____ MD ____ No ____ Not Sure ____ Other _____		
What are your long-term professional goals?		
Have you had any laboratory experience? Yes: ____ No ____		
If yes, indicate the length of time, and the area of research:		
Country of citizenship or permanent residence		
Optional: Ethnicity _____ Gender _____ Disabilities _____		
If program dates conflict with the academic schedule of your institution, what dates would you be available?		
<p>Applicants are required to supply an official transcript of their academic record, two letters of recommendation sent directly to us by the recommenders, a resume listing prior job experience, honors and accomplishments, and a brief narrative discussing interest in this program, research interests and career goals. Applicants must be US citizens or permanent residents to be considered for the program. Students of under-represented groups are strongly encouraged to apply. Additional information about the program and copies of this application can be obtained from our website at http://alpha.che.uc.edu. Applications must be postmarked no later than March 20, 2004 and mailed to:</p> <p style="text-align: center;">Professor William B. Krantz University of Cincinnati NSF MAST Center, 601 ERC PO Box 210012 Cincinnati, OH 45221-0012</p> <p>Questions may be referred to Professors William B. Krantz at bkrantz@alpha.che.uc.edu or Joel R. Fried at jfried@alpha.uc.edu.</p>		