Anna Lea Schoulties *Naff*

Anna was born on a small farm in Northern Kentucky on Nov. 29, 1920. Her early education and that of a younger brother began at Dale Grade School and continued through Cold Spring High, where her favorite subject was mathematics. She was the salutatorian for her high school class.

After finishing high school, Anna worked during the summers and studied at Eastern Kentucky University for two years. She worked at Williamson Heater in Cincinnati for a year before transferring to the University of Kentucky's Department of Home Economics. Her graduation in 1944 was with distinction. Receipt of a Haggin Fellowship enabled Anna to take up undergraduate and graduate work in chemistry. She received a Master of Science in 1946, and her thesis was published in 1947.

Anna married Benton Naff in December 1946 in Portland, Oregon. She taught chemistry at the University of Kentucky in 1946-47 and at Oregon State University in 1947-50. While her husband was at Bowling Green State University in Ohio, Anna attended the University of Michigan Ann Arbor and earned a Master of Arts Degree in Library Science. At that time (1953), she began research with the Owens Illinois Glass Co. exploring the properties of epoxy resins and silicones. Her investigations resulted in the invention of an organic ink for use on glass; the patent was issued in 1958. The family moved from Ohio in 1955. Anna continued research but in an academic environment. She assisted her husband in the acquisition of grants and produced a number of chemical research publications (1955-63).

From the fall of 1964 to the end of the summer of 1965, when her husband was on a sabbatical, Anna served as a cataloger in the Main Library at Brown University. A year later, she continued library work, first at the National Bureau of Standards and then at the National Institutes of Health. Her work in acquisition and cataloging areas provided significant professional advancement, and she continued to work at NIH until near the end of her career. Anna died Sept. 21, 1973.

2026 Naff Planning Committee

Dr. Prakash Shrestha | Chair, Department of Chemistry
Dr. Jason DeRouchey | Department of Chemistry
Dr. Christopher Richards | Department of Chemistry
Dr. Ryan Cheng | Department of Chemistry
Dr. Daniel Lee | Sanders-Brown Center on Aging

The Department of Chemistry at the University of Kentucky organizes an annual Symposium on Chemistry and Molecular Biology in honor of Anna S. Naff, a University of Kentucky graduate, through the generous support of Dr. Benton Naff of NIH.

The symposium has an interdisciplinary character and is attended by students and faculty from the Departments of Chemistry, Biochemistry, Biology, Pharmacy, Engineering, Agriculture and Medicine. The symposium features renowned experts from around the world, including Nobel prize-winning scientists, and is attended by faculty and students from colleges and universities in Kentucky and the contiguous states.

Questions about this year's symposium can be directed to chemistry@uky.edu or prakash_shrestha@uky.edu

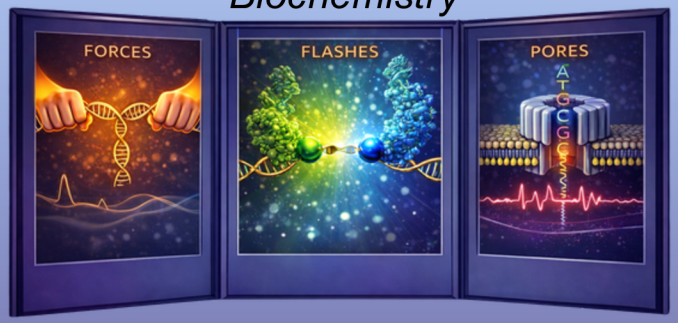
Stay up-to-date on department events!

College of Arts and Sciences
Department of Chemistry

51ST ANNUAL *Naff* SYMPOSIUM

Forces, Flashes, and Pores

Single-Molecule Windows into Biochemistry



Thursday, April 2, 2026

Healthy Kentucky Research Building Auditorium

College of Arts and Sciences
Department of Chemistry

Speakers

Taekjip Ha, Ph.D.

Howard Hughes Medical Institute & Program in Cellular and Molecular Medicine, Boston Children's Hospital | Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School

Dr. Taekjip Ha is George D. Yancopoulos Professor of Pediatrics in honor Frederick W. Alt at Harvard Medical School and director and senior investigator of Program in Cellular and Molecular Medicine at Boston Children's Hospital. He has been an investigator with the Howard Hughes Medical Institute since 2005. He is a member of the National Academy of Science and the National Academy of Medicine, and a fellow of the American Academy of Arts and Sciences. He received Ho-Am Prize in Science (2011), Kazuhito Kinosita Award in single molecule biophysics (2018) and Barany Award for young investigators (2007). He has served on Editorial Boards for Science (2011-present), Cell (2009-2020) and eLife (2014-2020). He co-chaired the National Academies committee on Toward Sequencing and Mapping of RNA Modifications (2022-2024). He served as President of the Biophysical Society (2023-2024).

Laura Finzi, Ph.D.

Department of Physics & Astronomy | Department of Bioengineering Center of Human Genetics | Clemson University

Laura Finzi is a Fellow of the American Physical Society a member of the Editorial Board of Biophysical Reviews. She received a Laurea in Industrial Chemistry from the University of Bologna, Italy and a PhD in Chemistry from the University of New Mexico working with Carlos Bustamante. She continued her collaboration with Bustamante as a postdoctoral fellow at The Institute of Molecular Biology in Eugene, OR, before joining the group of Dr. Jeff Gelles at Brandeis University. She held academic positions at the University of Milano, Italy and Emory University. Her career path is featured in The Living Histories Series. She is recognized internationally for her contributions to the understanding of DNA mechanics, topology and physical interactions relevant to transcription regulation.

Shixin Liu, Ph.D.

Head, Laboratory of Nanoscale Biophysics and Biochemistry | The Rockefeller University

Shixin Liu obtained his BSc in biology from the University of Science and Technology of China and his PhD in chemistry from Harvard University. After postdoctoral work at the University of California, Berkeley, he became a faculty member at The Rockefeller University, where he is now Associate Professor and heads the Laboratory of Nanoscale Biophysics and Biochemistry. His group studies the dynamic behaviors and interactions of biomolecules chiefly using single-molecule techniques, with a focus on DNA- and chromatin-based molecular machines. He was a recipient of the NIH Director's New Innovator Award and the Vilcek Prize for Creative Promise in Biomedical Science.

Jens H. Gundlach, Ph.D.

Department of Physics | University of Washington

Jens Gundlach is a Professor of Physics at the University of Washington. He earned his diploma from the Johannes Gutenberg University in Mainz, Germany, and his PhD (1990) in nuclear physics from the University of Washington. After his PhD, he stayed at UW, but changed his research field to experimental gravity and precision measurement. In 2002 he began research in biophysics, resulting in the development of nanopore sequencing of DNA and the development of a novel ultra-precise single-molecule tool. Professor Gundlach continues to lead two separate major research efforts at opposite end of physics: gravity and biophysics. He is a fellow of the American Physical Society, received a NIST Precision Measurement Grant, the APS Pipkin Prize and in 2021 the Breakthrough Prize in Fundamental Physics.

Schedule of Events

8:00am Breakfast and Networking

Set up posters for competition

8:45am Welcome and Introductions

Dr. Ilhen Messaoudi
Acting Vice President for Research

Dr. Prakash Shrestha
Assistant Professor

9:00am Dr. Taekjip Ha

From single molecules to cellular decision making: connecting the scales using mechanical force

In this lecture, I will describe our effort to understand how the mechanical responses of single molecules contribute to important cell fate decision, focusing on our work on integrins, mechanosensitive membrane proteins that cells use to interrogate the extracellular environments.

10:15am Dr. Laura Finzi

Using single-molecule approaches to dissect fundamental cellular processes

Single molecule techniques are extremely powerful in the investigation of the molecular mechanisms driving emergent behavior in living systems.

My lab has pioneered their use and development and combines these approaches to understand, primarily, but not only, transcription regulation. In particular, we study how the physical properties of DNA and chromatin, such as their mechanics and topology, the nucleoprotein complexes that shape the architecture of the genome, the remodeling of DNA by the motor enzymes that process it and phase separation contribute to transmitting information necessary for life.

11:30am Lunch & Poster Competition

Group A will present from 11:30am - 12:30pm
Group B will present from 12:30pm - 1:30pm

1:45pm Dr. Shixin Liu

Single-molecule visualization of genetic and epigenetic inheritance

Genome replication and gene expression are carried out by molecular machines that measure in nanometers and generate forces in piconewtons. My laboratory mainly employs single-molecule fluorescence detection and force manipulation techniques to study these biochemical and mechanical processes that govern genetic and epigenetic inheritance. This approach enables us to follow transient, stochastic, and heterogeneous molecular events that are inaccessible by ensemble-averaging methods.

By reconstituting DNA/chromatin-based macromolecular complexes and tracking their dynamic behavior in real time, we have gained fresh insights into their physicochemical properties and regulatory mechanisms.

3:00pm Dr. Jens H. Gundlach

Ultra-precise tracking of genomic enzymes with nanopore tweezers

My group has been at the nexus of developing nanopore sequencing of DNA and establishing nanopores as a new tool for single-molecule biophysics. Much of our work is based on the engineered protein pore MspA. Here, I will show the stunning capabilities of using protein nanopores to observe enzyme mechanics in real-time as these enzymes move along DNA or RNA. We easily achieve ten times better position and time resolution than optical tweezers, while simultaneously measuring the exact nucleotide sequence within the enzyme.

I will show hereto unseen detail of the motion of helicases, DNA and RNA polymerases, reverse transcriptases, etc. Besides establishing decisive kinetic enzyme models, our method reveals many surprisingly properties of these enzymes.

4:00pm Poster Competition Awards

4:30pm Closing Remarks