

CHEMICAL ENGINEERING / MATERIALS SCIENCE
COLLEGE OF ENGINEERING AND APPLIED SCIENCE

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2025

PROJECT TITLE: Projects in Soft Materials and Interfaces

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Project Description

The Soft Materials and Interfaces group at the University of Cincinnati focuses broadly on soft materials by combining concepts in polymer and materials science, mechanics, physics, chemistry, surface science, and unique characterization methods. Currently, the specific areas being actively studied in our group are related to adhesion, wetting, friction, rheology, microparticles, and lubricating grease. Potential applications for our work are diverse, ranging from adhesives and advanced coatings to biomaterials and lubricants. The potential project for this UPRISE summer program would be related to one of these topics. Students should be eager to conduct hands-on experiments in a laboratory setting, and have experience with hands-on work – this can be form of labs or from hobbies. For example, skills in DIY style projects can be beneficial for developing characterization methods and building new and specialized instrumentation. Experience in LabView and/or Matlab, or similar software would be useful for controlling devices and/or image and data analysis. Students typically gain experience in various experimental methods, including microscopy and imaging, mechanical characterization, materials preparation/synthesis, and custom-building techniques on microscopic and mesoscopic size scales. Moreover, students will have the opportunity to gain fundamental knowledge on soft materials by reviewing scientific literature, discussing with the group, and presenting at group meetings.