2020-21 NEW FACULTY
Dear Friends and Colleagues,

This year, the College of Engineering at North Carolina State University welcomes 12 new faculty members. We feel very fortunate to have recruited this distinguished and talented group. We are confident that their talents and accomplishments will take our college to even higher levels of achievement and provide our undergraduate and graduate students with exciting, new opportunities to strengthen the breadth and depth of their education. We are grateful to the departmental faculty recruiting committees and department heads for their exceptional work in attracting such outstanding candidates. Their insight and judgment were critical to the task, and the college has richly benefited from their efforts. We also want to acknowledge the significant commitments that have been made to the college by the university and the state that have facilitated this recruitment process. We are delighted with this important show of support and are excited about the prospects that our growing faculty will provide in the future.

We also extend a very warm and cordial welcome to our new faculty members and are delighted that you are now part of NC State’s College of Engineering family. Please be assured that we are committed to providing you with an environment that will facilitate your success, allow you to achieve your full potential and ultimately turn your ideas and dreams into reality.

Sincerely,

Louis A. Martin-Vega, Ph.D.
Professor and Dean
Guertault received her B.S. and M.S. in fluid mechanics engineering with a concentration in water resources from the French Engineering School of Electrical Engineering, Electronics, Computer Science, Hydraulics and Telecommunications. She received her Ph.D. in fluid mechanics from Claude Bernard University, Lyon, France in 2015. After her Ph.D., she joined the Department of Biosystem and Agricultural Engineering at Oklahoma State University as a postdoctoral researcher. Later, she became a post-doctoral researcher in the Department of Biological and Agricultural Engineering (BAE) at NC State University before joining the NC State faculty in 2020.

Presently, she studies the mechanisms controlling short-circuiting and preferential flow in floodplains and riparian areas and their impact on contaminant leaching from upland sources into waterbodies using a combination of laboratory experiments, field investigations and numerical modeling. She also studies how altered river flow regimes caused by increased dam and groundwater pumping affect aquatic habitat suitability for an endangered endemic fish species of the Great Plains using remote sensing and numerical modeling. Additionally, she is collaborating with STEM Education faculty members to assess how the change to online instruction due to COVID-19 impacted student learning and success in environmental and ecological engineering disciplines.

Poole received his B.S. in biological and agricultural engineering (BAE) in 2003 from NC State, concentrating in environmental and agricultural machinery engineering with a minor in agricultural business management. He received both his M.S. (2006) and Ph.D. (2015) in BAE at NC State focusing on soil and water engineering related to land applied animal waste management and water quality, quantity and crop yield benefits of drainage water management systems. He has served at NC State as a research associate / scholar from 2006-19. He is also a USDA NIFA Fellow.

Poole has an extensive background in production agriculture, drainage and irrigation system design, and is a registered professional engineer in North Carolina. Presently, he studies water use and new technologies to better manage water as a resource.
Sagues earned his B.S. in 2012 in agricultural and biological engineering from the University of Florida, M.S. in agricultural and biological engineering and chemical engineering in 2017 from the University of Florida, and Ph.D. in forest biomaterials in 2020 from NC State. During graduate school, Sagues was awarded the Department of Energy’s (DOE) Office of Science Graduate Student Research Fellowship, which provided funding to complete part of his dissertation research at the National Renewable Energy Laboratory. In addition, he spent time as a Technology-to-Market Scholar at the DOE’s Advanced Research Projects Agency-Energy and Summer Scholar at the American Chemical Society’s Green Chemistry Institute. Presently, he is principal investigator of the Biocarbon Utilization and Sequestration (BUS) Laboratory.

He is developing technologies that utilize and sequester biogenic carbon. These technologies can be broadly classified as natural and engineered. An example of a natural technology includes enhanced mineralization of soils to sequester CO₂. An example of an engineered technology includes bio-based graphitic anode material for use in lithium-ion batteries. Each technology pursued undergoes techno-economic and carbon life cycle assessments.

Liu received his B.S. in software engineering from Beihang University. He received his M.S. in computer science from Chinese Academy of Sciences and a Ph.D. in computer science from Rice University. Prior to joining the NC State faculty, he was an assistant professor at the Department of Computer Science at the College of William and Mary.

He works on building performance tools to pinpoint and optimize inefficiencies in HPC code bases. He has developed several open-source profiling tools, which are used worldwide at universities, DOE national laboratories, and industrial companies. Liu has published a number of papers in high-quality venues. His papers received Best Paper Award at SC’15, PPoPP’18, PPoPP’19, and ASPLOS’17 Highlights, as well as Distinguished Paper Award at ICSE’19. His recent ASPLOS’18 paper has been selected as ACM SIGPLAN Research Highlights in 2019 and nominated for CACM Research Highlights. Liu is the recipient of a 2019 IEEE TCHPC Early Career Researchers Award for Excellence in High Performance Computing.
AMRO AWAD
Assistant Professor
Ph.D. (2016), North Carolina State University
Research Interests: Computer architecture, secure hardware, memory systems, system architecture.

Awad earned his Ph.D. in computer engineering from NC State in 2016. Before joining NC State, he was an assistant professor at the University of Central Florida (UCF) for three years. Prior to joining academia, he was a senior member of technical staff (SMTS) at Sandia National Laboratories in Albuquerque, NM.

Awad had several research stints at government and industrial research labs, such as AMD Research, Los Alamos National Lab, HP Labs and Air Force Research Laboratory. He holds six U.S. patents and has several pending. His research has been published in the most prestigious computer architecture conferences, such as ISCA, MICRO, ASPLOS, and HPCA. His research group has been funded by DARPA, Sandia National Laboratories, NSF, Naval Surface Warfare Center and Air Force Research Lab. His research interests include secure hardware architectures, memory systems and system-level integration of emerging technologies.


AMAY BANDODKAR
Assistant Professor
Ph.D. (2016), University of California, San Diego
Research Interests: Soft electronics, self-powered/low power sensors, decentralized sensors, bioelectronics, heterogenous assembly, unconventional fabrication, wearables, implants.

Bandodkar received his B.S. in applied chemistry from the Indian Institute of Technology – Banaras Hindu University. He received his Ph.D. in nanoengineering from University of California, San Diego. He is completing his postdoctoral research in the Department of Materials Science and Engineering at Northwestern University and will start as an assistant professor at NC State in Jan. 2021.

He is the recipient of the MRS Graduate Student Award, Metrohm Young Chemist Award, Siebel Scholars Award, and Interdisciplinary Research Award (UC San Diego). He works at the interface of electronics, chemistry, materials science and biology to develop tissue-integrated, wireless, biochemical sensors and energy devices that provide previously inaccessible insights into human physiology.


NURIA GONZÁLEZ-PRELICIC

Associate Professor

Ph.D. (2000), The University of Vigo, Spain

Research Interests: Signal processing theory, signal processing and machine learning, filter banks, compressive sampling and estimation, multicarrier modulation, massive MIMO, MIMO processing for millimeter wave communication and sensing.

González-Prelcic received her Ph.D. in electrical engineering in 2000 from the University of Vigo, Spain. She joined the faculty at NC State as an associate professor in 2020. In addition to her main research interests, she is also interested in joint positioning and communication, joint sensing and communication, radar signal processing, radar and communications co-existence, multi-vehicle sensor fusion and autonomous navigation.

González-Prelcic has published more than 80 papers in the topic of signal processing for millimeter wave communications, including a highly cited tutorial published in the IEEE Journal of Selected Topics in Signal Processing. She is an editor for IEEE Transactions on Wireless Communications. She is an elected member of the IEEE Sensor Array and Multichannel Technical Committee. She was the founding director of the Atlantic Research Center for Information and Communication Technologies (atlanTTic) at the University of Vigo, where she was also an associate professor of the signal theory and communications department.

ROBERT HEATH

Distinguished Professor

Ph.D. (2002), Stanford University

Research Interests: Wireless communication; signal processing; sensing; 5G / 6G, MIMO communications, millimeter wave / THz, joint communication and radar; circuit-aware signal processing; machine learning for communications; vehicular communication systems.

Heath received his B.S. (1996) and M.S. (1997) from the University of Virginia and his Ph.D. (2002) from Stanford University, all in electrical engineering. From 1998 to 2001, he was a senior member of the technical staff, then a senior consultant at Iospan Wireless Inc., where he worked on the design and implementation of the physical and link layers of the first commercial MIMO-OFDM communication system. From 2002 to 2020, he was with the Department of Electrical and Computer Engineering at The University of Texas at Austin, where he was a Cockrell Family Regents Chair in Engineering and founded the Situation Aware Vehicular Systems initiative. He is also president and CEO of MIMO Wireless Inc. and chief innovation officer at Kuma Signals LLC.

Heath is currently editor-in-chief of IEEE Signal Processing Magazine. He received the 2017 IEEE Communication Theory Technical Committee Outstanding Service Award, the 2018 IEEE Wireless Communications Technical Committee (WTC) Recognition Award, the 2017 EURASIP Technical Achievement Award and is co-recipient of the 2019 IEEE Kiyo Tomiyasu Award. He was a distinguished lecturer in the IEEE Signal Processing and Vehicular Technology Societies and is a highly cited researcher. He is a fellow of the National Academy of Inventors and a fellow of the IEEE. He is also a licensed amateur radio operator, a private pilot and a registered professional engineer in Texas.
Ahadi received his B.S. in materials engineering from the Azad University. He holds a M.Sc. in ceramics engineering from Sharif University of Technology and a M.Sc. in materials engineering from University of Alberta. He received his Ph.D. in materials science from University of California at Santa Barbara, prior to joining the NC State faculty.

Presently, he studies high quality thin films and heterostructures of quantum materials grown by molecular beam epitaxy. He also studies the fundamental interplay between underlying lattice symmetry and novel phases of matter. He is working toward harnessing epitaxial strain and broken symmetry, inherent to the abrupt heterointerfaces, to construct metastable quantum materials with enhanced properties for novel device applications.


Gupta received his B.S. in materials and metallurgical engineering from the Indian Institute of Technology Kanpur, India and Ph.D. in materials engineering from Monash University, Australia. Prior to joining the NC State faculty, he was an assistant professor of chemical, biomolecular and corrosion engineering at the University of Akron, Ohio.

His primary research interests lie in the broad areas of corrosion and material engineering. His research group focuses on understanding the structure-processing-property-performance relationships, corrosion initiation and propagation mechanisms and high temperature oxidation. The fundamental research is intended to be applied in developing new alloys, corrosion monitoring techniques and prediction of corrosion damage. Gupta’s research has been continuously funded by the NSF, ONR, DOD, DOE, and industries.


EDMON PERKINS
Assistant Professor
Ph.D. (2019), University of Maryland, College Park

Research Interests: Nonlinear dynamics, stochastic dynamics, vibrations, topology optimization, robotics, musical instrument design, engineering pedagogy.

Perkins received his B.S. and M.S. in mathematics from the University of Oklahoma. He received his Ph.D. in mechanical engineering from the University of Maryland, College Park. Prior to joining the NC State faculty, he was an assistant professor in the Department of Mechanical Engineering at Auburn University, where he was awarded an Office of Naval Research Young Investigator Award.

Presently, Perkins studies the effects of noise on nonlinear oscillators, which have applications to structural dynamics, sensors and actuators. He also studies adaptive oscillators, which have plastic states allowing them to store information of external stimuli. Adaptive oscillators have many applications to energy harvesting and analog frequency analyzers. He is currently analyzing biomimetic tensegrity robots, which have both rigid and flexible components. In addition to these research topics, Perkins applies vibrations theory and experimental design to musical instruments to promote undergraduate research.

Yin is an assistant professor in the Department of Textile Engineering, Chemistry and Science (TECS). He earned his doctorate in textile engineering at The Hong Kong Polytechnic University in 2018. Prior to joining TECS, he worked as a postdoctoral fellow at the Institute of Textiles and Clothing, The Hong Kong Polytechnic University.

Yin has published 30+ journal papers, conference proceedings and patents. He served as a reviewer for several international journals including Textile Research Journal, Fibers and Polymers, and Journal of Materials Science. He is the recipient of a Bronze Award in the 47th Geneva International Invention Exhibition; China Cooperative Innovation Award of Industrial, Research and Development; Shanghai Outstanding Graduates; Zhou Hua-sheng Scholarship; as well as a series of municipal and inter-university awards.

RONG YIN
Assistant Professor
Ph.D. (2018), The Hong Kong Polytechnic University

Research Interests: Advanced yarn and textile manufacturing, innovative and sustainable textile technology, performance modeling of textile products and systems, smart textiles and structures, soft actuators and robots.

