

Advanced Materials & Interfacial Engineering



Leveraging excellence in nanoscale and molecular engineering and science, UW ChemE researchers design a broad range of advanced materials — from biocompatible coatings to plasmonic nanoparticles to electronic polymers — for applications in medicine, energy, and beyond. Our investigators are renowned for their expertise in biomaterials, colloids, polymers, and surface chemistry, and are pioneering methods to guide assembly, engineer defects and manipulate order over broad length scales to optimize material properties.

Above: Cross-polarized light shining through a single carbon fiber within an epoxy matrix.
Created by Luke Khoury

Featured research clusters

Surface engineering

UW ChemE researchers use advanced synthetic routes to control surface chemistry and structure at molecular and nanometer length scales. We are also recognized as experts in the molecular analysis of surfaces with ex-situ and in-situ probing. Applications of designed surfaces include water purification, biomedical devices, adhesives, catalysis, electronic devices and many others.

Biomaterials

We design biological and bio-inspired materials for biomedical implants, nanomedicines, medical diagnostics, and chemical sensors, as well as for synthesizing hybrid organic-inorganic materials. We integrate molecular simulations, data sciences, advanced microscopy and scattering tools to gain insight into these complex systems.

Colloidal, polymeric and nanomaterials

Fundamental understanding of interactions at molecular, nano and colloidal scales is key to achieving control over properties that govern the real-world behavior of dispersions and polymers. ChemE researchers have literally written the book on the rules for controlling soft matter systems.

 www.cheme.uw.edu/research/areas



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Campus opportunities



UW MEM·C

Molecular Engineering
Materials Center



Molecular Engineering
& Sciences Institute

INSTITUTE FOR
NANO-ENGINEERED SYSTEMS



CSSAS
Center for the Science of
Synthesis Across Scales