CHEMICAL ENGINEERING
UNIVERSITY of WASHINGTON

Clean Energy & Sustainability

ChemE researchers are developing materials, devices, systems, and processes to tackle pressing sustainability challenges and decarbonize the economy. In the clean energy space, we innovate at the nanoscale all the way up to the grid level. Our faculty specialize in electrochemical systems and drive improvements in photovoltaics, batteries, fuel cells, and electronic polymers. For sustainability, ChemE labs are developing more-efficient processes for cleaning up pollutants and upcycling waste into valuable products.

Featured research clusters

Electrochemical energy conversion

We examine electrochemical processes for batteries, fuel cells, and electrolysis, both experimentally and computationally, to develop novel energy storage and conversion technologies. Our expertise encompasses the electrochemistry of insertion and conversion electrodes; electrocatalysis; battery management and diagnostics; and ion transport in electrolytes.

Materials for photonic and electronic energy conversion

Solar cells, batteries, and flat panel displays depend critically on the structure and composition of nanomaterials for improved efficiency, power, and durability. Our research enables new technologies based on high performance solar cells and new families of devices such as flexible batteries and displays.

Eliminating pollutants and upcycling waste

We develop remediation processes that reduce, remove, or convert waste to value-added products. Our work involves advanced water treatment and filtration methods; catalytic processes for upcycling plastic waste; and technologies to enable materials circularity.

Large scale energy storage and utilization

We investigate how to meet electricity needs at the grid level through a wide variety of clean energy sources (wind, solar, hydro, and nuclear) and design effective charging stations and on-board batteries for fleet vehicles such as buses.


Stuart Adler


David Beck


David Bergsman


Guozhong Cao


Hugh Hillhouse


Vincent Holmberg


Samson Jenekhe


Jun Liu


Lilo Pozzo


Julie Rorrer


Daniel Schwartz


Zachary Sherman


Eric Stuve

Campus opportunities

CLEAN ENERGY INSTITUTE
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IMOD
NSF Center for Integration of Modern Optoelectronic Materials on Demand

UW MEM·C
Molecular Engineering Materials Center

WASHINGTON Clean Energy Testbeds

Molecular Engineering & Sciences Institute