UNIVERSITY OF CHICAGO – PURDUE UNIVERSITY VISIT

TUESDAY FEBRUARY 7, 2023

PURDUE BIOGRAPHIES (IN ALPHABETICAL ORDER)

MUHAMMAD ASHRAFUL ALAM
Jai N. Gupta Professor of Electrical and Computer Engineering
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Professor Alam holds the Jai N. Gupta professorship at Purdue University, where his research focuses on the physics and technology of semiconductor devices. From 1995 to 2003, he worked in the Silicon ULSI group at Bell Laboratories, Murray Hill, NJ. Since returning to Purdue in 2004, his group has explored the reliability physics of nanotransistors, limits of nanobiosensors, atom-to-farm modeling of solar cells, and physics/technology of Landau transistors. He is a fellow of IEEE, APS, and AAAS. His awards include the 2006 IEEE Kiyo Tomiyasu Medal for contributions to device technology for communication systems, the 2015 SRC Technical Excellence Award for fundamental contributions to reliability physics, and the 2018 IEEE EDS Education Award. Prof. Alam enjoys teaching: More than 350,000 students worldwide have learned some aspects of semiconductor devices from his web-enabled courses.

MUNG CHIANG
President of Purdue University
Roscoe H. George Distinguished Professor of Electrical and Computer Engineering

Mung Chiang is president of Purdue University and the Roscoe H. George Distinguished Professor of Electrical and Computer Engineering. From July 2017 to June 2022, he was the John A. Edwardson Dean of the College of Engineering. From April 2021 to December 2022, he was the executive vice president for strategic initiatives.

As the engineering dean, he led the college to its first back-to-back top 4 graduate rankings in the U.S. while growing it to be the largest top 10 undergraduate engineering college in the country. Undergraduate admissions applicant number, selectivity, yield rate and graduation rate, as well as women and minority enrollment percentages, all achieved new records. Online program size more than quadrupled, while the ranking for best online master's in engineering programs advanced to the top 3 in the U.S. New degrees were launched, and enrollment in professional master's programs more than quadrupled.

Annual research awards surged over 70% in five years, including the largest federal funding and the largest industry funding awards in college history and 12 national research centers headquartered at or co-led by Purdue. Patent applications increased by about 40%, and the college contributed to Purdue's Ever True campaign in excess of $1 billion. The "pinnacle of excellence at scale" in the college is further supported by 15 facility construction or renovation projects completed since 2017, including Dudley Hall and Lambertus Hall.

As an executive vice president of the university, Chiang worked with many colleagues to help launch initiatives in national security technology and semiconductor and life science manufacturing, in Discovery Park District at Purdue's aerospace cluster and the Lab to Life residential neighborhood, and in economic growth through federal, state, and private-sector opportunities.

Previously, Chiang was the Arthur LeGrand Doty Professor of Electrical Engineering at Princeton University, where he was the inaugural chairman of the Princeton Entrepreneurship Council and director of the Keller Center for Innovation in Engineering Education. He helped launch entrepreneurial programs at Princeton and was named a New Jersey CEO of the Year (2014). He received a BS (Hons.) in electrical engineering and in mathematics, and an MS and PhD in electrical engineering, from Stanford University.

CRAIG GOERGEN
Leslie A. Geddes Associate Professor of Biomedical Engineering
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Dr. Craig Goergen is an Associate Professor of Biomedical Engineering at Purdue University. Dr. Goergen also leads the Purdue Cardiovascular Imaging Research Laboratory. The mission of the Purdue University Cardiovascular Imaging Research Laboratory (CVIRL) is to advance imaging techniques to study disease progression and improve detection and treatment across a broad spectrum of medical conditions, ultimately enhancing the quality of human life. Under the guidance of Dr. Craig Goergen, CVIRL has previously been focused on developing imaging techniques to study both cardiac and vascular disease, but current efforts take a more expansive approach, including research projects from cancer to diabetes. Non-invasive imaging aids the group in the development of technologies that will positively impact the clinical care of patients.

He received a BSBME from Washington University in St. Louis and an MS and Ph.D. in Bioengineering from Stanford University. Dr. Goergen was awarded the BMES 2017 Rita Schaffer Young Investigator Award, which highlights originality and ingenuity in the research of investigators less than seven years removed from receiving their terminal degree. Dr. Goergen's research interests focus on developing advanced imaging techniques to study cardiovascular disease with the hope of developing therapeutics, devices, and imaging techniques to directly improve patients' lives.

CHI HWAN LEE
Leslie A. Geddes Associate Professor of Biomedical Engineering
Associate Professor of Mechanical Engineering with courtesy appointment in Materials Engineering and Speech, Language, and Hearing Sciences
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Dr. Chi Hwan Lee is a Leslie A. Geddes Associate Professor of Biomedical Engineering and Associate Professor of Mechanical Engineering with courtesy appointment in Materials Engineering and Speech, Language, and Hearing Sciences at Purdue University. His research focuses on the development of flexible and stretchable electronics for wearable healthcare applications.

He obtained Ph.D. (2013) and M.S. (2009) degrees in Mechanical Engineering from Stanford University, and received a B.S. degree (2007) in Mechanical Engineering from Illinois Institute of Technology. He is the recipient of Top Innovation Award (2013) from Technology Connect World National Innovation Summit, Purdue Faculty Award of Excellence (2017), Hanwha Advanced Materials Non-tenured Faculty Award (2018), Ralph W. and Grace M. Showalter Research Trust Award (2018), NIH Trailblazer Award for New and Early Stage Investigators (2019), Korean-American Scientists and Engineers Association (KSEA) Young Investigator Award (2019), Ajouin Outstanding Professional Award from Ajou University in South Korea (2019), Purdue Engineering Early Career Research Award (2020). He has published > 70 journal papers and 4 book chapters; issued 4 U.S. patents; filed 11 utility patents and 12 provisional patents; and launched 3 startup companies.

MARK LUNDSTROM
Interim Dean of the College of Engineering
The Don and Carol Scifres Distinguished Professor of Electrical and Computer Engineering
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Dr. Lundstrom is the interim Dean of the College of Engineering and the Don and Carol Scifres Distinguished Professor of Electrical and Computer Engineering at Purdue University. His research interests include the physics of electronic devices, especially nanoscale transistors and novel devices for computing, communication, and energy conversion and storage. Lundstrom's focus is on using theory, modeling, and simulation to explore new device approaches, understand the physics of devices, and to establish ultimate and practical limits of devices.

The Lundstrom group's work is directed to understand and explore devices through simulation. This work has led to a simple, conceptual model for nanoscale field-effect transistors that is now

widely-used in the field. At the same time his group has pioneered the application of the non-equilibrium Green's function (NEGF) approach to device simulation and used it to explore the ultimate MOSFET, III-V HEMTs and MOSFETs, carbon nanotube, semiconductor nanowire, and graphene transistors. Lundstrom's current interests are in applying the new methods developed to research on nanoelectronics for information processing devices to the field of nano-engineered devices for energy conversion and storage - solar cells, thermoelectric devices, etc.

Closely coupled to Lundstrom's research is an educational initiative called "Electronics from the Bottom Up." With his colleagues at Purdue, Datta and Alam, he is helping to establish a new conceptual and computational framework for nano-engineered electronics. Lundstrom is also the founding director of the NSF-funded Network for Computational Nanotechnology, a six-university initiative with a mission to accelerate the evolution of nanoscience to nanotechnology by connecting those who develop simulations to those who use them to analyze experiments and design devices. The NCN's science gateway, nanoHUB.org provides online services for simulation, education, and collaboration and now serves a community of more than 90,000 users each year.

STEVEN STEINHUBL
Vincent P. Reilly Professor of Biomedical Engineering
Member, Regenstrief Center for Healthcare Engineering
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Dr. Steinhubl is the Vincent P. Reilly Professor of Biomedical Engineering and a member of the Regenstrief Center for Healthcare Engineering at Purdue University. He is also the Chief Medical Officer for physIQ and a career-long clinician-scientist. He was formerly the Director of Digital Medicine at Scripps Research's Translational Institute and currently serves as a Cardiologist for the Alaska Native Tribal Health Consortium. He received his undergraduate training in chemical engineering at Purdue University, medical degree at St. Louis University, and cardiology training at the Cleveland Clinic.

His work has focused on the implementation of clinical programs built specifically around the novel capabilities of digital technologies, especially those made possible through combining novel sensor technologies and AI-based insights to provide personalized, real-time analyses able to detect individual changes in health. Much of his work focuses on pragmatic comparative efficacy trials to identify the impact of real-world implementation.

Dr. Steinhubl has been active in clinical research for over 20 years. He has been the Principal Investigator of dozens of national and international trials, has published nearly 300 peer-reviewed articles and was the founding Editor-in-Chief of Nature Partner Journal - Digital Medicine.

DAVID UMULIS
Senior Vice Provost for Purdue University in Indianapolis
(Acting) Dane A. Miller Head of the Weldon School of Biomedical Engineering
Professor of Biomedical Engineering
Professor of Agricultural and Biological Engineering (courtesy)
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As of January 2023, Dr. Umulis serves as the Senior Vice Provost for Purdue University in Indianapolis, while continuing as acting Dane A. Miller Head of the Weldon School of Biomedical Engineering and Professor of Biomedical Engineering. He is also the Director of the NSF-funded EMBRIO Institute.

Umulis leads the Weldon School to advance discovery and translational research in biomedical imaging, neuroengineering, instrumentation and devices, computational biomedicine, and engineered biomaterials. He is regarded as an impactful research leader, widely respected mentor to young faculty colleagues and an administrator with a proven track record.

In 2021, Umulis led a collaborative team of more than 20 faculty from six universities in the development of a new NSF-funded institute that uses simulation and AI combined with cell biology to discover mechanisms of wound repair and cellular defense. This is an extension of his innovative work that uses high performance computing and AI to support biological discovery in organismal development.

Translating the research innovation to the classroom, Dr. Umulis is a leader in the training and support of the next generation of diverse STEM leaders. Dr. Umulis has completed NSF-sponsored research in engineering formation to study how “computational thinking,” when woven into an integrative biological engineering curriculum, leads to improved self-efficacy and stronger engineering identity formation. This fusion of research into curriculum is a core principle of the NSF EMBRIO Institute that scales up these approaches for integrative biology research and training of diverse students and faculty at Purdue University, Indiana University, Notre Dame, the University of Pennsylvania, the University of Puerto Rico Mayagüez and Morehouse College.

Dr. Umulis serves on numerous grant review panels and boards including the European Science Foundation, and as a standing member on the NIH Development 1 study section. Prior to these assignments, he has served on over 15 government review panels at the NIH and he currently serves as Associate Editor of the field leading journal PLoS Computational Biology. Umulis is a member of the Purdue University Teaching Academy, and he has received the outstanding teacher award in agricultural biology and engineering, the Teaching for Tomorrow Award, the 2011 Richard L. Kohls Early Career Award and the 2021 Henry T. Yang Award for Leadership in Service.

UNIVERSITY OF CHICAGO BIOGRAPHIES (IN ALPHABETICAL ORDER)

ERIN ADAMS
Joseph Regenstein Professor of Biochemistry and Molecular Biology
Committee on Cancer Biology
Committee on Genetics, Genomics and Systems Biology
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Dr. Adams is the Joseph Regenstein Professor of Biochemistry and Molecular Biology and a faculty member of the Committee on Cancer Biology and the Committee on Genetics, Genomics, and Systems Biology.

Her laboratory combines structural, biochemical, and functional approaches to study the mechanisms of immune recognition. The laboratory is interested in the molecular signals that are used by the immune system to distinguish healthy from unhealthy tissue. Many of the projects focus on "unconventional" T cell recognition, involving γδ T cells, Natural Killer T cells and Muscosal-Associated Invariant T (MAIT) cells and antigen presentation by nonclassical or MHC-like proteins. The lab's strengths are in biochemistry, structural biology, protein engineering and cellular assays that will reveal the fundamental principles behind how effector cells of the immune system regulate human disease. They have a high level of expertise in studying molecular recognition of T cells, particularly unconventional T cells outside the canonical CD4+/CD8+ lineage and structure function of antigen-presenting molecules.

PAUL ALIVISATOS
President of the University of Chicago
John D. MacArthur Distinguished Service Professor in the Department of Chemistry

A celebrated chemist and accomplished administrator, Paul Alivisatos became the 14th president of the University of Chicago on September 1, 2021.

As President of the University, Alivisatos serves as Chair of the Board of Governors of Argonne National Laboratory and Chair of the Board of Directors of Fermi Research Alliance LLC, the operator of Fermi National Accelerator Laboratory. He is also the John D. MacArthur Distinguished Service Professor in the Department of Chemistry, the Pritzker School of Molecular Engineering, and the College.

Alivisatos previously served as the Executive Vice Chancellor and Provost (EVCP) of the University of California, Berkeley. In addition to his role as EVCP, Alivisatos was the Samsung Distinguished Professor of Nanoscience and Nanotechnology, founding Director of the Kavli Energy Nanoscience

Institute, and from 2009-2016 served as Director of the Lawrence Berkeley National Laboratory (Berkeley Lab). A member of Berkeley's faculty from 1988-2021, he held professorships in the departments of chemistry and materials science, and served in several administrative roles, including Vice Chancellor for Research.

A preeminent scientist and entrepreneur, Alivisatos has made pioneering research breakthroughs in nanomaterials. Contributions to the fundamental physical chemistry of nanocrystals are the hallmarks of his scientific career. His research accomplishments include studies of the scaling laws governing the optical, electrical, structural, and thermodynamic properties of nanocrystals. He developed methods to synthesize size and shape-controlled nanocrystals, and developed methods for preparing branched, hollow, nested, and segmented nanocrystals. In his research, he has demonstrated key applications of nanocrystals in biological imaging and renewable energy. His inventions are widely used in biomedicine and QLED TV displays, and his scientific advances have yielded more than 50 patents.

Alivisatos received his Bachelor's degree in chemistry in 1981 from the University of Chicago and his Ph.D. in chemistry from Berkeley in 1986. He is a founder of two prominent nanotechnology companies, Nanosys and Quantum Dot Corp, now a part of Thermo Fisher. He is also the founding editor of Nano Letters, a publication of the American Chemical Society, and formerly served on the senior editorial board of Science magazine, a publication of the American Association for the Advancement of Science.

Alivisatos has been recognized for his accomplishments with more than 25 awards including the National Medal of Science, the E.O. Lawrence Award, the Wolf Prize in Chemistry, the Dan David Prize, the Von Hippel Award, the Linus Pauling Medal, the Eni Award for Energy and Environment, the Wilhelm Exner Medal, the 2021 Priestley Medal, the BBVA Foundation Frontiers of Knowledge Award in the Basic Sciences, and the National Academy of Science Award in Chemical Sciences. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society.

MARK ANDERSON
Executive Vice President for Medical Affairs
Dean of the Division of the Biological Sciences (BSD
Dean of the Pritzker School of Medicine
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Mark Anderson, MD, PhD, is the Executive Vice President for Medical Affairs, Dean of the Division of the Biological Sciences (BSD) and Dean of the Pritzker School of Medicine at the University of Chicago, where he heads the medical and biological research, education, care delivery, and community-engagement enterprises.

Reporting to University President Paul Alivisatos, Dr. Anderson works closely with leaders across the University and UChicago

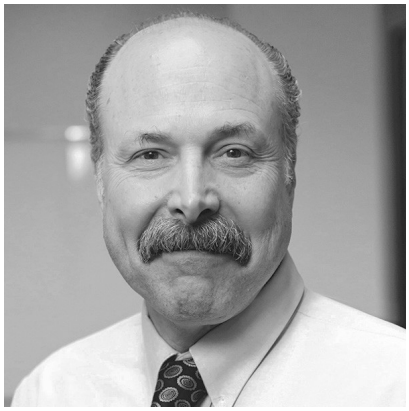
Medicine (UCM) to lead a transformation agenda aimed at driving growth of the health system and integrating the academic and clinical programs to leverage the strengths of each and enhance their impact. A vital part of these duties is leading efforts to enhance community health, health equity, and access to care for communities in Chicago's South Side and beyond.

A renowned scholar, physician and caregiver, Dr. Anderson's research, commitment to education and medical leadership have earned international recognition. He is a leading expert on the mechanisms of cardiac arrhythmias and heart failure, conducting research focused on the role of the calmodulin-dependent protein kinase II in heart failure and cardiac arrhythmias, which are a common cause of sudden cardiac death. He has published more than 160 peer-reviewed journal articles, book chapters and book reviews; given invited talks across the United States and in more than a dozen nations; and been included over many years in the Castle Connolly Top Doctors listing. In 2017 he was elected to the National Academy of Medicine.

Dr. Anderson came to the leadership at UChicago in October 2022 from the Johns Hopkins University School of Medicine, where he served as director of the Department of Medicine, the William Osler Professor of Medicine and physician-in-chief of The Johns Hopkins Hospital. In leadership roles at Johns Hopkins from 2014 to 2022, he oversaw more than 700 full-time faculty members and clinicians across 18 academic divisions, nearly 3,000 staff members and trainees, 300,000 clinic visits, and an annual research portfolio of more than $200 million in the last year. He also led the Department of Medicine's efforts in securing philanthropy, raising approximately $20 million to $40 million annually.

Before moving to Johns Hopkins, Anderson served as chairman and department executive officer of internal medicine at the University of Iowa Carver College of Medicine from 2005 to 2014, while also leading Iowa's Cardiovascular Research Center. He served on the medical faculty at Vanderbilt University from 1996 to 2005, where he directed educational and clinical programs.

Anderson received his undergraduate degree in biology with honors in 1981 from Macalester College in St. Paul, Minnesota, and earned a Ph.D. in physiology and an M.D. in 1989 from the University of Minnesota. He later completed an internal medicine residency and fellowships in cardiology and clinical cardiac electrophysiology at Stanford University before joining Vanderbilt's medical faculty in 1996.



DAVID AWSCHALOM
Liew Family Professor of Molecular Engineering
Vice Dean for Research and Infrastructure, Pritzker School of Molecular Engineering
Founding Director, Chicago Quantum Exchange
Senior Scientist, Argonne National Laboratory
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David Awschalom is the Liew Family Professor and Vice Dean for Research of the Pritzker School for Molecular Engineering at the University of Chicago, a Senior Scientist at Argonne National

Laboratory, and Founding Director of the Chicago Quantum Exchange. He is also the inaugural Director of Q-NEXT, one of the US DOE Quantum Information Science Research Centers. He works in the fields of spintronics and quantum information engineering, exploring and controlling the spins of electrons, nuclei, and photons in semiconductors and molecules. His research includes implementations of information processing with potential applications in quantum computing, communication, and sensing.

Professor Awschalom received his BSc in physics from the University of Illinois at Urbana-Champaign, and his PhD in experimental physics from Cornell University. He was a research staff member and manager of the Nonequilibrium Physics Department at the IBM Watson Research Center in Yorktown Heights, New York. In 1991 he joined the University of California-Santa Barbara as a professor of physics, and in 2001 was additionally appointed as a professor of electrical and computer engineering. Prior to joining PME, he served as the Peter J. Clarke Professor and Director of the California NanoSystems Institute, and director of the Center for Spintronics and Quantum Computation.

Professor Awschalom received the American Physical Society Oliver Buckley Prize and Julius Edgar Lilienfeld Prize, the European Physical Society Europhysics Prize, the Materials Research Society David Turnbull Award and Outstanding Investigator Prize, the AAAS Newcomb Cleveland Prize, the International Magnetism Prize from the International Union of Pure and Applied Physics, and an IBM Outstanding Innovation Award. He is a member of the American Academy of Arts & Sciences, the National Academy of Sciences, the National Academy of Engineering, and the European Academy of Sciences.

SLIMAN BENSMAIA
James and Karen Frank Family Professor of Organismal Biology and Anatomy
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Dr. Bensmaia is a neuroscientist who studies how sensory information is encoded in the nervous system and the brain, including the sense of touch and the position of limbs as they move through space. The overall scientific goal of his research program is to understand how nervous systems give rise to flexible, intelligent behavior. The lens through which he addresses this question is the study of sensory processing: how are robust and flexible neuronal representations of the environment constructed to support behavior? The advantage of sensory neuroscience is that the experimenter has complete control of (or access to) the input and can then track how neural signals relating to this input are transformed as they propagate along the neuraxis. The sensory system of interest is the somatosensory system (of primates), critical to motor behavior and particularly manual behavior.

The overall biomedical goal of his research program is to leverage what they learn about natural neural coding to restore the sense of touch to patients who have lost it, namely amputees and tetraplegic patients, by sensitizing bionic hands through electrical stimulation of the nerve or brain.

He is the principal architect of the biomimetic approach, which posits that encoding algorithms that mimic natural neural signals will give rise to more intuitive tactile percepts, thereby endowing bionic hands with greater dexterity. Not only are neuroengineering efforts explicitly informed by neuroscientific ones, they also provide an opportunity to test scientific hypotheses using causal manipulations, in this case electrical stimulation of neuronal populations.

CHIN-TU CHEN
Associate Professor of Radiology
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Dr. Chen is an Associate Professor of Radiology, and faculty in the Committee on Cancer Biology and the Committee on Medical Physics. Dr. Chen's research interests, primarily in integrative multimodality molecular imaging, cover a broad spectrum of imaging-centered topics including imaging physics and instrumentation, image reconstruction and processing, imaging tracers and probes development, physiological modeling, quantitative and intelligent image analysis, as well as applications of molecular imaging methods in a wide spectrum of biological and medical investigations, especially in cancer, brain disorders, cardiopulmonary diseases, and diabetes. Recently, Dr. Chen led efforts to install a facility to house a new, state-of-the-art IBA Cyclone 18/9 cyclotron that can be used to produce new types of radiopharmaceuticals, including advanced radiotracers for precision medicine.

ANDREW A. CHIEN
William Eckhardt Distinguished Service Professor of Computer Science
Director, CERES Center for Unstoppable Computing
Senior Computer Scientist, Argonne National Laboratory
Editor in Chief, Communications of the ACM
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Dr. Chien is a leading researcher in cloud software (serverless, resource management, etc) and cloud hardware (accelerators, graph computing, computational storage, etc), supercomputer architecture, and sustainable computing.

Andrew is the founder and current director of the UChicago CERES Center for Unstoppable Computing. He leads the Large-scale Sustainable Systems Research Group. Andrew is a Fellow of the ACM, IEEE, and AAAS and currently serves on the National Science Foundation's CISE Advisory Committee (2006-2011, 2020-current) as well as DARPA's Information Science & Technology (ISAT) Study Group. He has served on Advisory Boards for several universities (such as Stanford University, University of California Berkeley, University of Washington, EPFL) as well as national laboratory and

corporate research laboratories. From 2017-2022, Dr. Chien served as Editor-in-Chief of the Communications of the ACM (CACM).

From 2005-2010, Andrew was the Vice President of Research of Intel Corporation where he led long-range and disruptive technologies research in computer science and also had global responsibility for government research and university engagement. Chien's previous positions also include the SAIC Endowed Chair Professor in the Department of Computer Science and Engineering, and founding Director of the Center for Networked Systems at the University of California at San Diego (1998-2005). From 1999 to 2003, Andrew was Founder and CTO of Entropia, Inc. an early grid computing company. Chien was a Professor of Computer Science at the University of Illinois at Urbana-Champaign and the National Center for Supercomputing Applications (NCSA)(1990-1998).

JUAN DE PABLO
Executive Vice President for Science, Innovation, National Laboratories, and Global Initiatives
Liew Family Professor in Molecular Engineering
Senior Scientist at Argonne National Laboratory
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As the Executive Vice President for National Laboratories, Science Strategy, Innovation, and Global Initiatives, Juan de Pablo provides leadership for the University's stewardship of two U.S. Department of Energy National Laboratories — Argonne and Fermilab— as institutions to advance science and technology in support of the nation's interest. De Pablo collaborates with other leaders in research and innovation to build programs and links between and among the national laboratories and the University, as well as the Marine Biological Laboratory.

A prominent materials scientist, de Pablo's research focuses on polymers, biological macromolecules, and liquid crystals, a diverse class of materials widely used in many fields of engineering. He is also a leader in developing molecular models and computer simulations of complex processes over wide ranges of length and time scales. He heads a research group that develops advanced algorithms to design and predict the structure and properties of complex fluids and solids at a molecular level.

As a key leader for the Pritzker School of Molecular Engineering, de Pablo's work has been essential to the School's development and remarkable growth. He joined the University in 2012 as a member of the first set of the School's faculty appointments. He came from the University of Wisconsin, Madison, where he served as the Howard Curler Distinguished Professor and Hilldale Professor of Chemical Engineering. He was awarded the 2018 Polymer Physics Prize by the American Physical Society.

de Pablo is the author or coauthor of approximately 500 publications, and a textbook on Molecular Engineering Thermodynamics. He holds more than 20 patents on multiple technologies, including

nine jointly with Paul Nealey, the Brady W. Dougan Professor at the Pritzker School of Molecular Engineering. The International Technology Roadmap for Semiconductors has identified one of de Pablo and Nealey's collaborative inventions for directed self-assembly as a technology critical to the semiconductor industry's miniaturization goals. Another of de Pablo's patents has been licensed by a major health and nutritional products company and is used throughout the world to stabilize proteins and cells, including probiotics, in glassy materials over extended periods of time without refrigeration.

de Pablo received the Polymer Physics Prize from the American Physical Society in 2018, the DuPont Medal for Excellence in Nutrition and Health Sciences in 2016, the Intel Patterning Science Award in 2015, and the Charles Stine Award from the American Institute of Chemical Engineers in 2011. He served as chair of the Mathematical and Physical Sciences Advisory Committee of the National Science Foundation, and the Committee on Condensed Matter and Materials Research at the National Research Council. He is the founding editor of Molecular Systems Design and Engineering, and co-director of the new Center for Hierarchical Materials Design.

GREG ENGEL
Professor of Chemistry, the James Franck Institute, and the Institute for Biophysical Dynamics
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Dr. Engel is a Professor of Chemistry, the James Franck Institute, and the Institute for Biophysical Dynamics. Research in the Engel Group focuses on excited state reactivity including excitonic transport, non-radiative relaxation to photochemical products, and new methods to image excited state dynamics. Excited states in the condensed phase have an extremely high chemical potential thereby making them highly reactive and difficult to control. The group's control strategy involves exploiting coherent response of the environment to the excitation event. In particular, they develop methodologies to manipulate two fundamental components of excited state dynamics: exciton migration and non-radiative relaxation. Their approach is inspired by biological systems optimized by evolution to exploit manifestly quantum mechanical phenomena to drive coherent energy transfer, to steer trajectories through conical intersections and to protect long-lived quantum coherence. Currently, they are focusing on four key scientific efforts: (1) new techniques to image excited state dynamics, (2) understanding mechanisms of quantum transport in photosynthesis, (3) dynamics of conical intersections in the condensed phase, and (4) engineering quantum dynamics in new classes of synthetic materials.

The Engel Group program explores the interface between biology and quantum mechanics by creating new tools to explore design principles of coherent processes in proteins. Photosynthetic light harvesting and photoenzymatic dynamics exploit coherent protein motions for chemical control in a way that they do not yet fully understand. The Engel group seeks to isolate and copy the microscopic details of this process. In particular, they want to know if the process is a result of evolutionary fine-tuning and, regardless, how they can enable coherent energy transfer in synthetic systems for light harvesting, sensing, and communications. The Engel group is strongly

interdisciplinary; graduate students matriculate through Chemistry and the Biophysical Sciences while postdoctoral scholars have PhDs in Chemistry or Physics. The group contains pure theorists, organic chemists, inorganic chemists, physical chemists, physicists, and biophysicists. Engel and his lab members collaborate with physicists, biologists, engineers, and corporate partners to develop new technologies and new science.

MARYELLEN GIGER
A.N. Pritzker Distinguished Service Professor of Radiology, Committee on Medical Physics, and the College
Vice-Chair of Radiology (Basic Science Research)
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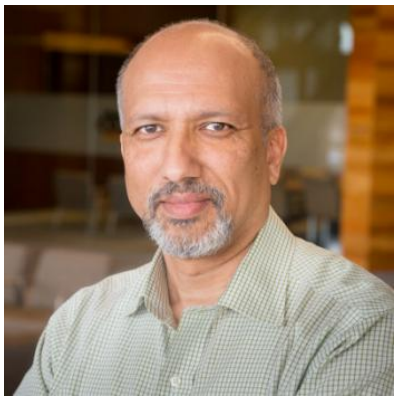
Maryellen L. Giger, Ph.D. is the A.N. Pritzker Distinguished Service Professor of Radiology, Committee on Medical Physics, and the College at the University of Chicago. She is also the Vice-Chair of Radiology (Basic Science Research) and the immediate past Director of the CAMPEP-accredited Graduate Programs in Medical Physics/ Chair of the Committee on Medical Physics at the University. For over 30 years, she has conducted research on computer-aided diagnosis, including computer vision, machine learning, and deep learning, in the areas of breast cancer, lung cancer, prostate cancer, lupus, and bone diseases, and now COVID-19. Over her career, she has served on various NIH, DOD, and other funding agencies' study sections, and is now a member of the NIBIB Advisory Council of NIH. She is a former president of the American Association of Physicists in Medicine and a former president of the SPIE (the International Society of Optics and Photonics) and is the inaugural Editor-in-Chief of the SPIE Journal of Medical Imaging. She is a member of the National Academy of Engineering (NAE) and was awarded the William D. Coolidge Gold Medal from the American Association of Physicists in Medicine, the highest award given by the AAPM. She is a Fellow of AAPM, AIMBE, SPIE, SBMR, IEEE, COS, and IAMBE, a recipient of the EMBS Academic Career Achievement Award, the SPIE Director's Award, and the SPIE Harrison H. Barrett Award in Medical Imaging, and was a Hagler Institute Fellow at Texas A&M University. In 2013, Giger was named by the International Congress on Medical Physics (ICMP) as one of the 50 medical physicists with the most impact on the field in the last 50 years. In 2018, she received the iBIO iCON Innovator award.

She has more than 260 peer-reviewed publications (over 450 publications), has more than 30 patents and has mentored over 100 graduate students, residents, medical students, and undergraduate students. Her research in computational image-based analyses of breast cancer for risk assessment, diagnosis, prognosis, and response to therapy has yielded various translated components, and she is now using these image-based phenotypes, i.e., these "virtual biopsies" in imaging genomics association studies for discovery. She has now extended her AI in medical imaging research to include the analysis of COVID-19 on CT and chest radiographs, and is contact PI on the NIH NIBIB-funded Medical Imaging and Data Resource Center (MIDRC). She was a cofounder of Quantitative Insights, Inc., which started through the 2009-2010 New Venture Challenge at the University of Chicago. QI produced QuantX, which in 2017, became the first FDA-cleared,

machine-learning-driven system to aid in cancer diagnosis (CADx). In 2019, QuantX was named one of TIME magazine's inventions of the year, and was bought by Qlarity Imaging.



SUPRATIK GUHA
Professor, Pritzker School of Molecular Engineering
Scientist and Senior Advisor to the Physical Sciences and Engineering Directorate, Argonne National Laboratory
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Supratik Guha is a professor at Pritzker Molecular Engineering and senior advisor to Argonne National Laboratory's Physical Sciences and Engineering directorate, leading the lab's microelectronics and quantum information science strategic efforts.

Prof. Guha led the Center for Nanoscale Materials, a US Department of Energy Office of Science user facility, from 2015 to 2019. Before joining Argonne and the University of Chicago in 2015, he spent twenty years at IBM Research, where he last served as the director of physical sciences. At IBM, Guha pioneered the materials research that led to IBM's high dielectric constant metal gate transistor, one of the most significant developments in silicon microelectronics technology. He was also responsible for initiating or significantly expanding IBM's R&D programs in silicon photonics, quantum computing, sensor based cyberphysical systems, and photovoltaics.

Guha is a member of the National Academy of Engineering and a Fellow of the Materials Research Society, American Physical Society, a 2018 Department of Defense Vannevar Bush Faculty Fellow, and the recipient of the 2015 Prize for Industrial Applications of Physics. He received his PhD in materials science in 1991 from the University of Southern California, and a BTech in 1985 from the Indian Institute of Technology, Kharagpur. At the University of Chicago and Argonne, his interests are focused on discovery science in the area of nano-scale materials and epitaxy for energy, sensing and future information processing.

JEFFREY HUBBELL
Eugene Bell Professor in Tissue Engineering
Vice Dean and Executive Officer, Pritzker School of Molecular Engineering
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Jeffrey Hubbell received his bachelor's degree from Kansas State University in 1982, and his PhD from Rice University in 1986, both in chemical engineering. He started his academic career as a member of the chemical engineering faculty at the University of Texas, then at the California Institute of Technology.

Prof. Hubbell next moved to Switzerland, where he initially served as a professor of biomedical engineering and director of the Institute for Biomedical Engineering at the Swiss Federal Institute of

Technology and the University of Zurich. He moved to École Polytechnique Fédérale de Lausanne (EPFL) in 2003 to serve as founding director of the Institute of Bioengineering.

In addition to his membership in the National Academy of Engineering, Hubbell is the former president of the Society for Biomaterials. Hubbell also is an elected fellow of Biomaterials Science and Engineering, of the American Association for the Advancement of Science, and of the American Institute of Medical and Biological Engineering.

Earlier in his career, Hubbell received the W.J. Kolff Award for Outstanding Research from the American Society of Artificial Internal Organs, the Outstanding Dow Young Faculty Award from the American Society of Engineering Education, and the National Science Foundation's Presidential Young Investigator Award.

PATRICK LA RIVIERE
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Patrick La Riviere received the A.B. degree in physics from Harvard University in 1994 and the Ph.D. degree from the Graduate Programs in Medical Physics in the Department of Radiology at the University of Chicago in 2000. In between, he studied the history and philosophy of physics while on the Lionel de Jersey-Harvard scholarship to Cambridge University. He is currently a Professor in the Department of Radiology at the University of Chicago, where his research interests include tomographic reconstruction in computed tomography, x-ray fluorescence computed tomography, and computational microscopy. In 2005, he received the IEEE Young Investigator Medical Imaging Scientist Award, given to a young investigator within 6 years of the Ph.D. for significant contributions to medical imaging research. He is an author of more than 75 peer-reviewed articles and peer-reviewed conference proceedings and 8 book chapters. With Mark Anastasio, he edited Emerging Imaging Technologies in Medicine (Taylor-Francis-CRC, 2012).

Dr. La Riviere's lab develops algorithms and algorithm-enabled imaging systems at scales from nanometers (x-ray microscopy) to meters (human computed tomography). Themes that span all scales and modalities include dose reduction, material identification, and orientation imaging.

STACY LINDAU
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Stacy Tessler Lindau, MD, MA, focuses on patient care, research, education and advocacy related to the health of aging women and urban populations. Dr. Lindau is the director of the Program in

Integrative Sexual Medicine (PRISM), a program that provides care for and studies female sexual function in the context of aging and common illnesses. Most of Dr. Lindau's patients have sexual health concerns caused by cancer or its treatment.

A respected physician scientist, Dr. Lindau has a master's degree in public policy from the University of Chicago. In addition to the study of female aging and sexuality, her laboratory focuses on urban population health improvement and fairness in health care.

Dr. Lindau is the director of the South Side Health and Vitality Studies (SSHVS) at the University of Chicago Urban Health Initiative. SSHVS works to create and spread knowledge that people and communities can use to sustain excellent health and vitality. The Studies include MAPSCorps, the Comer Children's Hospital Food Pantry and Food Security Project, the South Side Health and Technology Study, and CommunityRx. CommunityRx, supported by a 2012 Healthcare Innovation Award from the Centers for Medicare and Medicaid, leverages health information technologies to link people and places to improve individual health and grow community vitality.

PEDRO LOPES
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Pedro Lopes is an Assistant Professor at the University of Chicago. Pedro leads the Human Computer Integration Lab, a research group focused on integrating computer interfaces with the human body. Pedro's work is published at top-tier conferences (ACM CHI & UIST) and demonstrated at venues such as SIGGRAPH and IEEE Haptics. Pedro has received the CHI Best Paper award for his work on Affordance++, Best Talk Awards and a Best Paper nomination. As part of his research, Pedro has exhibited at Ars Electronica 2017, Science Gallery Dublin and World Economic Forum in San Francisco. His work also captured the interest of media, such as MIT Technology Review, NBC, Discovery Channel, NewScientist or Wired.

Lopes leads a research group that asks the following questions: (1) what if interfaces would share part of our body? (2) How can we engineer future devices to connect more personally and directly to our body? Pedro has materialized some of these ideas by creating interactive systems intentionally borrow parts of the user's body for input and output; allowing computers to be more directly interwoven in our bodily senses and actuators. One specific flavor of such devices that Pedro has extensively explored is devices that borrow the user's muscles by means of electrical muscle stimulation. These devices use part of the wearer's body for output, i.e., the computer can output by actuating the user's muscles with electrical impulses, causing it to move involuntarily. The wearer can sense the computer's activity on their own body by means of their sense of proprioception. Pedro's wearable systems have shown to (1) increase realism in VR, (2) provide a novel way to access information through proprioception, and (3) serve as a platform to experience and question the boundaries of our sense of agency.

MICHAEL MAIRE
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Michael Maire is an associate professor in the Department of Computer Science at the University of Chicago. He was previously a research assistant professor at the Toyota Technological Institute at Chicago (TTIC), where he maintains a courtesy appointment. Prior to TTIC, he was a postdoctoral scholar at the California Institute of Technology. He received a PhD in computer science from the University of California, Berkeley in 2009. His research interests span computer vision, with emphasis on perceptual organization and object recognition, and deep learning, with focus on neural network architectures and optimization.

RAYMOND MOELLERING
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Dr. Moellering is an Associate Professor of Chemistry at the University of Chicago. He obtained Bachelor's degrees in Chemistry and Biochemistry & Molecular Biophysics from the University of Arizona. He then earned a Ph.D. in Chemistry at Harvard University as an American Association for Cancer Research Centennial Fellow, followed by postdoctoral training as a Damon Runyon Postdoctoral Fellow at The Scripps Research Institute. Dr. Moellering started his independent program at UChicago in 2015, where his laboratory is focused on developing novel chemical probes and complementary proteomic technologies to expose and exploit novel signaling mechanisms in diseases like cancer, diabetes, and chronic inflammatory conditions. Dr. Moellering's independent program has garnered recognition with awards that include the Damon Runyon Dale F. Frey Award for Breakthrough Scientists, V Foundation V Scholar Award, American Cancer Society Research Scholar Award, NSF CAREER Award, Sloan Fellowship, and NIH Pathway to Independence and Director's New Innovator Awards.

Research in the Moellering Lab lies at the interface of chemistry and biology, with an eye towards understanding and intervening in human disease. By integrating chemical synthesis, cell biology and mass spectrometry platforms, our research aims to identify novel biological mechanisms underlying diseases, such as diabetes and cancer, and to subsequently develop innovative diagnostic and therapeutic modalities to impact these disorders. We are specifically interested in developing new chemical tools and technologies to study complexity and dynamics in the proteome, thus enabling targeted manipulation of protein targets and the pathways they govern. We are actively pursuing projects in the following research areas: metabolic signaling and protein post-translational modifications in disease; harnessing chemical proteomic technologies for discovery biology and chemical probe development; and synthetic protein and peptide therapeutics.

PAUL NEALEY
Brady W. Dougan Professor of Molecular Engineering
Vice Dean for Education and Outreach, Pritzker School of Molecular Engineering
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Paul Nealey is a pioneer of directed self-assembly, which is becoming very important in microelectronics processing to create patterns for integrated circuits. He is one of the world's leading experts on patterning organic materials, literally creating physical patterns of structure and composition in the materials at the nanometer length scale, where the patterns affect the function of the materials. Many of Prof. Nealey's collaborative projects with Prof. Juan de Pablo have focused on block copolymer films, which spontaneously self-assemble to form structures with dimensions that range from three to 50 nanometers. Nealey's experimental and de Pablo's computational teamwork extends even to jointly advised doctoral students. Their approach has become so powerfully productive that other institutions seek to replicate their formula for success with their own research teams.

Nealey's interest in tissue engineering of corneal prosthetic devices, pursued in collaboration with a veterinary ophthalmologist, demonstrates the versatility of his expertise in fabricating nanostructured surfaces. Nealey holds 14 patents and is the author of more than 180 publications. His honors include fellowship in the American Physical Society, the 2010 Nanoscale Science and Engineering Forum Award from the American Institute of Chemical Engineers, and a 2009 Inventor Recognition Award from Semiconductor Research Corporation.

Prior to arriving at the Pritzker School of Molecular Engineering, Nealey was Shoemaker Professor of Chemical and Biological Engineering, University of Wisconsin–Madison. He also conducted postdoctoral research at Harvard University and was an engineer at Solvay et Compagnie, Brussels. Nealey earned a PhD in chemical engineering from the Massachusetts Institute of Technology. He holds a BChE, magna cum laude, from Rice University.

ANGELA V. OLINTO
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Angela V. Olinto is Dean of the Division of the Physical Sciences and the Albert A. Michelson Distinguished Service Professor in the Department of Astronomy and Astrophysics, the Kavli Institute for Cosmological Physics, and the Enrico Fermi Institute at the

University of Chicago. She previously served as Chair of the Department of Astronomy and Astrophysics from 2003 to 2006 and again from 2012 to 2017.

Olinto is best known for her contributions to the study of the structure of neutron stars, primordial inflationary theory, cosmic magnetic fields, the nature of the dark matter, and the origin of the highest energy cosmic rays, gamma-rays, and neutrinos. She is the Principal Investigator of the POEMMA (Probe Of Extreme Multi-Messenger Astrophysics) space mission and the EUSO (Extreme Universe Space Observatory) on a super pressure balloon (SPB) mission, and a member of the Pierre Auger Observatory, all designed to discover the origin of the highest energy cosmic particles, their sources, and their interactions.

Olinto received a B.S. in Physics from the Pontifícia Universidade Católica of Rio de Janeiro, Brazil in 1981, and Ph.D. in Physics from the Massachusetts Institute of Technology in 1987. She is a fellow of the American Physical Society and of the American Association for the Advancement of Science, was a trustee of the Aspen Center for Physics, and has served on many advisory committees for the National Academy of Sciences, Department of Energy, National Science Foundation, and the National Aeronautics and Space Administration. She received the Chaire d'Excellence Award of the French Agence Nationale de Recherche in 2006, the Llewellyn John and Harriet Manchester Quantrell Award for Excellence in Undergraduate Teaching in 2011, and the Faculty Award for Excellence in Graduate Teaching in 2015 at the University of Chicago.

MELODY SWARTZ
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Melody A. Swartz is the William B. Ogden Professor in the Pritzker School of Molecular Engineering at the University of Chicago, where she holds a joint appointment in the Ben May Department for Cancer Research. She obtained her BS from Johns Hopkins and PhD from MIT, both in chemical engineering, and carried out postdoctoral work at Harvard Medical School and the Brigham & Women's Hospital. She started her independent career as an assistant professor at Northwestern University in the Department of Biomedical Engineering before moving to the Ecole Polytechnique Fédérale de Lausanne (EPFL), where she was promoted to full professor and eventually served as director of the Institute of Bioengineering.

Trained as a bioengineer, Prof. Swartz uses quantitative approaches in immunobiology and physiology, including biotransport and biomechanics, to develop a deeper understanding of how the lymphatic system regulates immunity in homeostasis and disease, particularly in cancer and chronic inflammation. Her lab applies this knowledge to develop novel immunotherapeutic approaches in cancer, including lymph node-targeting vaccine approaches, as well as in vitro model systems that recapitulate relevant features of the tumor-immune interface. Among her many honors, Swartz was

elected to the National Academy of Medicine in 2020, elected to the American Academy of Arts and Sciences in 2018, and named a MacArthur Fellow in 2012.

BOZHI TIAN
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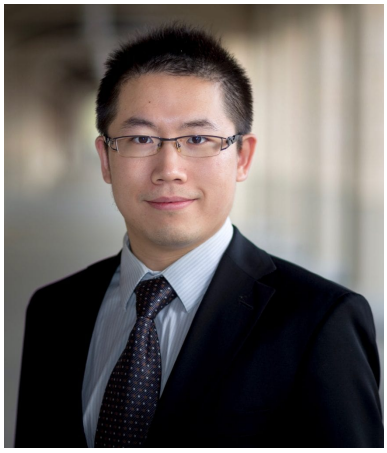
Bozhi Tian received his Ph.D. degree in physical chemistry from Harvard University in 2010. His Ph.D. research with Professor Charles Lieber included new nanowire materials synthesis, the fundamental study of high performance nanowire photovoltaics and the application of novel nanowire devices in cells and tissue. He worked with Professors Robert Langer and Daniel Kohane as a postdoctoral scholar in tissue engineering. He is now a Professor at the University of Chicago, working on the functional interfaces between semiconductors and soft materials. Dr. Tian's accolades from his independent career include Presidential Early Career Awards for Scientists and Engineers (PECASE), 2016 NIH new innovator award, 2016 ONR young investigator award, 2016 Sloan fellowship, 2015 AFOSR young investigator award, 2013 NSF CAREER award, 2013 Searle Scholar award, and 2012 TR35 honoree.

The Tian group is interested in probing the molecular-nano interface between biological and semiconductor systems, placing an emphasis on novel material synthesis and device conception. They focus on three primary goals: first, imitating cellular behavior using semiconductor nanomaterials and augmenting existing biological systems with semiconductor components. They hope to stably incorporate inorganic materials into preexisting cellular frameworks, examining both how single cells interact with these new artificial components and what uniquely inorganic properties (e.g., electrical and optoelectronic responses, bioorthogonality) they can exploit to derive a more nuanced control over these cellular systems. Second, they are developing new biophysical tools to understand subcellular dynamics. In particular, the ability to control the electrophysiology of living cells in real time with good spatiotemporal resolution is crucial for advancing our knowledge of cellular signaling pathways. However, minimally invasive intracellular or intercellular recording and modulation have been difficult to obtain as traditional techniques use probes that are too large to leave the cell membrane intact or to allow for satisfactory spatiotemporal resolution. Similarly, the rigidity of many of these devices prevents them from easily interfacing with soft biological systems. The Tian group is interested in developing original solutions to overcome these obstacles, allowing for improved intracellular or intercellular biointerfaces. Finally, they are seeking designs and solutions for semiconductor-based active matter. Biological systems are capable of a large degree of morphological and synthetic control, achieving various transformations under relatively benign conditions. Additionally, biological systems exhibit many unique properties not commonly observed in inorganic world such as homeostatic regulation and environmental adaptability. They are interested in exploring analogs to these types of behaviors in semiconductor systems, and examining how these insights can be applied towards new material and device designs for applications in regenerative medicine.



SIHONG WANG
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Sihong Wang's research focuses on the development of biomimetic polymer electronics and bio-energy harvesting for interfacing with the human body and other biological systems as wearable and implantable devices. The Wang research group focuses on the development of soft polymeric materials and devices that can merge electronics with biological systems in both mechanical & chemical characteristics, as well as energy flow. The target is to provide a new technological platform for biomedical studies. These developments largely rely on the fundamental study of the combinations of exceptional (opto)electronic/energy functionalities, mechanical softness, and bio-compatibility, in single material systems.

Dr. Wang received his PhD in Materials Science and Engineering from the Georgia Institute of Technology in 2014, and completed a postdoc in Chemical Engineering at Stanford University in 2018. In 2022, he received multiple awards, including the NSF CAREER Award, the NIH Director's New Innovator Award, and the Advanced Materials Rising Star Award.