



UNIVERSITY of WASHINGTON



MOLECULAR ENGINEERING & SCIENCES INSTITUTE

## MOLES QUARTERLY NEWSLETTER - *SPRING 2019*



### MESSAGE FROM THE DIRECTOR

Pat Stayton

*Professor of Bioengineering*

I'm excited to share with you a new quarterly newsletter from the Molecular Engineering & Sciences Institute (MoIES) at the University of Washington! Since its founding in 2011, the MoIES community has grown to include over 130 faculty members from more than 20 departments as well as 70+ graduate students.

As you'll see below, MoIES faculty and students are exploiting the principles and methods of molecular engineering for many different purposes – from designing protein filaments that could be used to create novel materials, to developing new systems to assess platelet health, to characterizing the photovoltaic materials used in solar cells to improve their performance.

Central to our mission is the education of future molecular engineers. We're proud to host one of the top molecular engineering PhD programs in the world. We recently added a [Data Science Option](#) for PhD students in recognition of the fact that scientists increasingly need to be able to manipulate and understand large, dynamic data sets as part of their research. This option, supported by the [UW eScience Institute](#), introduces students to the foundations of data science, and provides them with techniques and tools that can be applied to their research.

Finally, we are thrilled to have Lara Gamble as the new director of the Molecular Analysis Facility (MAF). We look forward to seeing the MAF grow under her leadership!

Pat Stayton



## Institute News

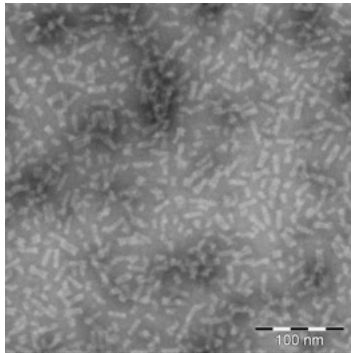


### **New leadership at the Molecular Analysis Facility**

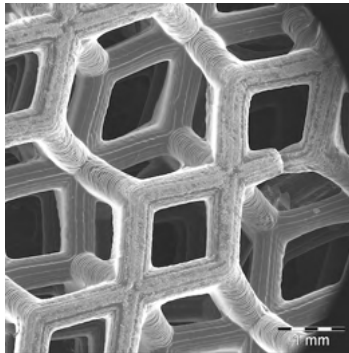
Lara Gamble, associate research professor in bioengineering at the University of Washington (UW), has been appointed director of the [UW Molecular Analysis Facility \(MAF\)](#), a fully-staffed instrumentation facility with extensive microscopy, spectroscopy, and surface science capabilities located in the MoIES building. Gamble will take over for long-time director Dave Castner, professor of bioengineering and chemical engineering at UW, who is retiring. [Read more.](#)

### ***MAF acquires new Scanning Electron Microscope (SEM)***

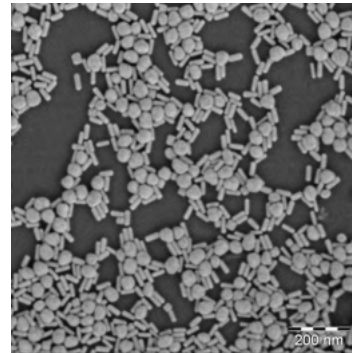
The MAF's new SEM, the TFS Apreo-S with Lovac, can produce high resolution images of a wide variety of materials including non-conductive ceramics and polymers. [Learn more about this versatile, high-performance SEM.](#)



Negatively stained synthetic protein



3D printed protein truss



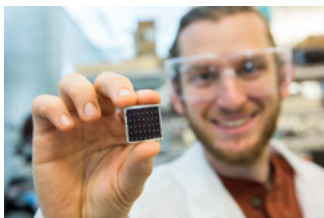
Gold nanoparticles on glass

## Research Highlights



### **BIOTECH: Self-assembling protein filaments created from scratch**

Hao Shen, a molecular engineering PhD candidate in David Baker's lab, was a lead author of a study published in [Science](#) describing the creation of self-assembling protein filaments from scratch. The filaments were built from identical protein subunits that snap together spontaneously to form long, helical, thread-like structures which could be used to create new materials for a range of applications, from diagnostics to nano-electronics. [Featured in Geekwire.](#)



### **CLEANTECH: Three awards from US Department of Energy to fuel UW solar cell research**

Teams led by MoIES faculty members Hugh Hillhouse and Scott Dunham, as well as the Clean Energy Institute's Devin MacKenzie, received competitive awards totaling over \$2.3 million from the U.S. Department of Energy Solar Energy Technologies Office for projects that will advance research and development in photovoltaic materials. Photovoltaic materials are an essential component of solar cells and impact the amount of sunlight that is converted into electricity. [Read the full press release from UW News.](#)



### BIOTECH: New method to assess platelet health could help ER doctors

A research team led by MoES faculty member Nathan Sniadecki has created a novel system that can measure platelet function within two minutes and can help doctors determine which trauma patients might need a blood transfusion upon being admitted to a hospital. The team's results were recently published in [Nature Communications](#). [Read about it in UW News](#).

## Pioneering Data Science for Molecular Engineers

MoES now offers Molecular Engineering (MoE) PhD students with little or no background in data science, computer science, or coding the opportunity to learn the fundamentals of data science and gain experience with relevant tools and techniques, through a new data science degree option. Training includes topics like scientific programming, machine learning, and data visualization. [Learn more about the MoE data science option](#).



## Spring Seminar Series

[Tuesdays, 1:00 - 2:00 PM in Nano Engineering and Sciences \(NANOES\) 181](#)

- **April 9:** Xiaobo Yin - Assistant Professor of Mechanical Engineering, Physics, *University of Colorado*
- **April 16:** Aurora Clark - Professor of Chemistry, *Washington State University*
- **April 23:** Brent Nannenga - Assistant Professor of Chemical Engineering, *Arizona State University*
- **April 30:** Quinton Smith - Post-Doctoral Fellow, *Massachusetts Institute of Technology*
- **May 7:** Michael Grünwald - Chemical Engineering Dept. Chair & Dean's Leadership Professor, *University of Utah*
- **May 14:** Carlos Rinaldi - Associate Professor of Chemistry, *University of Florida*
- **May 21:** Thomas Epps - Thomas and Kipp Gutshall Senior Career Development Chair, Director - Center for Molecular & Engineering Thermodynamics, Joint Professor, Materials Science & Engineering, *University of Delaware*
- **May 28:** Brian Kuhlman - Oliver Smithies Investigator, Professor of Biochemistry and Biophysics, *University of North Carolina*
- **June 4:** Laura Ensign-Hodges - Associate Professor of Ophthalmology, *Johns Hopkins*

*Medicine*



For additional information please contact MoIES Communications Manager [Renske Dyedov](#).

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