COLLEGE OF ENGINEERING

BIOMEDICAL RESEARCH FACULTY GUIDE

engineering.unl.edu

UNIVERSITY OF NEBRASKA–LINCOLN

COLLEGE OF ENGINEERING

BIOMEDICAL RESEARCH FACULTY GUIDE

This booklet provides a snapshot of biomedical research ongoing in the College of Engineering at the University of Nebraska-Lincoln. Biomedical activities and interest span the college, with every department represented and with individuals engaged in research that supports human health.

Areas of activity include broadly:

- Biomaterials and tissue engineering
- Biomechanics
- Devices, sensors, and medical robots
- Health care environments and infrastructure
- Metabolic engineering, biotherapeutics, and stem cell technologies
- Modeling and bioinformatics
- Optics and imaging

Biomedical research in the college spans activities from basic science investigations in the laboratory with cell and tissue cultures, to applications in animal models, to evaluations of devices in clinical environments.

In addition to the research of the 54 faculty described here, the College of Engineering includes numerous faculty with a wealth of experience in science and technology who may have supportive roles in advancing biomedical research in utilizing advances in optics, materials science, bioprocess engineering, modeling, fluid mechanics, manufacturing, sensors, and many other areas.

Additionally, the college leads several core facilities that provide state-of-the-art research instrumentation.

The **Nano-Engineering Research Core Facility** supports fabrication and characterization of materials at the nanoscale.
http://engineering.unl.edu/nercf/

The **Engineering and Science Research Support Facility** provides mechanical design, manufacturing, machining, fabrication and technical services.
http://engineering.unl.edu/research/esrsf-engineering-science-research-support-facility/

The **Nebraska Manufacturing Extension Partnership** provides expert consulting, diverse training programs, industry events and workshops, and customized assistance to enrich the productivity, technological performance, and competitiveness of the state's small- to medium-sized manufacturers.
http://nemep.unl.edu/

Yuris Dzenis

R. Vernon McBroom Professor of Mechanical and Materials Engineering; Adjunct Professor, Dept. of Surgery, UNMC

Ph.D., Mechanical and Aerospace Engineering, University of Texas
Ph.D., Materials Science and Engineering, Latvian Academy of Sciences
M.D., Physics, Latvian University

- Advanced nanomaterials and nonmanufacturing
- Experimental and theoretical analysis of electrospinning process

402-472-0713 / ydzenis@unl.edu

Jennifer Melander Keshwani

Assistant Professor of Biological Systems Engineering

Ph.D., Oral Biology and Engineering, University of Missouri-Kansas City
M.S., Agricultural and Biological Engineering, University of Nebraska
B.S., Biological Systems Engineering (emphasis in Biomedical Engineering), University of Nebraska-Lincoln

- Biomedical engineering
- Biomaterials

Recent Awards/Honors:

- 2016 Junior Faculty Holling Family Award for Teaching Excellence
- 2015 UNL Parents Association Recognition Award

Projects:

- Nebraska Wearable Technologies. NSF. 2014-2017
- Nebraska Blast! Improving Teacher Quality through STEM Workshops. Nebraska Coordinating Commission for Postsecondary Education. 2014-2015
- Improving Teacher Quality through Biomedical Engineering BLAST! Workshops. Nebraska Coordinating Commission for Postsecondary Education. 2016-2017

402-472-9614 / jkeshwani@unl.edu

Jung Yul Lim

Associate Professor of Mechanical and Materials Engineering

Ph.D., Dept. of Fiber and Polymer Science, Seoul National University, Korea
M.S., Dept. of Fiber and Polymer Science, Seoul National University, Korea
B.S., Dept. of Textile Engineering, Seoul National University, Korea

- Biomaterials for tissue engineering and regenerative medicine
- Cell mechanotransduction for developmental biology and endocrine function
- Mechanistic pathway studies for cell sensing and response to biomaterials and mechanical stimuli

Recent Awards/Honors:

- NSF CAREER Award (2014)
- AO Foundation Berton Rahn Research Fund Prize Award (2015)

402-472-2480 / jlim4@unl.edu

Mehrdad Negahban

Professor of Mechanical and Materials Engineering

Ph.D., Applied Mechanics, University of Michigan
M.S.E., Applied Mechanics, University of Michigan
B.S., Mechanical Engineering, Iowa State University

- Theoretical, computational, and experimental studies to characterize large deformation thermos-mechanical response of materials, in particular polymers
- Simulation of the effects of crystallization on the mechanical behavior of polymers under large deformations
- Effects of crystallization on failure and the redistribution of stress in polymer matrix composites.
- Experimental investigation and theoretical modeling of large plastic forming and shape recovery in amorphous polymers
- 3D printing with stereo lithography

402-472-2397 / mnegahban@unl.edu

Angie Pannier

Professor of Biological Systems Engineering; William E. Brooks Engineering Leadership Fellow; Associate Professor (by courtesy), Department of Surgery and Mary and Dick Holland Regenerative Medicine Program, University of Nebraska Medical Center

Ph.D., Biological Sciences, Northwestern University
M.S., Biological Systems Engineering, University of Nebraska
B.S., Biological Systems Engineering, University of Nebraska-Lincoln

- Mechanistic understanding of nonviral gene delivery systems through mathematical modeling and cell priming (chemical and physical) strategies
- Gene delivery to adult-derived stem cells (from bone marrow, fat and urine) for applications of tissue engineering (differentiation) and cell-based therapies (immunomodulation, secretion of factors, infertility, etc).
- Cell-material interactions: focus on nanostructured materials and novel optical methods to probe interaction

Recent Awards/Honors:

- NSF CAREER (2013)
- UNL Darrell W. Nelson Excellence in Graduate Student Advising Award (2016), USDA NIFA FUNDING (2017)
- Visiting scholar at Leibniz-Institute fur Polymerforschung Dresden e.V. (2017)

402-472-0896 / apannier2@unl.edu

Mark Riley

Associate Dean for Research, College of Engineering; Professor of Biological Systems Engineering

Ph.D., Chemical and Biochemical Engineering, Rutgers University-Piscataway, New Jersey
M.S., Chemical and Biochemical Engineering, Rutgers University-Piscataway, New Jersey
B.S., Chemical Engineering, University of Michigan-Ann Arbor

- Cellular spectroscopy
- Cell and tissue engineering
- Biosensors to detect pathogens

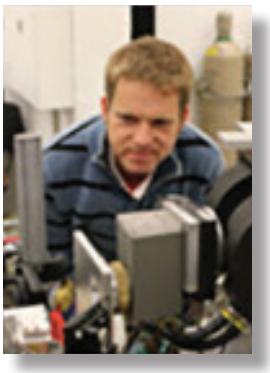
Recent Awards/Honors:

- Fellow, American Association for the Advancement of Science (AAAS).
- Inducted into the College of Fellows of the American Institute for Medical and Biomedical Engineering (AIMBE)

Projects:

- PI of Nebraska AgrAbility 2014-2018 project to provide rehabilitation support to injured farmers

402-472-3386 / mriley3@unl.edu



Mathias Schubert

Professor of Electrical and Computer Engineering

Privatdozent, Physics, University of Leipzig
Dr. habil, Physics, University of Leipzig
Dr. rer. Nat., Physics, University of Leipzig

Diplom-Physiker, University of Leipzig
Study of Physics, University of Leipzig

- Optical Hall-effect in semiconductors
- Interface polarization coupling
- Form-induced optical anisotropy in nanostructure materials
- Ellipsometric instrumentation development
- New chemical, biochemical and biological sensing and separation principles

402-472-3771 / mschubert4@unl.edu

Michael P. Sealy

Assistant Professor of Mechanical and Materials Engineering

Ph.D., Mechanical Engineering, University of Alabama
B.S., Mechanical Engineering, University of Alabama

- Medical device manufacturing
- Additive manufacturing
- Laser-based manufacturing
- Process sustainability and energy consumption
- Surface integrity
- Fatigue and corrosion
- Biodegradable metals
- Finite element analysis of manufacturing processes

Inventions/Patents:

- Biodegradable medical device having an adjustable degradation rate and methods of making the same, US 20140050942 A1 (University of Alabama)

402-472-2375 / sealy@unl.edu

Rebecca Wachs

Assistant Professor of Biological Systems Engineering

Ph.D., Biomedical Engineering, Rensselaer Polytechnic Institute
M.Eng., Biomedical Engineering, Rensselaer Polytechnic Institute
B.S., Mechanical Engineering, Worcester Polytechnic Institute

- Low Back Pain and Osteoarthritis
- Biomaterials
- Tissue Engineering
- Neural Engineering
- Antioxidants

Recent Awards/Honors:

- Selected participant in the U.S. Bone and Joint Initiative Young Investigator Initiative Grant Mentoring and Career Development Program, 2017-2019
- Patent Awarded May 2017. Ledet EH, Wachs RA, Cole KP, Fiorella D. PCT/US2013/024706. Sensor System, Implantable Sensor and Method or Remote Sensing of a Stimulus In Vivo

402-472-2262 / rebecca.wachs@unl.edu

Ali Tamayol

Assistant Professor of Mechanical and Materials Engineering

Ph.D., Engineering Sciences, Simon Fraser University, Canada
M.S., Mechanical Engineering, Sharif University of Technology, Iran
B.S., Mechanical Engineering, Shiraz University, Iran

- Tissue engineering and regenerative medicine
- Biomanufacturing
- Micro/Nanotechnologies
- Wearable and automated systems

Recent Awards/Honors:

- Work on smart bandages highlighted in media internationally, including Yahoo News, Forbes, Science Daily, phys.org
- Recipient of several awards including NSERC Postdoctoral Fellowship, BCIC Scholar Award, and the Alinasab Prize of ISME

402-472-1601 / atamayol@unl.edu

Joseph Turner

Robert W. Brightfelt Professor of Mechanical and Materials Engineering; Director of the Nano-Engineering Research Core Facility

Ph.D., Theoretical and Applied Mechanics, University of Illinois, Urbana-Champaign
M.Engr., Engineering Science and Mechanics, Iowa State University
B.S., Engineering Science and Mechanics, Iowa State Univ.

- Experimental ultrasonics: nondestructive evaluation, materials characterization
- Nanoindentation: quasi-static, nanoDMA, novel measurement technique development
- Atomic force microscopy: contact resonance AFM, AFM bean dynamics, viscoelastic characterization
- Elastic wave propagation: complex media, anisotropic media, scattering, radiative transfer, diffusion

Recent Awards/Honors:

- Fellow, Acoustical Society of America (2014)
- Wilhelm Bessel Forschungspreis, Alexander von Humboldt Stiftung (2013)

402-472-8856 / jaturner@unl.edu

Linxia Gu

Associate Professor of Mechanical and Materials Engineering

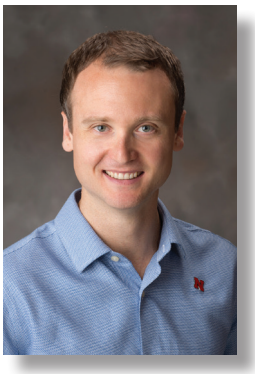
Ph.D., Mechanical Engineering, University of Florida
M.S., Mechanical Engineering, University of Florida
B.S., Xi'an Jiaotong University, China

- Vascular mechanics including structure-function relationship within non-diseases and diseased tissues, image and histology based computer modeling, and optimization of catheter-based minimally invasive medical device for better long-term outcomes
- Cell mechanics (F-actin network behavior, chemo-mechanical interaction, etc.) and its interaction with extracellular matrix (ECM)
- Predict the traumatic injury to the brain and optic nerve

Recent Awards/Honors:

- Inducted as a Fellow of American Society of Mechanical Engineers in the category of Research and Development, October 2016
- Featured by U.S. Medicine and other news media on "Relevance of Blood Vessel Networks in Blast-Induced Traumatic Brain Injury", August 2015
- Five-year, $406,248 Faculty Early Career Development Program Award, National Science Foundation, 2013

402-472-7680 / lgu2@unl.edu



Ryan Pedrigi

Assistant Professor of Mechanical and Materials Engineering

Ph.D., Biomedical Engineering, Texas A&M University
B.S., Mechanical Engineering, Kansas State University

- Mechanobiology of endothelial cell dysfunction in advanced atherosclerotic plaques
- Low intensity ultrasound as a mechano-therapy for endothelial cell dysfunction
- Biomechanical modeling to develop biomarkers of coronary artery disease progression
- Lens capsule fibrosis after cataract surgery and artificial intraocular lens design

402-472-2375 / rpedrigi@unl.edu

Benjamin Terry

Associate Professor of Mechanical and Materials Engineering

Ph.D., Mechanical Engineering, University of Colorado
M.S., Engineering Systems, Colorado School of Mines
B.S., Mechanical Engineering, Brigham Young University

- Medical therapeutics, devices, and surgical tools
- Intuitive, ambulatory biosensors
- Biomechanical behavior of tissues and organs

The objectives of the TRL are to:

- Solve essential biomedical challenges through exceptional research and engineering
- Provide industry-relevant research opportunities for engineering students
- Collaborate with local primary education to enhance K12 interest in STEM

Recent News:

- Terry's work on biosensors featured in ASME video
- Swallowable sensor featured on ASME's Alliance of Advanced Biomedical Engineering
- Terry, NSRI team get $1.3M grant to develop microbubble technology

402-472-7595 / bterry2@unl.edu

Ruiguo Yang

Assistant Professor of Mechanical and Materials Engineering

Ph.D., Electrical Engineering, Michigan State University
M.S., Mechatronics Engineering, Nanjing University of Aeronautics and Astronautics
B.S., Mechanical Engineering, Nanjing University of Aeronautics and Astronautics, China

- Mechanotransduction at cell-cell adhesion
- Mechanics at cell-cell adhesion
- BioMEMS for single cell manipulation

Recent Awards/Honors:

- Early Stage Investigator for Nebraska Center for Integrated Biomolecular Communication (CIBC), 2017

Research Facilities:
We host a range of state-of-the-art instruments and tools, including micro/nano manipulators for cell manipulation, atomic force microscopy for high resolution imaging and mechanical characterization, optical microscopy for fluorescence imaging, and a host of electronics including micro-controllers, patch-clamp amplifers, oscilliscopes and more.

402-472-2375 / ryang6@unl.edu

HEALTH CARE ENVIRONMENTS & INFRASTRUCTURE

Fadi Alsaleem

Assistant Professor of Architectural Engineering

Ph.D., Mechanical Engineering, State University of New York
M.S., Mechanical Engineering, State University of New York
G.C., Mechatronics Engineering, American University of Sharjah, UAE
B.S., Mechatronics Engineering, The Hashemite University, Jordan

- Nonlinear dynamics of MEMS
- Smart MEMS
- IoT
- Smart Building
- Online monitoring and diagnostics
- Big data analysis

402-554-3283 / falsaleem2@unl.edu

Kevin Grosskopf

Professor of Construction Management; Program Coordinator

Ph.D., Architecture, University of Florida
M.S., Building Construction, University of Florida
B.S., Construction of Engineering Technology, Florida A&M Univ.

- Research and training provider expertise in airborne infection control' mold and 'sick building' syndrome
- Fire, explosive and windstorm mitigation
- Post-disaster response and recovery
- Energy efficiency

402-472-3340 / kevin.grosskopf@unl.edu

Josephine Lau

Associate Professor of Architectural Engineering;
Graduate Chair

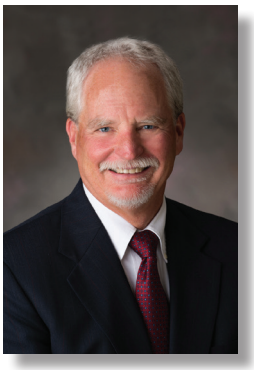
Ph.D., Architectural Engineering, The Pennsylvania State University
M. S., Mechanical Engineering, Purdue University
M.Eng. & B.Eng., Building Services Engineering, The Hong Kong Polytechnic University

- Indoor environmental solutions for improving occupant's comfort, health and performance
- Air cleaning – UV light disinfection and filtration devices in HVAC systems and rooms
- Air flow and contaminants modeling
- Real-time bioaerosol monitoring
- HVAC system control strategies

Recent Awards / Honors:

- Henry Y. Kleinkauf Family Distinguished New Faculty Teaching Award, 2013
- ASHRAE Distinguished Service Award (American Society of Heating, Refrigerating and Air-Conditioning Engineers), 2015
- Architectural Engineering Mentoring Award, 2011
- Journal Editorships - Deputy Editor and Regional Editor for Indoor and Built Environment (I+BE); Associate Editor for Journal of Architectural Engineering (JAE)

402-554-2079 / jlau3@unl.edu



Jay Puckett

Director of the Durham School of Architectural Engineering and Construction

Ph.D., Civil Engineering, Colorado State University
M.S., Civil Engineering, Colorado State University
B.S., Civil Engineering, University of Missouri

- Building information systems
- Software engineering
- Bridge engineering
- Big data related to asset management
- Seismic engineering
- Structural dynamics including aeroelastic phenomena
- Multiphysics simulations

402-554-3037 / jay.puckett@unl.edu

Erica Ryherd

Associate Professor of Architectural Engineering

Ph.D., Architectural Engineering, University of Nebraska
B.S., Architectural Engineering, Kansas State University

- Engineering healthcare environmental systems (e.g., acoustics, lighting, spatial layout)
- Effects of healthcare environments on patient health, sleep, and recovery; patient experience and perception of care; staff occupational health, task performance, and communication

Recent Awards/Honors:

- Sherry Kranys Research Innovation Fund Award for Improving NICU Soundscapes, April 2017

402-554-4146 / eryherd@unl.edu

Terry Stentz

Associate Professor of Construction Engineering and Construction Management;
Graduate Chair

M.P.H., Occupational and Environmental Health (post-doctoral), Harvard University
Ph.D., Psychological Studies (Health and Human Performance), University of Nebraska
M.S.I.E., Industrial and Management Systems Engineering, University of Nebraska
A.M., Environmental Science Concentration Dartmouth College
M.A., English (Technical Composition and Rhetoric) University of Nebraska-Lincoln, 1978
B.A., Biological Science University of Nebraska-Lincoln

- Occupational health and safety
- Human factors and ergonomics
- Sleep behaviors and accidents for general industry workers

402-472-5078 / tstentz1@unl.edu

HEALTH CARE ENVIRONMENTS & INFRASTRUCTURE

Lily Wang

Professor of Architectural Engineering; Associate Dean for Graduate Programs and Faculty Development

Ph.D., Acoustics, Pennsylvania State University
B.S.E., Civil Engineering with Certificate in Architecture, Princeton University

- Effects of noise and reverberations on human perception and performance
- School environmental effects on student health and achievement, particularly related to acoustics

Recent Awards/Honors:

- President-elect of the Acoustical Society of America, 2017-18

402-554-2065 / 402-472-5649 / lilywang@unl.edu

DEVICES, SENSORS & MEDICAL ROBOTICS

Shane Farritor

David and Nancy Lederer Professor of Mechanical and Materials Engineering

Ph.D., Mechanical Engineering, Massachusetts Institute of Technology
M.S., Mechanical Engineering, Massachusetts Institute of Technology
B.S., Mechanical Engineering, University of Nebraska-Lincoln

- Designing, building, and testing small robots used in general surgery

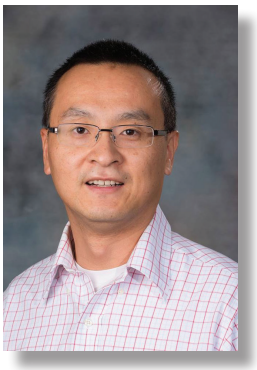
Recent Awards/Honors:

- Inducted into the National Academy of Inventors, 2016

Recent News:

- Former astronaut Anderson tests professors' surgery robot
- Farritor named Fellow of National Academy of Inventors
- Virtual Incision conduct its first human surgery using mini-robots
- Surgical robotics startup founded by Farritor to locate at NIC
- BTN's LiveBig features professor's work on small surgical robots
- MME professor's team gets $2.8M from Army for robotic telesurgery research

402-472-5805 / sfarritor@unl.edu



Qing Hui

Associate Professor of Electrical and Computer Engineering

Ph.D., Aerospace Engineering, Georgia Institute of Technology
M.S., Applied Mathematics, Georgia Institute of Technology
M.Eng., Automotive Engineering, Tsinghua University
B.Eng., Aerospace Engineering, National University of Defense Technology

- Thermostabilization analysis and design for robustness and resilience in complex systems engineering
- Human-interactive neuromorphic supercomputing networks via mobile and autonomous and semiautonomous systems
- Model-based and data-driven fault detection and diagnosis methods for large-scale distributed hybrid networks
- Nature-inspired swarm intelligence algorithms and methods

402-472-3714 / qing.hui@unl.edu

Nicole Iverson

Assistant Professor of Biological Systems Engineering

Ph.D., Biomedical Engineering, Rutgers University and University of Medicine and Dentistry of New Jersey
M.S., Biomedical Engineering, Rutgers University
B.S., Biomedical Engineering, University of Minnesota

- In vitro and in vivo carbon nanotube sensors
- Nitric oxide's role in disease progression
- Hydrogel delivery platforms for nanotechnology

Recent Awards/Honors:

- Listed on CNN's Top 10 Ideas of the Year

402-472-0884 / Iverson@unl.edu

Forrest Kievit

Assistant Professor of Biological Systems Engineering

Ph.D., Materials Science and Engineering, University of Washington
B.S., Bioengineering, University of Washington

- Nanoparticles for targeting and treating traumatic brain injury
- Sensitizing brain cancer to standard-of-care therapies through nanoparticle delivery
- Nanoparticle based contrast agents for magnetic resonance imaging

Recent Awards/Honors/Funding:

- NIH/NIGMS COBRE 4P20GM103480-09 subaward, Nebraska Center for Nanomedicine – Nanoparticle-mediated treatment of traumatic brain injury

402-472-2175 / fkievit2@unl.edu

Carl Nelson

Professor of Mechanical and Materials Engineering

Ph.D., Purdue University
M.S., Purdue University
B.S., University of Oklahoma

- Mechanical systems design and analysis
- Medical Robots: surgical and rehabilitation applications
- Modularity in mechanical systems
- Graph-theoretic techniques in robotics and mechanical systems design

Recent News:

- Robotics challenge in Sweden provides launching pad for students' futures
- Air and Space Research team makes impact in NASA challenge
- MME professor Nelson chosen one of ASEE's "20 Under 40"
- Engineering innovation finishes among best in the nation

402-472-4128 / cnelson5@unl.edu

Sangjin Ryu

Associate Professor of Mechanical and Materials Engineering

Ph.D., Mechanical Engineering, Massachusetts Institute of Technology
M.S., Mechanical Engineering, Seoul National University,
B.S., Mechanical Engineering, Seoul National University, South Korea

- Microfluidics and atomic force microscopy (AFM) for cell mechanics
- Micro paper-based analytic device for biomolecule detection
- Hydrogel scaffold for cell mechanobiology
- University of Nebraska Collaboration Initiative Seed Grant (2017)
- UNL Biomedical Research Seed Grant (2015)

402-472-4313 / sangjin.ryu@unl.edu

Aaron Yoder

Assistant Professor of Biological Systems Engineering; Assistant Professor, Department of Environmental, Agricultural & Occupational Health, College of Public Health, University of Nebraska Medical Center

Ph.D., Agricultural and Biological Engineering, Purdue University
M.S., Environmental Pollution Control, Pennsylvania State University
B.S., Agricultural Systems Management, Pennsylvania State University

Specific interests are in the research and development of sound ergonomic and human factors principles and technologies that will lead to healthier and safer workers in agriculture and related industries.

- Improve the health of workers in agriculture and related industries
- Ergonomic and human factors

Projects:

- Co-PI of Nebraska AgrAbility 2014-2018 project to provide rehabilitation support to injured farmers

402-552-7240 / aaron.yoder@unmc.edu

METABOLIC ENGINEERING, BIOTHERAPEUTICS & STEM CELL TECHNOLOGIES

Srivatsan Kidambi

Associate Professor of Chemical and Biomolecular Engineering

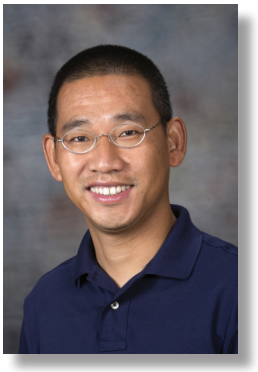
Postdoctoral Research Fellow, Harvard Medical School and Massachusetts General Hospital, 2009
Ph.D., Chemical Engineering and Materials Science, Michigan State University, 2007
M.S., Chemistry, Michigan State University, 2002
B.S., Chemistry, University of Madras, India, 1999

- Neural and liver tissue engineering
- Cancer tissue engineering
- Nano-scale drug delivery system for gene therapy
- Novel thin films for sensor applications

Recent News:

- Tumor-mimicking platform shows promise for fighting breast cancer

402-472-5313 / ylei14@unl.edu



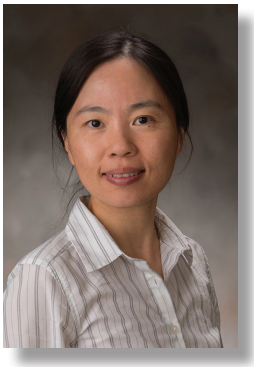
Yuguo Lei

Assistant Professor of Chemical and Biomolecular Engineering

Ph.D., Chemical and Biomolecular Engineering, UCLA
M.S., Molecular and Medical Pharmacology, UCLA School of Medicine
MPhil., Polymer Science, Hong Kong University of Science and Technology
B.S., Chemistry, Peking University

- hPSC-derived synthetic tissues for the next-generation regenerative medicine
- GMP compliant 3D culture system for the scalable production of stem cells and synthetic tissues
- Efficient combination stem cell therapies for various degenerative diseases (parkinson's, huntington's, alzheimer's, amyotrophic lateral sclerosis, spinal cord injury, stroke, myocardial infarction and diabetes)
- Novel biomaterials mimicking the transitional extracellular matrixes for stem cell expansion / delivery
- Synthetic 3D human tissue arrays for high throughput drug discovery

402-472-5313 / ylei14@unl.edu



Wei Niu

Assistant Professor of Chemical and Biomolecular Engineering

Ph.D., Bioorganic Chemistry, Michigan State University
M.S., Biophysics, Tsinghua University
B.S., Chemistry, Tsinghua University

- Apply metabolic engineering principles and synthetic biology tools to the microbial synthesis of industrial or other value-added chemicals from renewable feedstocks
- Develop new enzyme catalysts and auxiliary functional proteins for efficient and green synthesis of pharmaceutical precursors and energy molecules

402-472-5348 / wniu2@unl.edu

Rajib Saha

Assistant Professor of Chemical and Biomolecular Engineering

Ph.D., Chemical Engineering, Pennsylvania State University
M.S., Chemical Engineering, Pennsylvania State University
B.S., Chemical Engineering, Bangladesh University of Engineering and Technology

- Reconstruction and analysis of genome-scale and community models
- Systems-level analysis of 'omics' data
- Development of genetic toolkit and engineering metabolic pathways
- Redesign photosynthetic apparatus and carbon fixing mechanism

402-472-7531 / rsaha2@unl.edu

Max Pierobon

Assistant Professor of Computer Science and Engineering

Ph.D., Electrical and Computer Engineering, Georgia Institute of Technology
M.S., Telecommunication Engineering, Politecnico di Milano
B.S., Telecommunication Engineering, Politecnico di Milano

- Molecular communication theory for nanonetworks
- Communication engineering applied to intelligent drug delivery systems
- Biological circuit network of engineering

402-472-5021 / maxp@unl.edu

William Velander

College of Engineering Distinguished Scholar; Professor of Chemical and Biomolecular Engineering

Ph.D., Chemical Engineering, Penn State University
M.ChE., Chemical Engineering, Illinois Institute of Technology
B.S., Biochemistry, Illinois Benedictine College

- Safer, more abundant sources of biotherapeutics;
- Pioneer genetically engineered versions of human anticoagulant Protein C, human anti-hemophiliac factors VIII and IX, and fibrinogen from the milk of transgenic livestock

402-472-3697 / wvelander2@unl.edu

Jitender Deogun

Professor of Computer Science and Engineering

Ph.D., University of Illinois
M.S., University of Illinois
M.Sc., University of Delhi
B.Sc., (Hons.), Punjab University

- High Performance Optical Switch -Architecture
- Optical and Optical Wireless -Networks
- Multi-domain Networks
- Structural and Algorithmic Graph Theory - Design and Analysis of Algorithms
- Bioinformatics
- Data Mining Models

402-472-5033 / jdepgun1@unl.edu

Hasan Otu

Professor of Electrical and Computer Engineering

Ph.D., University of Nebraska
M.S., Bogazici University
B.S., Bogazici University

- Bioinformatics and Computational/Systems Biology
- Analyzing high-throughput biological data (e.g. microarray, RNA-seq) for biomarker discovery
- Combining multi-omic data (e.g. transcriptomic, proteomic, metabolomic, lipidomic, etc.)
- Utilization of Bayesian Networks to infer gene interaction networks and atlases
- Identifying Genetic Variations using deep DNA sequencing

Recent Awards/Honors:

- 2016-2019 -- NIH/NIA; Project No: R01AG051658; "Advancing the Understanding of Postoperative Delirium Mechanisms via Multi-Omics"; Marcantonio/Libermann (MPI's), Otu (Co-PI); ~$2.3M

402-472-0351 / hotu2@unl.edu

Jae Sung Park

Assistant Professor of Mechanical and Materials Engineering

Ph.D., Mechanical Engineering, University of Illinois at Urbana-Champaign
M.S., Mechanical Engineering, University of Illinois at Urbana-Champaign
B.S., Mechanical Engineering, Hanyang University, Seoul, South Korea

- Modeling and simulation of electrokinetic phenomena in colloidal systems for developments of biomaterial processing techniques
- Numerical simulation of particulate suspensions with applications to biosensors
- Mathematical modeling of soft-matter physics and complex fluids

402-472-1671 / jaesung.park@unl.edu

Khalid Sayood

Henson Professor of Engineering, Electrical and Computer Engineering

Ph.D., Texas A&M University
M.S., University of Rochester
B.S., University of Rochester

- Search of patterns in data
- Data compression
- Joint source-channel coding
- Various aspects of bioinformatics

402-472-6688 / ksayood@unl.edu

Tadeusz Wysocki

Professor of Electrical and Computer Engineering

D.Sc. (Habilitation), Telecommunications Engineering, Warsaw University of Technology
Ph.D., summa cum laude, Warsaw University of Technology
M.Eng.Sc (highest distinction in telecommunications), Academy of Technology and Agriculture, Bydgoszcz, Poland

- Molecular communication
- Indoor propagation of microwaves
- Signal processing for communication systems
- Modeling biological processes at nano-scale

402-554-2164 / twysocki2@unl.edu

Greg Bashford

Professor of Biological Systems Engineering; Chair, Biomedical Graduate Program

Ph.D., Biomedical Engineering, Duke University
B.S., Electrical Engineering, University of Nebraska-Lincoln

- Biomedical imaging
- Noninvasive blood flow velocity measurement
- Transcranial Doppler for neurosonology applications
- Biosignal processing

402-472-1745 / gbashford2@unl.edu

Lance Pérez

Dean, College of Engineering; Omar H. Heins Professor of Electrical and Computer Engineering

Ph.D., Electrical Engineering, University of Notre Dame
M.S., Electrical Engineering, University of Notre Dame
B.S., Electrical Engineering, University of Virginia

- Coding
- Real-Time Localization
- Smart Spaces
- Stereoscopic Image Processing
- Wireless Sensors

402-472-5259 / lcperez@unl.edu

Yongfeng Lu

Lott Distinguished University Professor, Electrical and Computer Engineering

Ph.D. Osaka University
M.Eng., Osaka University
B.Eng., Tsinghua University

- Carbon materials: diamond, carbon nanotubes, carbon Nano-onions, graphene, etc.
- Nanophtonics
- Optical spectroscopy and imaging
- Nanoscale laser material processing and characterization
- Laser-assisted nanoimprinting
- 2D and 3D nonmanufacturing employing scanning probe microscope
- Laser-assisted materials synthesis and processing
- Molecular level surface drying for nanoelectronics
- Controlled growth of carbon nanostructures
- Supercapacitors
- Nano-Raman spectroscopy
- Two photon polymerization for 3D nanofabrication
- Pulsed laser deposition
- Laser-assisted chemical vapor deposition

402-472-8323 / ylu2@unl.edu

COLLEGE OF ENGINEERING

As the only engineering college in Nebraska, we take our role very seriously. We provide our students with professors with national and international expertise in their fields, the latest technology, quality facilities, a vast network of successful alumni and friends of the college, and caring staff. We offer academic programs in the state's two largest cities on three campuses.

LOCATIONS

LINCOLN

- *City Campus:* Avery Hall, June and Paul Schorr III Center for Computer Science and Engineering, Nebraska Hall, Othmer Hall, Prem S. Paul Research Center at Whittier School, Scott Engineering Center / the Link
- *East Campus:* Chase Hall

OMAHA

- *Scott Campus:* The Peter Kiewit Institute, Scott Technology Center

DEPARTMENTS / SCHOOLS

Biological Systems Engineering	bse.unl.edu
Chemical and Biomolecular Engineering	che.unl.edu
Civil Engineering	civil.unl.edu
Computer Science and Engineering	cse.unl.edu
The Durham School of Architectural Engineering and Construction	durhamschool.unl.edu
Electrical and Computer Engineering	ece.unl.edu
Mechanical and Materials Engineering	mme.unl.edu

4,345 TOTAL COLLEGE ENROLLMENT

35 GRADUATE DEGREE PROGRAMS

OUR STUDENTS COME FROM 45 STATES & 66 COUNTRIES

631 GRADUATE STUDENTS

218 COLLEGE FACULTY

UNIVERSITY OF Nebraska Lincoln

402.472.3181 | 114 Othmer Hall, Lincoln, NE 68588-0642
402.554.6009 | The Peter Kiewit Institute, 1110 S. 67th Street, Omaha, NE 68182-0176