COLLEGE OF NATURAL RESOURCES AND ENVIRONMENT
SUSTAINABLE BIOMATERIALS
VIRGINIA TECH

Ph.D. Assistantship Available!

DESIGN OF BLOCK POLYMER ADDITIVES FOR IMPROVED MIXED PLASTIC RECYCLING

Start Date: August, 2026

Research Project Description:

Mechanical recycling of mixed plastics is limited by the immiscibility of different polymers, which leads to brittle, phase-separated blends. Block polymers additives can compatibilize these blends by lowering interfacial tension and improving toughness, but how block polymer architecture–which can dramatically impact how the additive interacts with the blend components–governs compatibilization remains poorly understood. This project will investigate this relationship to guide the design of highly efficient compatibilizers for mixed plastic recycling.

What's Expected:

The selected graduate student will pursue their graduate degree through the Department of Sustainable Biomaterials.

Responsibilities Include:

- Conducting scientific research independently
- Presenting research at scientific conferences

Funding:

Graduate Assistantships will provide a $33,588 annual stipend in addition to fully covering Virginia Tech tuition.

Required Qualifications:

- B.S. in Chemistry, Polymer Science, Materials Science, Chemical Engineering, or a related discipline
- Must be accepted into the Ph.D. program within the SBIO Dept.
- Must have completed the TOEFL and the GRE with acceptable scores, and must have a GPA of at least 3.4

Preferred Qualifications:

- Experience with scientific research and data analysis
- Already be accepted into the MACR program at Virginia Tech
- Good writing, communication, and interpersonal skills
- Experience with polymer synthesis or other wet lab chemistry

SBIO Department graduates are successful in securing careers in public and private research organizations and universities, and large sectors of the business world. We provide educational and research opportunities in the areas of sustainable biomaterials, spanning the range from nanotechnology and the basic science of wood and other renewable materials, through processing, manufacturing, marketing, & management in various biomaterials industries.

WANT TO KNOW MORE?

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