DEPARTMENT OF CHEMICAL ENGINEERING
College of Engineering

SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: MARCH 3, 2003

The Department of Chemical Engineering is pleased to offer the following research project(s) for the summer of 2003. Interested students are urged to contact the faculty member(s) directing the project(s) that most interest them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be, and if possible, develop a timetable for the twelve-week research period.

Protein Fouling During Microfiltration

Professor Chia-Chi Ho
684 ERC (513) 556-2438 FAX: (513) 556-3473 E-Mail: Chiachi.Ho@UC.Edu

Membrane microfiltration is currently used for clarification and sterile filtration of many pharmaceutical and biotechnology products. One of the critical factors governing the overall performance of these processes is the irreversible alteration in the membrane caused by protein fouling. Previous studies of protein fouling have generally employed one of the classical fouling models: pore blockage, pore constriction, or cake filtration. We have developed a combined pore blockage and cake filtration model that was able to accurately describe the rate of flux decline for various membranes and proteins, with the model parameters for each of these systems directly related to the physical properties of the protein solutions. The goal of this project is to apply this model to the analysis of the effects of solution conditions (e.g., pH and salt concentration) on membrane fouling and correlate the model parameters to the property of the protein solution.