



INSTITUTE OVERVIEW

Research Areas:

- ▶ Sustainable energy
- ▶ Molecular design and synthesis
- ▶ Hierarchical molecular assembly
- ▶ “Active” or “smart” materials
- ▶ Medical therapeutics and diagnostics
- ▶ Synthetic biology

Related Centers & Initiatives:

- ▶ Advanced Materials for Energy Institute
- ▶ Center for Intracellular Delivery of Biologics
- ▶ Center for Nanotechnology
- ▶ Microfabrication Facility
- ▶ Nanotech User Facility
- ▶ NESAC/BIO

Education Programs:

- ▶ Nanotechnology PhD Track
- ▶ Nanoscience & Molecular Engineering Option Program for Undergraduates

Web site:

- ▶ <http://depts.washington.edu/moleng>
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A Home for Molecular Engineering & Sciences Research at the University of Washington

The Institute for Molecular Engineering and Sciences will bring together faculty teams from across the University of Washington to catalyze translational research in the Biotech and Clean Tech areas. It will serve both as an intellectual accelerator to bring fresh approaches and ideas to societal grand challenges, and as a physical incubator where new interdisciplinary teams can come together in a shared space.

Housed in the new Molecular Engineering and Sciences Building, the Institute will provide research space for more than 15 research groups, 3 research centers, and a Molecular Analysis Facility. The broader Institute membership hails from a range of fields including Biochemistry, Physics, Chemistry, Physiology & Biophysics, Biological Structure, and Medicinal Chemistry, in addition to the majority of the engineering disciplines.

The Molecular Engineering & Sciences Institute will serve both as a physical incubator and an intellectual accelerator for cutting-edge translational research.

The Institute will also create and coordinate new interdisciplinary education programs for undergraduate and graduate students in the College of Arts and Sciences and the College of Engineering. Drawing on the expertise of multiple departments, these programs will teach students the fundamental aspects of molecular-level engineering through core courses and top-notch research opportunities.

Research at the Institute is made possible by the support of the College of Arts & Sciences, the College of Engineering, and the UW Provost, as well as the Life Sciences Discovery Fund, the National Science Foundation, and the National Institutes of Health.



MoES Building Stats:

- ▶ 89,000 square feet
- ▶ 4 floors of research lab space and offices, plus a large ground contact lab
- ▶ Home to 15-20 faculty, 3 centers, and a dedicated Molecular Analysis Facility
- ▶ Naturally vented offices and radiant heating; an expected LEED Silver rating
- ▶ Summer 2012 occupancy

The Molecular Engineering & Sciences Building

The Molecular Engineering & Sciences Building was designed to accommodate sophisticated molecular-level engineering research. The building has been specially sited to minimize vibration and electromagnetic interference, and the design maximizes the ground contact lab space to fully exploit this location. The Institute's Molecular Analysis Facility located on the ground floor will provide state-of-the-art instrumentation for the use of UW researchers as well as the larger non-profit and tech communities in Seattle.



The upper floors are designed to enable easy reconfiguration to accommodate the evolving research landscape. The open layout of the research space promotes interaction and collaboration, helping create a fertile and creative environment for research and discovery.

Some of the building's residents and research foci will include:

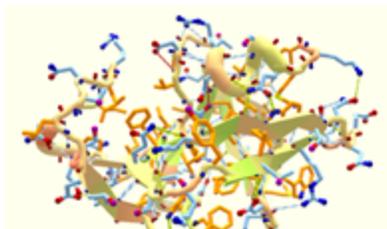
- ▶ **Biotech** - Patrick Stayton, Center for Intracellular Delivery of Biologics
- ▶ **CleanTech** - Daniel Gamelin, David Ginger, Hugh Hillhouse, Christine Luscombe
- ▶ **Surface Analysis** - Dave Castner, Lara Gamble, NESAC/BIO
- ▶ **Protein Design and Engineering** - David Baker
- ▶ **Characterization and Nanofabrication** - Analytical Biopharmacy Core, NanoTech User Facility

"The Institute will be flexible and responsive – it will align its efforts with the most creative molecular engineering and sciences research wherever it is occurring."

– Patrick Stayton, MoES Director

Featured Research: David Baker

Professor Baker's research aims to predict the structures of naturally occurring biomolecules and interactions and to design new molecules with new and useful functions. To carry out the required calculations Baker and his group developed the computer program Rosetta, as well as the distributed computing projects Foldit and Rosetta@Home. Building on initial computational designs, Baker uses experiment to better understand the principles underlying catalysis and binding in order to design novel proteins and enzymes. More info » www.bakerlab.org



Featured Research: Christine Luscombe

Research in the Luscombe Group focuses on the design, synthesis, and applications of functional macromolecules. Polymeric materials are a more lightweight, flexible, and cost-effective alternative to conventional materials such as silicon. Professor Luscombe's research aims to develop new methods for making semiconducting polymers and to create new polymers with improved light absorption, charge transport, and stability. More info » faculty.washington.edu/luscombe

