

NEW GRADUATE TRAINING PROGRAM IN FST

Ph.D. Graduate Training Opportunity with Certification in Macromolecular Interfaces with Life Sciences

We are recruiting highly qualified Ph.D. students for an exciting multidisciplinary training program, called Macromolecular Interfaces with Life Sciences (MILES), awarded through the National Science Foundation Integrative Graduate Education and Training (IGERT) program.

"Initiated in 1997, the IGERT program was developed to meet the challenges of educating Ph.D. scientists and engineers with the multidisciplinary backgrounds and the technical, professional, and personal skills needed for the career demands of the future. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and universities, by establishing new, innovative models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate greater diversity in student participation and preparation and to contribute to the development of a diverse, globally-aware, science and engineering workforce. (IGERT 2001, NSF Program Announcement)".

The research focus for students recruited through the Department of Food Science and Technology is **Oxidation Control Mechanisms in Complex Food and Beverage Matrices**.

Complex matrices, such as food systems, are extremely susceptible to oxidative processes that frequently lead to detrimental changes in appearance, odor, flavor, and nutritional value. Measurement and control of oxidative reactions are difficult because, in many food systems, there exist both pro- and antioxidants, a myriad of reactant molecular species, and a complex assortment of intermediate and end products. Understanding the basic mechanisms of free radical formation can assist in interpretation of the reactions but the implications to final product value and quality must be approached in a systematic manner that considers the interactions within the matrix. Control of these reactions exists in creative application of polymeric materials that interfere or intercept the oxidative process with resulting benefit to food quality and nutritive value. While model and real food matrices will be the primary systems in which these questions are investigated, adaptation to other matrices, such as blood, cell systems, and other biomedical and pharmaceutical applications may be explored.

Three focal research areas include:

1. Implications of Oxidative Initiators on Formation of Intermediate and End-Products Impacting Food Quality.
2. Intercepting the Formation of Intermediate and End-Products of Oxidation in Food Matrices.
3. Natural Antioxidants Within Natural Food Systems For Diverse Applications.

For more information, contact Dr. Susan Duncan at duncans@vt.edu.