Juan Cui is recognized for outstanding research in computational and systems biology, especially her interdisciplinary research in dietary microRNA with the Nebraska Center for the Prevention of Obesity Diseases through Dietary Molecules (NPOD). Juan is also an outstanding mentor, with one of her students receiving the CSE Outstanding Graduate Student Research Award this past spring.

THE DURHAM SCHOOL OF ARCHITECTURAL ENGINEERING AND CONSTRUCTION

George Morcous is a structural engineer who specializes in the design of concrete bridges. He conducts impactful research in the area of design innovation with a focus on accelerated bridge construction where constructors are able to build bridge much more rapidly, saving undue congestion for the traveling public.

Ece Erdogmus is a structural engineer who specializes in design and analysis of masonry structures, including arch bridges. She also teaches the on-the-road Global Experiences in Architectural Engineering course in conjunction with the UNL’s Engineering Study Abroad in Italy program. She has been selected as one of two to attend Big Ten Academic Alliance leadership programs this year.

Erica Ryherd is an acoustics engineer who specializes in building systems. She is a researcher in the interaction of humans, wellness, and acoustics in hospital environments. She was one of the initial catalysts for the healthcare design initiative.

Terry Stentz is an expert in ergonomics and human factors. He works with UNMC on joint research projects in the area of healthcare ergonomics and processes, most recently with the emboli transport project. He is a 28-year Navy vet with service in many theatres dating back to Viet Nam.

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Michael Hoffman is recognized for groundbreaking contributions to advanced signal processing techniques implemented into an ultra low-power sensor for detection of nuclear material.

Yi Qian is recognized for contributions to communications systems, computer and network security, and cyber security.

Chris Argyropoulos is recognized for contributions to understanding of the metasurfaces and nanoantennas that provide an exclusive route towards the manipulation, confinement, and enhancement of radiation at the nanoscale.

Hamid Sharif is recognized for contributions to new electronic and photonic materials.

DEPARTMENT OF MECHANICAL AND MATERIALS ENGINEERING

Ali Tamayol works at the intersection of biomedical engineering, materials, and micro/nanotechnologies to enhance quality of life. His advancements in tissue engineering has led to improved wound healing and technologies that resist tissue diseases. He is the PI of two new NIH R01 awards. He came to MME in 2017 from Brigham and Women’s Hospital and Harvard Medical School.

Jian Wang’s work is focused on understanding and controlling the deformation mechanisms in hexagonal materials such as titanium and magnesium—important materials for lightweight applications. He combines modeling and experiment to examine atomic-level motion of atoms. He is funded by the DOE and NSF. Jian joined MME from Los Alamos National Laboratory.

Prahalada Rao is a data scientist with a focus on additive manufacturing and 3D printing. He is working to develop techniques to qualify parts as they are being built - the primary challenge facing the AM community - using sensors and machine learning. He is the recipient of an NSF CAREER Award and several other NSF grants. He joined MME from SUNY-Binghampton.

Bai Cui works on developing materials for use in extreme environments, ensuring function at high temperatures and under irradiation conditions. Developing these materials is critical for use in next-generation nuclear reactors. Bai uniquely is an expert in both metals and ceramics, and conducts many in situ electron microscopy experiments to understand the behavior of materials in different conditions. He has received funding from industry, NSF, and NRC, among others.

Carl Nelson’s research is dedicated to projects blending mechanical design, robotics, medicine, rehabilitation, and assorted other topics with societal relevance. He has developed a number of medical technologies, including surgical instruments and rehabilitative machines. He has received funding from a variety of sources.

Joe Turner focuses, in part, on using ultrasonic techniques to characterize the microstructure of materials at the granular level. This is advancing the state-of-the-art in non-destructive evaluation and impacts a wide variety of fields, including railroad, biomedical, and aerospace industries. He also is researching pathways to understand living polymer systems. He has been funded by industry, NSF, and other agencies.
**DEPARTMENT OF BIOLOGICAL SYSTEMS ENGINEERING**

**Troy Gilmour** is an assistant professor in the Biological Systems Engineering Department and the School of Natural Resources. His research interests include water quality and the design of sustainable management practices in Nebraska and beyond, and he is changing the way producers are viewing water and their water resources.

**Aaron Mittelstet** focuses on environmental engineering and hydrology. He has made significant contributions in streambank restoration, water quality assessment, and groundwater monitoring. He is contributing to a better understanding of groundwater behavior and water quality in Northeast Nebraska. He has successfully secured significant external research funding from federal and local sources. His research is informing producers and policy makers about the long-term impact of practices and regulations.

Francisco Munoz-Arriola focuses on hydroinformatics and intends to improve water resources development and management for food production to produce a lasting and significant impact on achieving more food security with less pressure on scarce water resources. He is attempting to accomplish this by developing and evaluating sustainable management water resources, applying modeling and information tools, and investigating social and environmental water needs in areas where water development is dominated by the demands of agricultural production systems. He is involved with a significant NSF-funded training grant at UNL and has established collaborations around the world.

**Doran Rudnick** is stationed at the West Central Research and Extension Center in North Platte. He works in the field of irrigation engineering. His work is being recognized around the world for his innovation and discoveries in water management and site-specific water application, and building multi-disciplinary teams. He is a key contributor in the National Irrigation Consortium, been involved in numerous publications, and has contributed to over $7 million in external funding. In addition to his impact on the irrigation and water management practices in Nebraska and beyond, he is changing the way producers are viewing water and their water resources.

**Becky Wachs** focuses on addressing critical gaps in musculoskeletal pain, specifically low back pain. Her approach leverages her background in biomaterials, orthopedics, and neural engineering to create novel materials and drug delivery systems to treat low back pain. One major thrust of her work is aimed at developing tissue engineering solutions to regenerate the intervertebral disc thereby alleviating low back pain. For this work, she is utilizing techniques and patents she developed as part of postdoctoral work at the University of Florida that she is continuing at UNL. Her approach utilizes decellularized pig tissue in combination with stem cells to reduce the inflammatory response and regenerate a healthy disc.

**DEPARTMENT OF CHEMICAL AND BIOMOLECULAR ENGINEERING**

**Wei Ni** is recognized for her research on expanding the substrate specificity of carboxylate reductases (CARs) by directed evolution of enzymes, leading to applications in organic synthesis and the conversion of biomass to biofuels. She is also recognized for her research contributions to the development of hybrid biochemical processes for hydrogen production, utilizing the synergy between biological and chemical conversions to achieve sustainable production.

**Vitaly Alexandrov** is recognized for his research on a catalyst-based technique that can double the amount of carbon dioxide converted to oxygen in the world's most common oxygenator for inhaled anesthesia. He has received support from the Engineering and Physical Sciences Research Council and the Welsh Government Sêr Cymru Program. He is also an associate editor in the top one percent for most cited documents in Computer Science three years in a row.

**Shaoping Liu** is recognized for his research on the synthesis and development of polymers and polymer-based nanomaterials. She explores how the polymers behave in nanoscale materials and how these properties can be optimized for renewable energy and biomedical applications. Shaoping Liu received an NSF CAREER Award (2018-2023) to pursue research on innovative polymer design and understanding of ionomer-catalyst interface.

**Sajib Saha** is recognized for his research to understand how plants produce their own means of defending themselves against pathogens, pests, and herbivores. His work is contributing to the development of novel crops that are more vigorous and resistant to pests and diseases. He is a member of the Nebraska coordinator team for the national project titled "Standing on the Shoulders of Stand-alone Solar Membrane distillation." Sajib was recently awarded a grant from the U.S. Department of Interior for support of this research.

**Chris Cornelius** is recognized for his research investigating the fundamental material interrelationships between structure, physical properties, and transport of, natural and synthetic polymers, ionomers, and hybrid organic-inorganic materials, and sol-gel glasses. He has made significant contributions to the understanding of the energy conversion and storage technologies, including the development of new materials for solar cells, fuel cells, and energy storage devices. His combined research experience spans over 15 years as a faculty member, a senior administrator in academia, a national laboratory staff scientist, and an industrial engineer. He uses his unique perspectives to contribute to outreach efforts to promote student and faculty diversity to enrich the research, scholarship, and learning domains. He is also the editor of the Journal of Materials Science.

**DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

**Bruce Dvorak** is an environmental engineer and focusses his research on applied methods for improving the sustainability of industrial operations and the design of small municipal drinking water and wastewater systems. He is the PI or Co-PI on seven active external grants with a total value of $2.4 million. His current funding is from the U.S. Environmental Protection Agency, U.S. Department of Energy, and the Nebraska Department of Environmental Quality. He is outreach director of the Water Innovation Network for Sustainable Small Systems (WINSS) Center, a Small Systems Innovation Center funded by the U.S. Environmental Protection Agency. He also serves as associate director of the Nebraska Industrial Assessment Center.

Shannon Bartelt-Hunt conducts research on water quality and health and engagement of Nebraskans through citizen science.

**Kenji Tanaka** is recognized as a distinguished professor in civil engineering and his field of research is in the transportation system analysis area. He is currently PI on seven projects and co-PI on two projects with a total funding of approximately $16.3 million. Since arriving at UNL in 2004 he has been a principal investigator or co-principal investigator on over 40 research projects with total funding in excess of $5 million. He has also contributed the U.S.D.O.T, the National Science Foundation, the Nebraska Department of Roads, the U.S. Environmental Protection Agency, the US Department of Defense Transportation Command (TRANSCOM), and the Federal Railway Administration.

**Yong-Rak Kim** is a leading scholar in his field to advance the understanding and development of various infrastructure materials to enable more sustainable, functional, and future-oriented civil structures. Toward the challenge, Kim's research is multidisciplinary with a close collaboration with different engineering and science fields including mechanics, material sciences, environmental chemistry, and physics. In 2011, he has been involved in 17 projects (12 as a PI) funded from diverse agencies (federal/international/state/internal). In 2018, his creative research activities have resulted in 12 high-impact journal papers and 14 national/international presentations including the two best paper/award papers. His research program in 2018 has been very prolific with nine Ph.D. students, visiting scholars, and six undergraduate research assistants for a number of research projects and joint publications-presentations. He has leadership roles in several technical committees and professional societies and serves an associate editor for four journals and an Editorial Board Member of three other journals.

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**Qiben Yan** is recognized for outstanding research in Internet-of-Things security, as demonstrated by his recent NSF award for "SAPER: Sensor Access for Physical electronics and Engagement with Radio" (SAPER), and his recent $2M NSF award entitled "Adapt, Implement, & Research at Nebraska." Leen-Kiat has also been recognized as a Teaching Academy Fellow for outstanding teaching.

**Hongfeng Yu** is recognized for outstanding research on big data visualization and its NSF CAREER Award, and interdisciplinary research.

**Leen-Kiat Soh** is recognized for outstanding research in multiguanst systems, especially in their application to education, as evidenced by his recent $2M NSF award entitled "Adapt, Implement, & Research at Nebraska." Leen-Kiat has also been recognized as a Teaching Academy Fellow for outstanding teaching.

**Chris Cornelius** is recognized for his research investigating the fundamental material interrelationships between structure, physical properties, and transport of, natural and synthetic polymers, ionomers, and hybrid organic-inorganic materials, and sol-gel glasses. He has made significant contributions to the understanding of the energy conversion and storage technologies, including the development of new materials for solar cells, fuel cells, and energy storage devices. His combined research experience spans over 15 years as a faculty member, a senior administrator in academia, a national laboratory staff scientist, and an industrial engineer. He uses his unique perspectives to contribute to outreach efforts to promote student and faculty diversity to enrich the research, scholarship, and learning domains. He is also the editor of the Journal of Materials Science.