Northeastern University
College of Engineering

Dear Colleagues,

It is my great pleasure to share our college's scholarship report for this year with you, which outlines the recent accomplishments of our faculty and graduate students for the past year.

As you can see from the sidebar, Northeastern's College of Engineering is growing rapidly. Since my appointment as dean in fall 2012, we have hired nearly 60 tenured/tenure-track faculty – over 20 for this year alone! Research awards are up about 50% over the same period. Alongside this faculty and research growth is investment in our facilities, including state-of-the-art research laboratories and equipment. Research spaces across campus are in a period of active renovation and in the spring, Northeastern will complete construction on the 220,000 square foot Interdisciplinary Science and Engineering Complex on our campus in the heart of Boston (see report cover image.) Along with this unprecedented growth, comes along the transformative research by our faculty who are being awarded numerous national and international recognitions for their contributions.

Our growth also extends to our graduate programs. In the past four years we have awarded 256 PhDs, up 98 (62%) from the previous period. This correlates with our Masters student enrollment, which has more than doubled since 2012, with over 1,100 new students this fall.

These growth metrics across engineering research and education demonstrate the dynamic spirit of our faculty and their commitment to addressing the engineering grand challenges of the 21st century and building the next generation of engineering leaders and innovators.

We look forward to collaborating with colleagues across the nation and the world to address the global engineering and cross-disciplinary needs of our time. Please use this book as a reference, and reach out to us!

Sincerely,

Nadine Aubry, PhD
University Distinguished Professor
Dean of Engineering

QUICK FACTS

169
TENURED/ TENURE-TRACK Faculty

64
YOUNG INVESTIGATOR Awards

36
NSF CAREER Awards

COLLEGE OF ENGINEERING

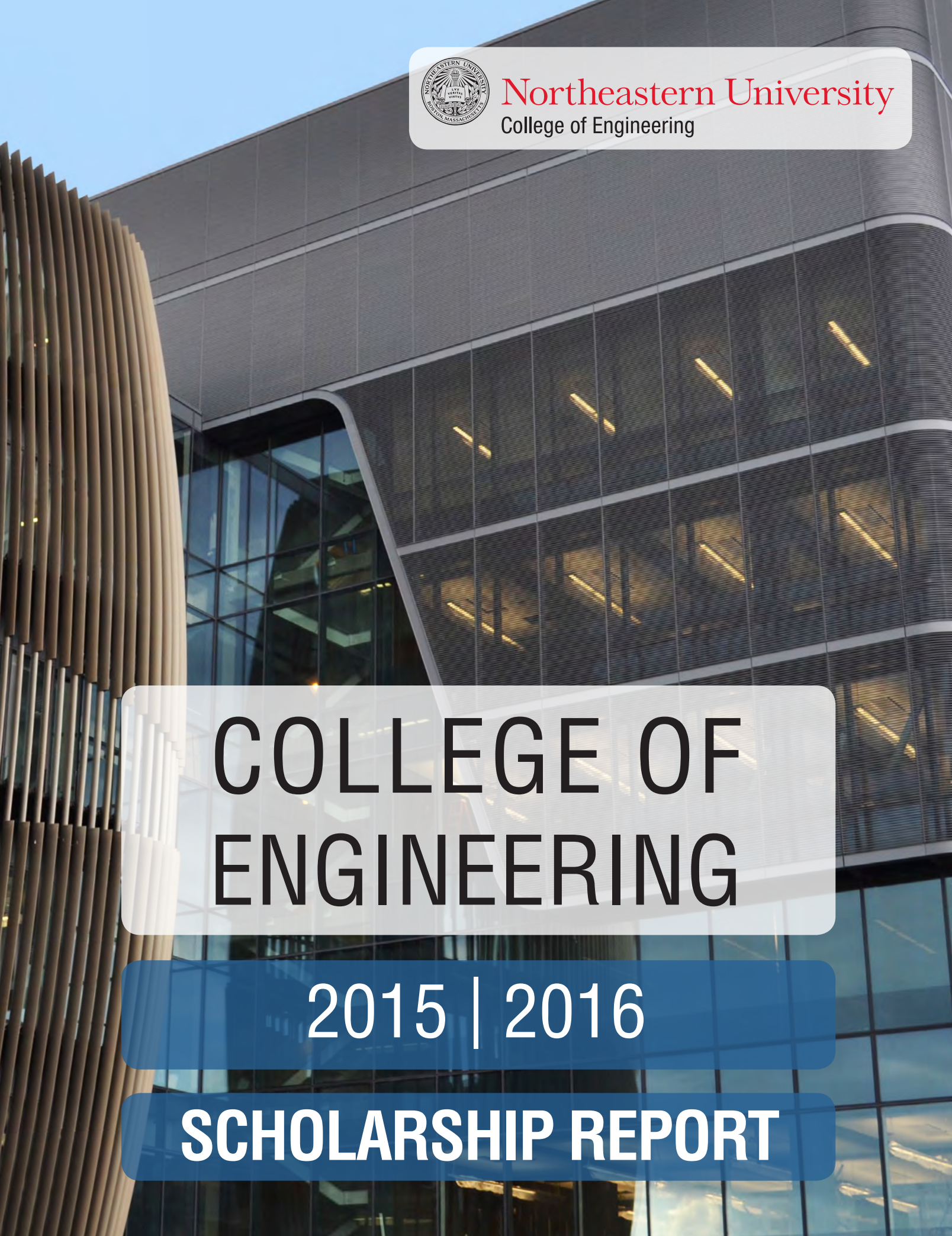
230 Snell Engineering Center
Northeastern University
360 Huntington Avenue
Boston, MA 02115

coe.neu.edu

COVER IMAGE

Northeastern's newest research facility, the Interdisciplinary Science and Engineering Complex, nears completion. The building is scheduled to open in winter of 2017. The ISEC is being built on a 3.5-acre parcel owned by Northeastern. Designed by the architectural firm Payette, ISEC will include wet and dry lab facilities, educational laboratories, classrooms, and offices for faculty members and graduate students. The six-story, LEED-certified facility will be shared by researchers from Northeastern's College of Science, Bouvé College of Health Sciences, College of Engineering, and College of Computer and Information Science.

Learn more at **bit.ly/1Bglyru**



Northeastern University
College of Engineering

COLLEGE OF ENGINEERING

2015 | 2016

SCHOLARSHIP REPORT

QUICK FACTS — College of Engineering

5 ENGINEERING DEPARTMENTS

- Bioengineering
- Chemical Engineering
- Civil and Environmental Engineering
- Electrical and Computer Engineering
- Mechanical and Industrial Engineering

TENURED/ TENURE-TRACK Faculty

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12 MULTI-INSTITUTIONAL RESEARCH CENTERS funded by six federal agencies

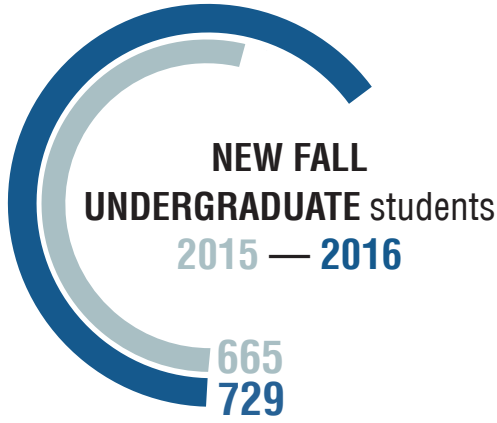
- Department of Energy
- Department of Homeland Security
- National Institutes of Health
- National Institute of Standards and Technology
- National Security Agency
- National Science Foundation

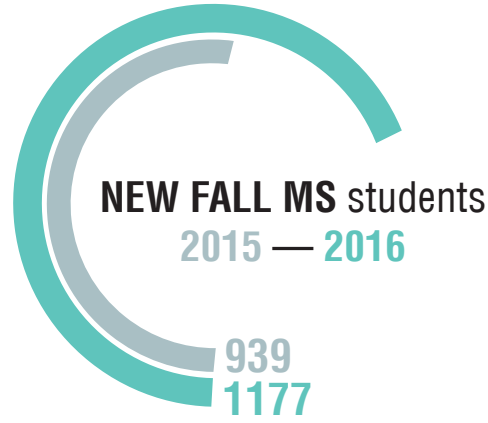
NSF CAREER Awards

YOUNG INVESTIGATOR Awards

3550 **UNDERGRADUATE** students

3210 **GRADUATE** students





HONORS

ACHIEVEMENTS

* PhD student co-author

FACULTY HONORS AND AWARDS

Akram Alshawabkeh, George A. Snell Professor of Engineering in civil and environmental engineering and bioengineering affiliated faculty, and his team were awarded a **$2.9M** grant for the Center for Research on Early Childhood Exposure and Development in Puerto Rico (CRECE). This is the college's 12th federally funded research center.

Professor and Chair of mechanical and industrial engineering **Hanchen Huang**, created the start-up company Meso Glue with two PhD students. The team designed a metallic glue that sets at room temperatures — which has the potential to replace welding and soldering. Learn more at **coe.neu.edu/mesoglue**

Associate Professor of electrical and computer engineering, and affiliated bioengineering Professor **Stefano Basagni** was named a Distinguished Scientist of the Association for Computing Machinery.

Electrical and computer engineering professors **Mario Sznaier**, **Octavia Camps**, **Ali Abur**, **Edmund Yeh**, civil and environmental engineering Professor and Chair **Jerome Hajjar,** mechanical and industrial engineering Assistant Professor **Jacqueline Griffin**, College of Science Professor Lisa Feldman Barrett, College of Computer and Information Science Professor Stacy Marsella, and Kostas Director Peter Boynton were awarded a **$2.5M** NSF grant for the "Identification and Control of Uncertain, Highly Interdependent Processes Involving Humans with Applications to Resilient Emergency Health Response."

Professor and Chair of chemical engineering **Thomas Webster** won the Chinese Academy of Science's Lee Hsun Lecture Award by the Institute of Metal Research.

Associate Professor of electrical and computer engineering **Yun Raymond Fu** was recognized by the IEEE Computational Intelligence Society as the awardee of 2016 IEEE CIS Outstanding Early Career Award, for contributions to neural computing, manifold learning, and visual intelligence.

Associate Professor of electrical and computer engineering **Ningfang Mi** was awarded a $459K NSF CAREER Award for her project, "Capacity Planning Methodologies for Large Clusters with Heterogeneous Architectures and Diverse Applications."

Assistant Professor of mechanical and industrial engineering, **Yongmin Liu,** was awarded an Office of Naval Research 2016 Young Investigator Award for "Reconfigurable Metamaterials for Beam Steering, Imaging and Sensing at Infrared Frequencies."

Assistant Professor of chemical engineering, **Eno Ebong,** was awarded an NIH Mentored Research Scientist Career Development Award for her project on, "Atheroprotective vs. Atherogenic Glycocalyx Mechanotransduction Mechanisms."

Associate Professor of mechanical and industrial engineering, **Rifat Sipahi,** was selected to receive the 2015 ASME DSCD Outstanding Young Investigator Award.

Assistant Professor of civil and environmental engineering, **Andrew Myers,** received a $500K NSF CAREER award for his project entitled, "Advancing Multi-hazard Assessment and Risk-based Design for Offshore Wind Energy Technology."

Associate Professor **Kaushik Chowdhury** from electrical and computer engineering was awarded a $489K NSF CAREER Award for his project, "IDEA: Integrated Data and Energy Access for Wireless Sensor Networks."

Assistant Professor of electrical and computer engineering, **Marvin Onabajo,** was awarded a $500K NSF CAREER Award to investigate, "Low-power Transceiver Design Methods for Wireless Medical Monitoring."

University Distinguished Professor and William Lincoln Smith Chair Professor **Vincent Harris** has been named a Fellow of the American Association for the Advancement of Science.

Professor of chemical engineering, **Shashi Murthy,** was elected a Fellow of the American Institute for Medical and Biological Engineering for outstanding contributions to the science and technology of cell purification for therapeutic and analytical applications.

Professor and Vice Provost for Curriculum **Katherine Ziemer** was selected as a Fellow of the American Institute of Chemical Engineers (AIChE).

Robert D. Black Professor and COE Distinguished Professor **Michael B. Silevitch**, along with Director of the Gordon Engineering Leadership Program **Simon Pitts** received the 2015 National Academy of Engineering Gordon Prize.

PATENTS

Bioengineering **Professor Jeffrey Ruberti** was awarded two patents for "Microparticle Organization" and "Systems, Methods, and Devices for Frozen Sample Distribution."

College of Engineering Distinguished Professor **Ming Wang** was awarded a patent for his design of a "Saliva Glucose Monitoring System."

Professor of electrical and computer engineering and chemical engineering **Vincent Harris** and electrical and computer engineering Professor Carmine Vittoria were awarded a patent for "Voltage Tuning of Microwave Magnetic Devices Using Magnetoelectric Transducers."

Assistant Professor **Mahshid Amirabadi** was awarded a patent for creating "DC Capacitors-less Power Converters."

WL Smith Chair and University Distinguished Professor **Ahmed Busnaina**, and electrical and computer engineering Professor **Nicol McGruer** were awarded a patent for "Directed Assembly of Carbon Nanotubes and Nanoparticles Using Nanotemplates."

Associate Professor **Gregory Kowalski** was awarded a patent for his designs for a microfluidic calorimeter system and its method of use.

DEPARTMENTAL RESEARCH AREAS

BIOENGINEERING

- » Biocomputing
- » Bioimaging and Signal Processing
- » Biomechanics and Mechanobiology
- » BioMEMS/Bionano
- » Biochemical and Bioenvironmental Engineering
- » Cell and Tissue Engineering
- » Motor Control

CHEMICAL ENGINEERING

- » Advanced Materials Research
- » Biological Engineering

CIVIL AND ENVIRONMENTAL ENGINEERING

- » Civil Infrastructure Security
- » Environmental Health
- » Sustainable Resource Engineering

ELECTRICAL AND COMPUTER ENGINEERING

- » Communications and Signal Processing
- » Computer Engineering and Networks
- » Electromagnetics and Optics
- » Microsystems and Devices
- » Power Electronics, Systems and Controls

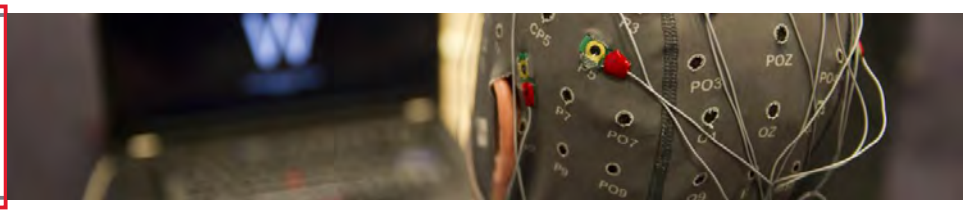
MECHANICAL AND INDUSTRIAL ENGINEERING

- » Biomechanics
- » Energy
- » Healthcare Systems
- » Operations Research
- » Material Science
- » Mechanics
- » Mechatronics
- » Nanomanufacturing
- » Thermofluids

COLLEGE WIDE RESEARCH INITIATIVES

ADVANCING NANOTECHNOLOGY THROUGH INNOVATION IN MATERIALS ENGINEERING

BIOMACHINE INTEGRATION

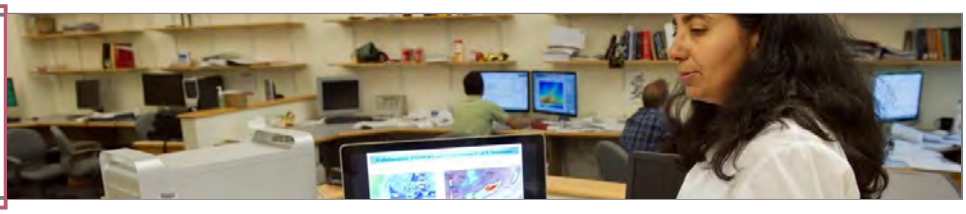


CRITICAL INFRASTRUCTURE SUSTAINABILITY AND SECURITY

ENGINEERED CYBER-SOCIAL-PHYSICAL SYSTEMS

ENGINEERED WATER, SUSTAINABILITY AND HEALTH

INTEGRATED MODELING, INFERENCE, AND COMPUTING



SECURITY, SENSING AND SURVEILLANCE

ALI ABUR

Professor, Electrical and Computer Engineering

PhD, Ohio State University, 1985
ece.neu.edu/people/abur-ali

Scholarship focus: power system monitoring, estimation and optimization, fault location, and identification in power grids

Honors and awards: Fellow, Institute of Electrical and Electronics Engineers

SELECTED PUBLICATIONS

Y. Lin, A. Abur
A New Framework for Detection and Identification of Network Parameter Errors, IEEE Transactions on Smart Grids, 99, 2016

A. Rouhani, A. Abur
Linear Phasor Estimator Assisted Dynamic State Estimation, IEEE Transactions on Smart Grids, 99, 2016

Y. Lin, A. Abur
Highly Efficient Implementation for Parameter Error Identification Method Exploiting Sparsity, IEEE Transactions on Power Systems, 99, 2016, 1-9

G. Feng, A. Abur
Fault Location Using Wide-Area Measurements and Sparse Estimation, IEEE Transactions on Power Systems, 31(4), 2015, 2938-2945

M. Göl, A. Abur
A Fast Decoupled State Estimator for Systems Measured by PMUs, IEEE Transactions on Power Systems, 30(5), 2015, 2766-2771

M. Göl, A. Abur
Hybrid State Estimator for Systems with Limited Number of PMUs, IEEE Transactions on Power Systems, 30(3), 2015, 1511-1517

A. Rouhani, A. Abur
Real-time Dynamic Parameter Estimation for an Exponential Dynamic Load Model, IEEE Transactions on Smart Grids, 7(3), 2015, 1530-1536

M. Göl, A. Abur
A Robust PMU Based Three-phase State Estimator Using Modal Decoupling, IEEE Transactions on Power Systems, 29(5), 2014, 2292-2299

M. Göl, A. Abur
LAV Based Robust State Estimation for Systems Measured by PMUs, IEEE Transactions on Smart Grids, 5(4), 2014, 1808-1814

SELECTED RESEARCH PROJECTS

Identification and Correction of Network Parameter Errors
Principal Investigator, ISO-New England

Engineering Research Center for Ultra-wide Area Resilient Electric Energy Transmission Network
Site Principal Investigator, National Science Foundation

GEORGE ADAMS

COE Distinguished Professor, Mechanical and Industrial Engineering; affiliated faculty: Civil and Environmental Engineering, Electrical and Computer Engineering

PhD, University of California at Berkeley, 1975
mie.neu.edu/people/adams-george

Scholarship focus: contact mechanics including adhesion, friction, and plasticity; modeling and analysis of MEMS; modeling and analysis in nanomechanics

Honors and awards: Fellow, American Society of Mechanical Engineers; Fellow, Society of Tribologists and Lubrication Engineers; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

G. Stan, G.G. Adams
Adhesive Contact Between a Rigid Spherical Indenter and an Elastic Multi-Layer Coated Substrate, International Journal of Solids and Structures, 87, 2016, 1-10

G.G. Adams
Critical Value of the Generalized Stress Intensity Factor for a Crack Perpendicular to an Interface, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 471, 2015, 20150571

S. Berger, N.E. McGruer, and G.G. Adams
Simulation of Dielectrophoretic Assembly of Carbon Nanotubes Using 3D Finite Element Analysis, Nanotechnology, 26, 2015, 155602

G.G. Adams
Adhesion and Pull-off Force of an Elastic Indenter from an Elastic Half-space, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 470, 2014, 20140317

G.G. Adams, D.A. Hills
Analytical Representation of the Non-Square-root Singular Stress Field at a Finite Angle Sharp Notch, International Journal of Solids and Structures, 51, 2014, 4485-4491

G.G. Adams
Stick, Partial Slip and Sliding in the Plane Strain Micro Contact of Two Elastic Bodies, Royal Society Open Science, 1, 2014, 140363

J.R. Parent, G.G. Adams
A Model of a Trapped Particle Under a Plate Adhering to a Rigid Surface, Journal of Applied Mechanics, 80, 2013, 051011

Y.-C. Wu, N.E. McGruer, G.G. Adams
Adhesive Slip Process Between a Carbon Nanotube and a Substrate, Journal of Physics D: Applied Physics, 46, 2013, 175305

MD NOOR E ALAM

Assistant Professor, Mechanical and Industrial Engineering

PhD, University of Alberta, 2013
mie.neu.edu/people/alam-md-noor-e

Scholarship focus: applied operations research, healthcare, supply chain, large scale optimization and data analytics

Honors and awards: Postdoctoral Fellowship, Natural Sciences and Engineering Research Council of Canada

SELECTED PUBLICATIONS

M. Noor-E-Alam, B. Todd, J. Doucette
Integer Linear Programming Model for Grid-based Wireless Transmitter Location Problems, International Journal of Operational Research, 22(1), 2015, 48-64

M. Noor-E-Alam, J. Doucette
Solving Large Scale Fixed Cost Integer Linear Programming Models for Grid-based Location Problems with Heuristic Techniques, Engineering Optimization, 47(8),2015, 1085-1106

M. Noor-E-Alam, J. Doucette
An Application of Infinite Horizon Stochastic Dynamic Programming in Multi Stage Project Investment Decision Making, International Journal of Operational Research, 13(4), 2012, 423-438

M. Noor-E-Alam, A. Ma, J. Doucette
Integer Linear Programming Models for Grid-based Light Post Location Problem, European Journal of Operational Research, 222, 2012, 17-30

M. Noor-E-Alam, J. Doucette
Relax-and-fix-based Decomposition Technique for Solving Large Scale GBLPs, Computers and Industrial Engineering, 63, 2012, 1062-1073

M. Noor-E-Alam, A.Z. Kasem, J. Doucette
ILP Model and Relaxation-based Decomposition Approach for Incremental Topology Optimization in p-Cycle Networks, Journal of Computer Networks and Communication, 1-10, 2012

M. Noor-E-Alam, T.F. Lipi, Md. A.A. Hasin, A.M.M. Sharif Ullah
Algorithms for Fuzzy Multi Expert Multi Criteria Decision Making (ME-MCDM), Knowledge-Based Systems, 24(3), 2011, 367-377

T.F. Lipi, Md. A.A. Hasin, M. Noor-E-Alam
Fuzzy Multi Objective Machine Reliability & Availability Based Hybrid Flow Shop Scheduling, Asia Pacific Journal of Operational Research, 26(5), 2009, 637-653

M. Noor-E-Alam, Md. A. A. Hasin, A.M.M. Sharif Ullah, T.F. Lipi
Supplier Evaluation with GD based Multi Criteria Decision Making, International Journal of Industrial & Systems Engineering, 3(3), 2008, 368-381

MICHAEL ALLSHOUSE

Assistant Professor, Mechanical and Industrial Engineering

PhD, Massachusetts Institute of Technology, 2013
mie.neu.edu/people/allshouse-michael

Scholarship focus: nonlinear dynamics, geophysical fluid dynamics, computational fluid mechanics, disaster response, experimental fluids

SELECTED PUBLICATIONS

M.R. Allshouse, F.M. Lee, P.J. Morrison, H.L. Swinney
Internal Wave Pressure, Velocity, and Energy Flux from Density Perturbations, Physical Review Fluids, 1(1), 2016, 014301

M.R. Allshouse, T. Peacock
Lagrangian Based Methods for Coherent Structure Detection, Chaos, 25, 2015, 097617

M.R. Allshouse, T. Peacock
Refining Finite-time Lyapunov Exponent Ridges and the Challenges of Classifying Them, Chaos, 25, 2015, 087410

M. Mercier, A. Ardekani, M.R. Allshouse, B. Doyle, T. Peacock
Self-Propulsion of Immersed Objects via Natural Convection, Physical Review Letters, 112, 2014, 097617

D. Kelley, M.R. Allshouse, N. Ouellette
Lagrangian Coherent Structures Separate Dynamically Distinct Regions in Fluid Flows, Physical Review E, 88, 2013, 013017

M.R. Allshouse, J-L. Thieault,
Detecting Coherent Structures Using Braids, Physica D, 241, 2012, 95-105

M.R. Allshouse, M.F. Barad, T. Peacock
Propulsion Generated by Diffusion-driven Flow, Nature Physics, 6, 2010, 516-519

AKRAM ALSHAWABKEH

George A. Snell Professor of Engineering and Civil and Environmental Engineering; Associate Dean for Research; affiliated faculty, Bioengineering

PhD, Louisiana State University, 1994
civ.neu.edu/people/alshawabkeh-akram

Scholarship focus: geoenvironmental engineering, soil and groundwater remediation; electrokinetic and electrochemical processes; contaminant fate and transport; environmental restoration

Honors and awards: Fellow, American Society of Civil Engineers; National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

L. Rajic, R. Nazari, N. Fallahpour, A.N. Alshawabkeh
Electrochemical Degradation of Trichloroethylene in Aqueous Solution by Bipolar Graphite Electrodes, Journal of Environmental Chemical Engineering, 4(1), 2016, 197-202

N. Fallahpour, S. Yuan, L. Rajic, A.N. Alshawabkeh
Hydrodechlorination of TCE in a Circulated Electrolytic Column at High Flow Rate, Chemosphere, 144, 2016, 59-64

N. Yang, J. Cui, L. Zhang, W. Xiao, A.N. Alshawabkeh, X. Mao
Iron Electrolysis-assisted Peroxymonosulfate Chemical Oxidation for the Remediation of Chlorophenol-contaminated Groundwater, Journal of Chemical Technology and Biotechnology, 91(4), 2016, 938-947

X. Yu, R. Ghasemizadeh, I.Y. Padilla, D. Kaeli, A.N. Alshawabkeh
Patterns of Temporal Scaling of Groundwater Level Fluctuation, Journal of Hydrology, 536, 2016, 485-495

A.M. Aker, D..J Watkins, L.E. Johns, K.K. Ferguson, O.P. Soldin, L.V. Anzalota Del Toro, A.N. Alshawabkeh, J.F. Cordero, J.D. Meeke
Phenols and Parabens in Relation to Reproductive and Thyroid Hormones in Pregnant Women, Environmental Research, 151, 2016, 30-37

SELECTED RESEARCH PROJECTS

Puerto Rico Testsite for Exploring Contamination Threats (PROTECT), a National Institute of Environmental Health Sciences Superfund Research Center. PROTECT investigates the relationship between environmental contamination and preterm birth
Principal Investigator, National Institutes of Health

The Center for Research on Early Childhood Exposure and Development in Puerto Rico (CRECE) studies how mixtures of environmental exposures and other factors affect the health and development of infants and children living in Puerto Rico
Director and Principal Investigator, National Institutes of Health/ Environmental Protection Agency

Induced Partial Saturation (IPS) Through Transport and Reactivity for Liquefaction Mitigation
Co-Principal Investigator, National Science Foundation

MANSOOR AMIJI

University Distinguished Professor, Pharmaceutical Sciences; affiliated faculty, Chemical Engineering, Bioengineering

PhD, Purdue University, 1992
che.neu.edu/people/amiji-mansoor

Scholarship focus: polymeric biomaterials, drug delivery systems, nanomedical technologies

Honors and awards: Fellow, American Association of Pharmaceutical Scientists; Fellow, Controlled Release Society; T. Nagai Award, Controlled Release Society

SELECTED PUBLICATIONS

M. Talekar, M. Trivedi, P. Shah, Q. Ouyang, A. Oka, S.K. Gandham, M.M. Amiji
Combination wt-p53 and microRNA-125b Transfection in a Genetically Engineered Lung Cancer Model Using Dual EGFR/CD44 Targeted Nanoparticles, Molecular Therapy, 24(4), 2016, 759-769

A. Singh, J. Xu, G. Mattheolabakis, M.M. Amiji
EGFR-targeted Gelatin Nanoparticles for Systemic Administration of Gemcitabine in an Orthotopic Pancreatic Cancer Model, Nanomedicine: Nanotechnology, Biology, and Medicine, 12(3), 2016, 589-600

S. Yadav, S.K. Gandham, R. Panicucci, M.M. Amiji
Intranasal Brain Delivery of Cationic Nanoemulsion-encapsulated TNF siRNA for Prevention of Experimental Neuroinflammation, Nanomedicine: Nanotechnology, Biology, and Medicine, 12(4), 2016, 987-1002

D. Deshpande, S. Kethireddy, D.R. Janero, M.M. Amiji
Therapeutic Efficacy of an w-3-fatty Acid-containing Estradiol Nano-delivery System Against Experimental Atherosclerosis, PLoS ONE, 11(2), 2016

SELECTED RESEARCH PROJECTS

Combinatorial-designed Nano-platforms to Overcome Tumor Drug Resistance
Principal Investigator, National Institutes of Health

Multi-modal Gene Therapy for Pancreatic Cancer with Targeted Nanovectors
Principal Investigator, National Institutes of Health

IGERT: Nanomedical Science and Technology
Co-Investigator, National Science Foundation

Integrated Image-guided Targeted Therapy for Refractory Ovarian Cancer
Principal Investigator, Nemucore Medical Innovations, Inc.

Impact of Lipids on Compound Absorption: Mechanistic Studies and Modeling
Co-Investigator, National Institutes of Health

Hepatic Insulin Resistance and Metabolic Disease
Principal Investigator, National Institutes of Health

Targeted Platinates/siRNA Combination Therapy for Resistant Lung Cancer
Principal Investigator, National Institutes of Health

MAHSHID AMIRABADI

Assistant Professor, Electrical and Computer Engineering

PhD, Texas A&M University, 2013
ece.neu.edu/people/amirabadi-mahshid

Scholarship focus: design, modeling and control of power converters, power electronics for renewable energy systems, microgrids, variable speed drives, and wireless power transfer

SELECTED PUBLICATIONS

S.A.KH. Mozaffari Niapour, M. Amirabadi
Extremely Sparse Parallel AC-Link Universal Power Converters, IEEE Transactions on Industry Applications, 52(3), 2016, 2456-2466

M. Amirabadi, H. A. Toliyat, J. Baek
Bidirectional Soft-switching Series AC-link Inverter, IEEE Transactions on Industry Applications, 51, 2015, 2312-2320

M. Amirabadi, J. Baek, H.A. Toliyat, W.C. Alexander
Soft-switching AC-link threephase AC-AC Buck-Boost Converter, IEEE Transactions on Industrial Electronics, 62, 2015, 3-14

M. Amirabadi
Extremely Sparse Parallel AC-link Universal Power Converters, Proceedings of IEEE Energy Conversion Congress and Exposition (ECCE), 2014, 1534-1541

M. Amirabadi, A. Balakrishnan, H. Toliyat, W.C. Alexander
High Frequency AC-link PV Inverter, IEEE Transactions on Industrial Electronics, 61, 2014, 281-291

M. Amirabadi, J. Baek, H.A. Toliyat
Sparse AC-link Buck-boost Inverter, IEEE Transactions on Power Electronics, 29, 2014, 3942-3953

M. Amirabadi, H. A. Toliyat, W.C. Alexander
A Multi-port AC Link PV Inverter with Reduced Size and Weight for Stand-alone Application, IEEE Transactions on Industry Applications, 49, 2013, 2217-2228

SELECTED RESEARCH PROJECTS

A Novel Inverter for Wireless Charging
Principal Investigator, Korea Railroad Research Institute

A Reliable PV Inverter for Reducing the Overall Cost of Residential PV Systems
Principal Investigator, The Massachusetts Technology Transfer Center at UMass

TEIICHI ANDO

Professor, Mechanical and Industrial Engineering

PhD, Colorado School of Mines, 1982
mie.neu.edu/people/ando-teiichi

Scholarship focus: rapid solidification processing, droplet-based materials processing, powder metallurgy, material processing by severe plastic deformation, processing-structure-property relationships in materials

Honors and awards: Fellow, American Society of Materials International; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

S. Onell, T. Ando
Application of a Simple Sub-regular Solution Model to the Computation of Phase Boundaries and Free-dendritic Growth in the Ag-Cu System, Acta Mater, 113, 2016,109-115

B. Yildirim, H. Fukunuma, T. Ando, A. Gouldstone, S. Muftu
A Numerical Investigation into Cold Spray Bonding Processes, Journal of Tribology, 137, 2015, 11102-11113

S. Gheybi Hashemabad, T. Ando
Ignition Characteristics of Hybrid Al-Ni-Fe2O3 and Al-Ni-CuO Reactive Composites Fabricated by Ultrasonic Powder Consolidation, Combustion and Flame, 162, 2015, 1144-1152

T. Hu, S. Zhalehpour, A. Gouldstone, S. Muftu, T. Ando
A Method for the Estimation of the Interface Temperature in Ultrasonic Joining, Metallurgical and Materials Transactions A, 45A, 2014, 2545-2552

D. Erdeniz, T. Ando
Fabrication of Micro/Nano Structured Aluminum-Nickel Energetic Composites by Ultrasonic Powder Consolidation, International Journal of Materials Research, 104(4), 2013, 387-391

T. Ando
Production, Characterization and Application of Mono-size Alloy Droplets, Powder Metallurgy, 55(5), 2012, 395-401

S. Onel, T. Ando
Comparison and Extension of Free Dendritic Growth Models with Application to Ag-15at.%Cu Alloy, Metallurgical and Materials Transactions A, 39A, 2008, 2449-58

SELECTED RESEARCH PROJECTS

Production of Porous Aluminum and High Colbalt WC-Co Composites
Principal Investigator, Hitachi Metals, Ltd

Metallographic Characterization of Cold Sprayed Materials
Principal Investigator, Fukuda Metal Foil

Engineered Materials and Materials Design of Engineered Materials
Co-Principle Investigator, ARL

NASIM ANNABI

Assistant Professor, Chemical Engineering

PhD, University of Sydney, Australia, 2010
che.neu.edu/people/annabi-nasim

Scholarship focus: advanced biomaterials; soft tissue engineering; 3D microfabrication; vascularized 3D tissues; nanocomposite hydrogels

SELECTED PUBLICATIONS

N. Annabi, S. Shin, M. Miscuglio, M. Afshar Bakooshli, A. Assmann, P. Mostafalu, L. Cheung, X. Tang, A.S. Weiss, A. Khademhosseini
Highly Elastic and Conductive Human-based Protein Hybrid Hydrogels, Advanced Materials, 28(1), 2016, 40-49

Y. Zhang, R. Avery, Q. Vallmajó Martín, A. Assmann, A. Vegh, A. Memic, B.D. Olsen, N. Annabi, A. Khademhosseini
A Highly Elastic and Rapid Crosslinkable Elastin-like Polypeptide-based Gels for Biomedical Applications, Advanced Functional Materials, 25 (30), 2015, 4814-4826

N. Annabi, A. Tamayol, J. Alfredo Uquillas, M. Akbari, L. Bertassoni, C. Cha, G. Camci-Unal, M. Dokmeci, N.A. Peppas, A. Khademhosseini
25th Anniversary Article: Rational Design and Applications of Hydrogels in Regenerative Medicine, Advanced Materials, 26(1), 2014, 85-124

N. Annabi, A. Tamayol, S. Shin, A.M. Ghaemmaghami, N.A. Peppas, A. Khademhosseini
Surgical Materials: Current Challenges and Nano-enabled Solutions, Nano Today, 9(5), 2014, 574-589

N. Annabi, K. Tsang, S.M. Mithieux, M. Nikkhah, A. Ameri, A. Khademhosseini, A.S. Weiss
Highly Elastic Micropatterned Hydrogels for Engineering Functional Cardiac Tissues, Advanced Functional Materials, 23(39), 2013, 4950-4959

SELECTED RESEARCH PROJECTS

Engineering a Sprayable Multifunctional Wound Dressing
Principal Investigator, Northeastern University

Engineering Bioprintable Cardiac Tissues
Principal Investigator, American Heart Association

Smart Wound Dressing for Treating Chronic Diabetic Ulcers
Co-Investigator, National Institutes of Health

ANAND ASTHAGIRI

Associate Professor, Bioengineering; affiliated faculty, Chemical Engineering

PhD, Massachusetts Institute of Technology, 1995
bioe.neu.edu/people/asthagiri-anand

Scholarship focus: elucidates design principles for engineering living cells and tissues

SELECTED PUBLICATIONS

D.I. Walsh III, M.L. Lalli, J.M. Kassas, A.R. Asthagiri, S.K. Murthy
Cell Chemotaxis on Paper for Diagnostics, Analytical Chemistry, 87(11), 2015, 5505-5510

M.L. Lalli, A.R. Asthagiri
Collective Migration Exhibits Greater Sensitivity but Slower Dynamics of Alignment to Applied Electric Fields, Cellular and Molecular Bioengineering, 8(2), 2015, 247-257

J.H. Kim, L.J. Dooling, A.R. Asthagiri
Intercellular Mechanotransduction During Multicellular Morphodynamics, Royal Society Interface, 7(3), 2010, 341-350

K.S. Kushiro, A. Chang, A.R. Asthagiri
Reprogramming Directional Cell Motility by Tuning Micropattern Features and Cellular Signals, Advanced Materials, 22, 4516, 2010, 4516-4519

C.A. Giurumescu, A.R. Asthagiri
Systems Approaches to Developmental Patterning, Systems Biomedicine, Eds: Douglas A. Lauffenburger, Edison Liu and Garry Nolan, Elsevier Press, 2010

S.A. Chapman, A.R. Asthagiri
Quantitative Role of Scaffolding on Signal Propagation, Molecular Systems Biology, 5(313), 2009

C.A. Giurumescu, P.W. Sternberg, A.R. Asthagiri
Predicting Phenotypic Diversity and the Underlying Quantitative Molecular Transitions, PLoS Computational Biology, 5(4), 2009, 1-13

SELECTED RESEARCH PROJECTS

Multi-scale Complex Systems Transdisciplinary Analysis of Response to Therapy
Co-Principal Investigator, National Institutes of Health

Quantitative Analysis of Epithelial Cell Scatter
Principal Investigator, National Institutes of Health

NADINE AUBRY

University Distinguished Professor, Mechanical and Industrial Engineering and Dean of the College of Engineering

PhD, Cornell University, 1987
mie.neu.edu/people/aubry-nadine

Scholarship focus: fluid dynamics, microfluids, chaotic mixing, particle manipulation

Honors and awards: Member, National Academy of Engineering; Fellow, National Academy of Inventors; Fellow, American Association for the Advancement of Science; Fellow, American Institute of Aeronautics and Astronautics; Fellow, American Physical Society; Fellow, American Society of Mechanical Engineers; National Science Foundation Presidential Young Investigator Award; Former Chair, National Academies' U.S. National Committee for Theoretical and Applied Mechanics (USNC/TAM); Former Chair, Division of Fluid Dynamics of the American Physical Society (APS)

SELECTED PUBLICATIONS

R. Chabreyrie, C. Chandre, N. Aubry
Complete Chaotic Mixing in an Electro-osmotic Channel by Destabilization of Key Periodic Orbits, Physics of Fluids, 23, 2011, 072002

P. Singh, D.D. Joseph, N. Aubry
Dispersion and Attraction of Particles Floating on Fluid-liquid Surfaces, Soft Matter, 6, 2010, 4310-4325

M. Janjua, S. Nudurupati, P. Singh, N. Aubry
Electrohydrodynamic Removal of Particles from Drop Surfaces, Physical Review E, 80, 2009, 010402

A.K. Uguz, O. Ozen, N. Aubry
Electric Field Effect on a Two-fluid Interface Instability in Channel Flow for Fast Electric Times, Physics of Fluids, 20, 2008, 031702

N. Aubry, P. Singh, M. Janjua, S. Nudurupati
Micro- and Nanoparticles Self-assembly for Virtually Defect-free, Adjustable Monolayers, Proceedings of the National Academy of Sciences USA (PNAS), 105, 2008, 3711-3714

N. Aubry, P. Singh
Physics Underlying Controlled Self-assembly of Micro and Nanoparticles at a Two-fluid Interface Using an Electric Field, Physical Review E, 77, 2008, 056302

A.K. Uguz, N. Aubry
Quantifying the Linear Instability of a Flowing Electrified Two-fluid Layer in a Channel for Fast Electric Times, Physics of Fluids, 20, 2008, 092103

S. Pillapakkam, P. Singh, D. Blackmore, N. Aubry
Transient and Steady State of a Rising Bubble in a Viscoelastic Fluid, Journal of Fluid Mechanics, 589, 2007, 215-252

F. Li, O. Ozen, N. Aubry, D. Papageorgiou, P. Petropoulos
Linear Instability of a Two-fluid Interface for Electro-hydrodynamic Mixing in a Channel, Journal of Fluid Mechanics, 583, 2007, 347-377

DEBRA AUGUSTE

Professor, Chemical Engineering

PhD, Princeton University, 2005
che.neu.edu/people/auguste-debra

Scholarship focus: bioresponsive drug delivery; cell and tissue engineering; tissue architecture; targeted therapeutics

Honors and awards: NSF CAREER Award; NIH Director's New Innovator Award; Presidential Early Career Award in Science

SELECTED PUBLICATIONS

P. Guo, J. Yang, D. Jia, M.A. Moses, D.T. Auguste
ICAM-1-Targeted, Lcn2 siRNA-Encapsulated Liposomes are Potent Anti-angiogenic Agents for Triple Negative Breast Cancer, Theranostics, 6, 2016, 1-13

D. Liu, D.T. Auguste
Cancer Targeted Therapeutics: From Molecules to Drug Delivery Vehicles, Journal of Controlled Release, 219, 2015, 632-643

B. Wang, P. Guo, D.T. Auguste
Mapping the CXCR4 Receptor on Breast Cancer Cells, Biomaterials, 57, 2015, 161-8

T.T. Ho, J.O. You, D.T. Auguste
siRNA Delivery Impedes the Temporal Expression of Cytokine-activated VCAM1 on Endothelial Cells, Annals of Biomedical Engineering, 2015, 1-8

J.O. You, M. Rafat, D. Almeda, N. Maldonado, P. Guo, C.S. Nabzdyk, M. Chun, F.W. LoGerfo, J.W. Hutchinson, L.K. Pradhan-Nabsdyk, D.T. Auguste
pH-Responsive Scaffolds Generate a Pro-healing Response, Biomaterials, 57, 2015, 22-32

D. Almeda, B. Wang, D.T. Auguste
Minimizing Antibody Surface Density on Lipsomes While Sustaining Cytokine-activated EC Targeting, Biomaterials, 47, 2015, 37-44

P. Guo, J. Huang, L. Wang, D. Jia, J. Yang, D.A. Dillon, D. Zurakowski, H. Mao, M.A. Moses, D.T. Auguste
ICAM-1 as a Molecular Target for Triple Negative Breast Cancer, Proceedings of the National Academy of Science, 111(41), 2014, 14710-14715

P. Guo, J.O. You, J. Yang, D. Jia, M.A. Moses, D.T. Auguste
Inhibiting Metstatic Breast Cancer Cell Migration Via the Synergy of Targeted, pH-triggered siRNA Delivery and Chemokine Axis Blockade, Molecular Pharmaceutics, 11(3), 2014, 755-765

J. You, P. Guo, D.T. Auguste
A Multi-targeted Drug Delivery Vehicle Approach that Targets, Triggers, and Thermally Ablates HER2+ Breast Cancer Cells, Angewandte Chemie, 52(15), 2013, 4141-4146

JOSEPH AYERS

Professor, Marine and Environmental Sciences; affiliated faculty: Biology, Bioengineering, Civil and Environmental Engineering, Electrical and Computer Engineering

PhD, University of California, Santa Cruz, 1975
bioe.neu.edu/people/ayers-joseph

Scholarship focus: development of underwater robots for civil infrastructure and explosive sensing; neurophysiology and behavior biomimetics

SELECTED PUBLICATIONS

L.L. McGrath, S.V. Vollmer, S.T. Kaluziak, J. Ayers
De Novo Transcriptome Assembly for the Lobster Homarus Americanus and Characterization of Differential Gene Expression Across Nervous System Tissues, BMC Genomics, 17, 2016, 3-12

J. Ayers
Underwater Vehicles Based on Biological Intelligence, ASME Journal of Dynamic Systems, Measurement and Control, 138, 2016, 1-5

L. Zhu, A.I. Selverston, J. Ayers
The Role of Ih in Differentiating the Dynamics of the Gastric Mill and Pyloric Neurons in the Stomatogastric Ganglion of the Lobster, Homarus americanus, Journal of Neurophysiology, 115(5), 2016, 2434-45

J. Lu, J. Yang, Y.-B. Kim, J. Ayers, K.K. Kim
Implementation of Excitatory CMOS Neuron Oscillator for Robot Motion Control Unit, Journal of Semiconductor Technology and Science, 14(4), 2014, 383-390

L. Lewis, J. Ayers
Temperature Preference and Acclimation in the Jonah Crab, Cancer Borealis, Journal of Experimental Marine Biology and Ecology, 455, 2014, 7-13

J. Ayers, D. Blustein, A. Westphal
A Conserved Biomimetic Control Architecture for Walking, Swimming and Flying Robots, Lecture Notes in Artificial Intelligence, 2012, 1-12

SELECTED RESEARCH PROJECTS

Biomimetics of Jellyfish Tentacles
Principal Investigator, Schlumberger Doll, Inc

RoboBees: A Convergence of Body, Brain and Colony
Principal Investigator, National Science Foundation

Modernization and Enhancement of the Seawater System and Research Infrastructure at Northeastern University's Marine Science Center
Co-Principal Investigator, National Science Foundation

Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots
Co-Principal Investigator, Office of Naval Research

AMBIKA BAJPAYEE

Assistant Professor, Bioengineering

PhD, Massachusetts Institute of Technology, 2015
bioe.neu.edu/people/bajpayee-ambika

Scholarship focus: targeted drug delivery to avascular connective tissues; polypeptide and protein based nanocarriers; bio-electrostatics; transport phenomena in biological systems; biomechanics; post-traumatic osteoarthritis

Honors and awards: MIT Post-doc Travel Grant Award; MIT Global Fellow Award; Meredith Kamm Memorial Award for Outstanding Performance, MIT; MIT Graduate Women of Excellence Award

SELECTED PUBLICATIONS

A.G. Bajpayee, M.A. Quadir, P.T. Hammond, A.J. Grodzinsky
Charge Based Intra-cartilage Delivery of Single Dose Dexamethasone Using Avidin Nano-carriers Suppresses Cytokine-induced Catabolism Long Term, Osteoarthritis & Cartilage, 24(1), 2016, 71-81

A.G. Bajpayee, A.M. Sheu, A.J. Grodzinsky, R.M. Porter
A Rabbit Model Demonstrates the Influence of Cartilage Thickness on Intra-articular Drug Delivery and Retention within Cartilage, Journal of Orthopaedic Research, 33(5), 2015, 660-667

A.G. Bajpayee, A.M. Sheu, A.J. Grodzinsky, R.M. Porter
Electrostatic Interactions Enable Rapid Penetration, Enhanced Uptake and Retention of Intra-articular Injected Avidin in Rat Knee Joints, Journal of Orthopaedic Research, 32(8), 2014, 1044-1051

A.G. Bajpayee, C.R. Wong, M.G. Bawendi, E.H. Frank, A.J. Grodzinsky
Avidin as a Model for Charge Driven Transport into Cartilage and Drug Delivery for Treating Early Stage PTOA, Biomaterials, 35(1), 2014, 538-549

JAYDEEP BARDHAN

Assistant Professor, Mechanical and Industrial Engineering

PhD, Massachusetts Institute of Technology, 2006
mie.neu.edu/people/bardhan-jaydeep

Scholarship focus: multiscale continuum models; electrolyte solutions in biophysics; boundary-integral methods; fast numerical algorithms

SELECTED PUBLICATIONS

A. Molavi Tabrizi, M.G. Knepley, J.P. Bardhan
Generalising the Mean Spherical Approximation as a Multiscale, Nonlinear Boundary Condition at the Solute–solvent Interface, Molecular Physics, 2016

J.P. Bardhan, M.G. Knepley
Modeling Charge-sign Asymmetric Solvation Free Energies using Nonlinear Boundary Conditions, Journal of Chemical Physics (Communication), 141, 2014, 131103

J.P. Bardhan, P. Jungwirth, L. Makowski
Affine-response Model of Molecular Solvation of Ions: Accurate Predictions of Asymmetric Charging Free Energies, Journal of Chemical Physics, 137, 2012, 124101

R. Yokota, J.P. Bardhan, M.G. Knepley, L.A. Barba, T. Hamada
Biomolecular Electrostatics using a Fast Multipole BEM on up to 512 GPU and a Billion Unknowns, Computer Physics Communications, 182, 2011, 1272-1283

J.P. Bardhan
Nonlocal Continuum Electrostatic Theory Predicts Surprisingly Small Energetic Penalties for Charge Burial in Proteins, Journal of Chemical Physics, 135, 2011, 104113

S. Park, J.P. Bardhan, B. Roux, L. Makowski
Simulated X-ray Scattering of Protein Solutions using Explicit-solvent Models, Journal of Chemical Physics, 130, 2009, 134114

SELECTED RESEARCH PROJECTS

Hybrid Mixed-resolution Solvation Models for Chemical Processing in Ionic Liquids Dynamics
Principal Investigator, National Science Foundation

Critical Analysis of Long-range Interactions in Molecular Dynamics
Principal Investigator, Battelle

STEFANO BASAGNI

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Texas, Dallas, 2001
PhD, University of Milan, Italy, 1998
ece.neu.edu/people/basagni-stefano

Scholarship focus: wireless networks, ad hoc networks, underwater and terrestrial sensor networking, and protocol design and testing

Honors and awards: Distinguished Scientist of the Association for Computing Machinery

SELECTED PUBLICATIONS

S. Basagni, C. Petrioli, D. Spenza
CTP-WUR: The Collection Tree Protocol in Wake-up Radio WSNs for Critical Applications, In Proceedings of IEEE ICNC 2016, Kauai, HI, 2016, 1-6

R.G. Cid-Fuentes, M.Y. Naderi, S. Basagni, K.R. Chowdhury, A. Cabellos-Aparicio, E. Alarcon
On Signaling Power: Communications over Wireless Energy, In Proceedings of IEEE Infocom 2016, San Francisco, CA, 2016

L. Chen, J. Warner, P.L. Yung, D. Zhou, W. Heinzelman, I. Demirkol, U. Muncuk, K.R. Chowdhury, S. Basagni
Reach2-mote: A Range Extending Passive Wake-up Wireless Sensor Node, ACM Transactions on Sensor Networks, 11(4):64, 2015, 1-64

D. Spenza, M. Magno, S. Basagni, L. Benini, M. Paoli, et al.
Beyond Duty Cycling: Wake-up Radio with Selective Awakenings for Long-lived Wireless Sensing Systems, Proceedings of IEEE Infocom 2015, Hong Kong, China, April 26-30, 2015

D. Mishra, S. De, S. Jana, S. Basagni, K.R. Chowdhury, et al.
Smart RF Energy Harvesting Communications: Challenges and Opportunities, Communications Magazine, IEEE, 53(4), 2015, 70-78

M.Y. Naderi, K.R. Chowdhury, S. Basagni
Wireless Sensor Networks with RF Energy Harvesting: Energy Models and Analysis, Proceedings of IEEE WCNC 2015, New Orleans, LA, March 9-12, 2015, 1494-1499

C. Petrioli, M. Nati, P. Casari, M. Zorzi, S. Basagni
ALBA-R: Load-balancing Geographic Routing Around Connectivity Holes in Wireless Sensor Networks, IEEE Transactions on Parallel and Distributed Systems, 24(3), 2014, 529-539

SELECTED RESEARCH PROJECTS

Cross Layer Approach to 5G: Models and Protocols
Principal Investigator, MathWorks, Inc.

Development of the Northeastern University Marine Observatory NETwork
Principal Investigator, National Science Foundation

JAMES BEAN

Provost and Senior Vice President of Academic Affairs; Professor, Mechanical and Industrial Engineering; Professor, D'Amore-McKim School of Business

PhD, Stanford University, 1980
mie.neu.edu/people/bean-james

Honors and awards: Fellow, Institute of Operations Research and the Management Sciences; George E. Kimball Medal, Institute of Operations Research and the Management Sciences

SELECTED PUBLICATIONS

S. Xu, J. Bean
Scheduling Parallel-machine Batch Operations to Maximize On-time Delivery Performance, Journal of Scheduling, 2015, 1-18

S. Xu, J. Bean
A Genetic Algorithm for Scheduling Parallel Non-identical Batch Processing Machines, Proceedings of the IEEE Symposium on Computational Intelligence in Scheduling, 2007, 143–150

Z.-Z. Lin, J. Bean, C. White III
A Hybrid Genetic/Optimization Algorithm for Finite Horizon Partially Observed Markov Decision Processes, INFORMS Journal on Computing, 16, 2004, 27-38

J. Ohlmann, J. Bean, S. Henderson
Convergence in Probability of Compressed Annealing, Mathematics of Operations Research, 29, 2004, 837-860

C. Kim, G. Keoleian, D. Grande, J. Bean
Life Cycle Optimization of Automobile Replacement: Model and Application, Environmental Science & Technology, 37, 2003, 5407-5413

Z.-Z. Lin, J. Bean, C. White III
Chapter 15: A Genetic Algorithm Heuristic for Finite Horizon Partially Observed Markov Decision Problems, Evolutionary Optimization, Eds. R. Sarkar, X. Yao and M. Mohammadian, Kluwer Academic, Boston, 2002, 371-398

R. Hughes, J. Bean, D. Chaffin
A Method for Classifying Co-contraction of Lumbar Muscle Activity, Journal of Applied Biomechanics, 17, 2001, 253-258

B. Norman, J. Bean
Scheduling Operations on Parallel Machine Tools, IIE Transactions, 32, 2000, 449-459

MEHDI BEHROOZI

Assistant Professor, Mechanical and Industrial Engineering

PhD, University of Minnesota, Twin Cities, 2016
mie.neu.edu/people/behroozi-mehdi

Scholarship focus: geographic resource allocation, transportation and logistics, computational geometry; data analytics, robust optimization, mathematical programming; scheduling

SELECTED PUBLICATIONS

J.G. Carlsson, M. Behroozi, X. Meng, R. Devulapalli
Household-level Economies of Scale in Transportation, Operation Research, 2016

J.G. Carlsson, M. Behroozi, X. Li
Geometric Partitioning and Robust Ad-Hoc Network Design, Annals of Operation Research, 238, 2016, 41-68

J. G. Carlsson, M. Behroozi
Worst-case Demand Distributions in Vehicle Routing, European Journal of Operational Research, 2016

M. Behroozi
Plant Layout and Location, 6th Ed., Modaresane Sharif, Tehran, Iran, 2015

M. Behroozi, A.B. Jahromi, A.J. Dehkordi, S. Abbasi, F. Masafinia
Solution Mannual for the National Graduate Studies Entrance Exams: Industrial Engineering, 7th Ed., Modaresane Sharif, Tehran, Iran, 2015

H. Samarghandi, P. Taabayan, M. Behroozi
Metaheuristics for Fuzzy Dynamic Facility Layout Problem with Unequal Area Constraints and Closeness Ratings, International Journal of Advanced Manufacturing Technology, 67, 2013, 2701-2715

M. Behroozi, K. Eshghi
Modeling and Solving Job Shop Scheduling Problem with Sequence Dependent Setup Times, International Journal of Industrial Engineering and Production Management, 21(4), 2010

M. Behroozi, K. Eshghi
A New Hybrid Particle Swarm Optimization for Job Shop Scheduling Problem, International Journal of Industrial Engineering and Production Management, 20(2), 2009

R. EDWARD BEIGHLEY

Associate Professor, Civil and Environmental Engineering

PhD, University of Maryland, 2001
civ.neu.edu/people/beighley-edward

Scholarship focus: hydrologic and hydraulic modeling; remote sensing of the hydrologic cycle; hydrologic impacts of climate and/or land use change; flood hazard and risk assessment

SELECTED PUBLICATIONS

R. Ray, R.E. Beighley, Y. Yoon
Integrating Runoff Generation and Flow Routing in Susquehanna River Basin to Characterize Key Hydrologic Processes Contributing to Maximum Annual Flood Events, ASCE Journal of Hydrologic Engineering, 2016

D. Alsdorf, R.E. Beighley, A. Laraque, H. Lee, R. Tshimanga, F. O'Loughlin, G. Mahe, B. Dinga, G. Moukandi, R. Spencer
Opportunities for Hydrologic Research in the Congo Basin, Reviews of Geophysics, 2016

R.E. Beighley, K. Eggert, C.J. Wilson, J.C. Rowland, H. Lee
A Hydrologic Routing Model Suitable for Climate Scale Simulations of Arctic Rivers: Application to the Mackenzie River Basin, Hydrological Processes, 29(12), 2015, 2751-2768

Y. Yoon, R.E. Beighley, H. Lee, T. Pavelsky, G. Allen
Estimating Flood Discharges in Reservoir-regulated River Basins by Integrating Synthetic SWOT Satellite Observations and Hydrologic Modelling, ASCE Journal of Hydrologic Engineering, 21(4), 2015

Y. Yoon, R.E. Beighley
Simulating Streamflow on Regulated Rivers using Characteristic Reservoir Storage Patterns Derived from Remotely Sensed Water Surface Elevations, Hydrological Processes, 29, 2015, 2014-2026

F. Hossain, J. Arnold, R.E. Beighley, C. Brown, S. Burian, J. Chen, A. Mitra, D. Niyogi, R.A. Pielke, V. Tidwell, D. Wegner
What Do Experienced Water Managers Think of Water Resources of Our Nation and Its Management Infrastructure?, PLoS ONE, 10(11), 2015

SELECTED RESEARCH PROJECTS

Decomposing the Water Storage Signal from Basins in Varied Climate Settings with Remote Sensing and Modeling
Principal Investigator, National Aeronautics and Space Administration

Gravity Recovery and Climate Experiment (GRACE) Mission Science Team Program, Enhancement of GRACE Temporal Gravity Field Solutions to Study Terrestrial Water Dynamics in the Congo Basin
Co-Principal Investigator, National Aeronautics and Space Administration

CHIARA BELLINI

Assistant Professor, Bioengineering

PhD, University of Calgary, 2012
bioe.neu.edu/people/bellini-chiara

Scholarship focus: diseases of the cardiovascular system; effects of cell-mediated growth and remodeling processes on tissue and organ mechanics

SELECTED PUBLICATIONS

C. Bellini, S. Wang, D.M. Milewicz, J.D. Humphrey
Myh11R247C/R247C Mutations Increase Thoracic Aorta Vulnerability to Intramural Damage Despite a General Biomechanical Adaptivity, Journal of Biomechanics, 48(1), 2015, 113-121

S. Roccabianca, C. Bellini, J.D. Humphrey
Computational Modelling Suggests Good, Bad and Ugly Roles of Glycosaminoglycans in Arterial Wall Mechanics and Mechanobiology, Journal of The Royal Society Interface, 2014

C. Bellini, S. Federico
Green-naghdi Rate of the Kirchhoff Stress and Deformation Rate: the Elasticity Tensor, Zeitschrift fuer Angewandte Mathematik und Physik, 66(3), 2015, 1143-1163

C. Bellini, J. Ferruzzi, S. Roccabianca, E.S. Di Martino, J.D. Humphrey
A Microstructurally Motivated Model of Arterial Wall Mechanics with Mechanobiological Implications, Annals of Biomedical Engineering, 42(3), 2014, 488-502

A. Satriano, C. Bellini, E.S. Di Martino, E.J. Vigmond
A Feature-based Morphing Methodology for Computationally Modeled Biological Structures Applied to Left Atrial Fiber Directions, Journal of Biomechanical Engineering, 135(3), 2013

C. Bellini, E.S. Di Martino, S. Federico
Mechanical Behavior of the Human Atria, Annals of Biomedical Engineering, 41(7), 2013, 1478-1490

C. Bellini, E.S. Di Martino
A Mechanical Characterization of the Porcine Atria at the Healthy Stage and After Ventricular Tachypacing, Journal of Biomechanical Engineering, 134(2), 2012

E.S. Di Martino, C. Bellini, D. Schwartzman
In Vivo Porcine Left Atrial Wall Stress: Effect of Ventricular Tachypacing on Spatial and Temporal Stress Distribution, Journal of Biomechanics, 44(16), 2011, 2755-2760

E.S. Di Martino, C. Bellini, D. Schwartzman
In Vivo Porcine Left Atrial Wall Stress: Computational Model, Journal of Biomechanics, 44(15), 2011, 2589-2594

SIDI A. BENCHERIF

Assistant Professor, Chemical Engineering

PhD, Carnegie Mellon University, 2009
che.neu.edu/people/bencherif-sidi

Scholarship focus: polymer chemistry; polymer engineering; biomedical engineering; material science and engineering; biomaterials for immunotherapy; drug/cell Delivery; tissue engineering; regenerative medicine

SELECTED PUBLICATIONS

S.A. Bencherif, R.W. Sands, O. Ali, S.A. Lewin, A. Li, T. Braschler, T. Shih, D. Bhatta, G. Dranoff, and D.J. Mooney
Injectable Scaffold-based Whole Tumor Cell Vaccines, Nature Communications, 2015 **Selected as research highlight by Harvard University, Biomedical Picture of the Day, and several online news articles

O. Chaudhuri, L. Gu, D. Klumpers, M. Darnell, S.A. Bencherif, J.C. Weaver, N. Huebsch, H. Lee, E. Lippens, G.N. Duda D.J Mooney
Hydrogels with Tunable Stress Relaxation Regulate Stem Cell Fate and Activity, Nature Materials, 15, 2016, 326-334

O. Chaudhuri, L. Gu, D. Klumpers, M. Darnell, S.A. Bencherif, J.C. Weaver, N. Huebsch, D.J Mooney
Substrate Stress Relaxation Regulates Cell Spreading, Nature Communications, 2015

J. Kim*, S.A. Bencherif*, A. Li, D.J. Mooney
Cell-Friendly Inverse Opal-like Hydrogels for Spatially Separated Coculture System, Macromolecular Rapid Communications, 5, 2014, 1578-1586 *These authors contributed equally to this work

S.A. Bencherif, T.M. Braschler, P. Renaud
Advances in the Design of Macroporous Polymer Scaffolds for Potential Applications in Dentistry, Journal of Periodontal & Implant Science, 43, 2013, 1251-261 **Selected as research highlight by JPIS

S. Kennedy, S.A. Bencherif, D. Norton, L. Weinstock, M. Mehta, D.J. Mooney
Rapid and Extensive Collapse from Electrically Responsive Macroporous Hydrogels, Advanced Healthcare Materials, 5, 2013, 500-507

S.A. Bencherif, W.R. Sands, D. Bhatta, P. Arany, C. Verbeke, D.A. Edwards, D.J. Mooney
Injectable Preformed Scaffolds with Shape-memory Properties, PNAS, 109(48), 2012, 19590-19595 **Selected as research highlight by Nature, Imperial College of London, Harvard University, Materials360®, Biomedical Picture of the Day, Sciences & Avenir magazine, Cell Therapy News, and several online news articles

N. Korin, M. Kanapathipillai, B.D. Matthews, M. Crescente, T. Mammoto, K. Ghosh, S. Jurek, S.A. Bencherif, D. Bhatta, A.U. Coskun, C.L. Feldman, D.D. Wagner, D.E. Ingber
Shear-activated Platelet Mimetics for Drug Targeting to Obstructed Blood Vessels, Science, 337, 2012, 738-742

JAMES BENNEYAN

Director, Healthcare Systems Engineering Institute; Professor, Mechanical and Industrial Engineering

PhD, University of Massachusetts, Amherst, 1997
mie.neu.edu/people/benneyan-james

Scholarship focus: healthcare process improvement, healthcare systems engineering, operations research, quality and reliability engineering, statistical quality control

Honors and awards: Senior Fellow, Institute for Healthcare Improvement; Fellow, Society for Health Systems; Lifetime Fellow, Healthcare Information and Management Systems Society; Fellow, Institute of Industrial Engineers

SELECTED PUBLICATIONS

H. Musdal, B. Shiner, M.E. Ceyhan, B.V. Watts, J.C. Benneyan
In-person and Video-based Post-traumatic Stress Disorder Treatment for Veterans: A Location-allocation Model, Journal of Military Medicine, 179(2), 2014, 150-156

J.S. Peck ,D.J. Nightingale, S.A. Gaehde, J.C. Benneyan
Generalizability of a Simple Approach for Predicting Hospital Admission from an Emergency Department, Academic Emergency Medicine, 20(11), 2013, 1156-1163

L. Romeo, J.C. Benneyan
An Economic Model and Sub-optimality Analysis of the CMS Readmissions Incentive and Penalty Policy, National Science Foundation IUCRC/CHOT center white paper series, 2012

S. Demirkan, A. Taseli, J.B. Benneyan
Readmissions from a Statistical Quality Engineering Perspective, 2012

J.C. Benneyan
Design, Use, and Performance of Statistical Process Control Charts for Clinical Process Improvement, International Journal of Six Sigma, 4(3), 2008, 209-239

SELECTED RESEARCH PROJECTS

Scalable Healthcare Systems Engineering Regional Extension, a CMS Healthcare Systems Engineering Center
Center Director and Principal Investigator, Centers for Medicare and Medicaid Services

Center for Healthcare Organizational Transformation (CHOT)-I/UCRC
Co-Director and Site Principal Investigator, National Science Foundation

Drug Safety Risk-benefit Models
Principal Investigator, National Science Foundation

Reducing Preventable Hospital Readmissions
Principal Investigator, Purdue University

DIONISIO BERNAL

Professor, Civil and Environmental Engineering

PhD, University of Tennessee, 1979
civ.neu.edu/people/bernal-dionisio

Scholarship focus: system identification, fault detection and fault localization, earthquake engineering, soil structure interaction, structural stability

Honors and awards: Moisseiff Award, American Society of Civil Engineers

SELECTED PUBLICATIONS

D. Bernal
Non-recursive Sequential Input Deconvolution, Mechanical Systems and Signal Processing, 2016

D. Bernal, A. Kunwar
Steady State Shift Damage Localization, Meccanica, 2016, 1-11

D. Bernal
Complex Eigenvector Scaling from Mass Perturbations, Mechanical Systems and Signal Processing, 45(1), 2014, 80-90

D. Bernal
Damage Localization and Quantification from the Image of Changes in Flexibility, Journal of Engineering Mechanics, ASCE, 140(2), 2014, 279-286

D. Bernal
Fixed Base Poles and Eigenvectors from Transmission Zeros, Mechanical System and Signal Processing, 45(1), 2014, 68-79

D. Bernal, A. Ussia
Sequential Deconvolution Input Reconstruction, Mechanical Systems and Signal Processing, 50, 2014, 41-55

D. Bernal
The Zero-Order Hold in Time Domain Identification: An Unnecessary Operating Premise, Structural Control and Health Monitoring, 18(5), 2010, 510-518

D. Bernal
Load Vectors for Damage Location in Systems Identified from Operational Loads, Journal of Engineering Mechanics, 136(1), 2010, 31-39

SELECTED RESEARCH PROJECTS

Monitoring the Health of Structural Systems from the Geometry of Sensor Traces
Principal Investigator, National Science Foundation

Algorithm-fused High Performance Damage Detector: Optimal Sensor Distributions
Principal Investigator, National Science Foundation

Assessment of Seismic Provisions on Effects of Multi-component Excitation Using Instrumental Data and Adaptive Principal Component Reconstruction Scheme
Principal Investigator, California Strong Motion Instrumentation Program

PENNY BEUNING

Associate Professor, Chemistry and Chemical Biology; affiliated faculty, Bioengineering

PhD, University of Minnesota, 2000
bioe.neu.edu/people/beuning-penny

Scholarship focus: chemical biology and biotechnology

Honors and awards: Chemical Research in Toxicology Young Investigator Award, American Chemical Society; National Science Foundation CAREER Award; Cottrell Scholar Award; American Cancer Society Research Scholar Award

SELECTED PUBLICATIONS

L.A. Hawver, M. Tehrani, N. Antczak, D. Kania, S. Muser, J. Sefcikova, P.J. Beuning
Point Mutations in *Escherichia coli* DNA pol V that Confer Resistance to Non-cognate DNA Damage also Alter Protein-protein Interactions, Mutation Research—Fundamental and Molecular Mechanisms of Mutagenesis, 780, 2015, 1-14

P. Nevin, X. Lu, K. Zhang, J.R. Engen, P.J. Beuning
Non-cognate DNA Damage Prevents Formation of Active Conformation of Y-family DNA Polymerases DinB and Pol Kappa, The FEBS Journal, 282, 2015, 2646-2660

P. Nevin, V. Kairys, C. Venclovas, J.R. Engen, P.J. Beuning
Conformational Analysis of Processivity Clamps in Solution Demonstrates That Tertiary Structure Does not Correlate with Protein Dynamics, Structure, 22, 2014, 572-581

J.M. Walsh, P.J. Ippoliti, E.A. Ronayne, E. Rozners, P.J. Beuning
Discrimination Against Major Groove Adducts by Y Family Polymerases of the DinB Subfamily, DNA Repair, 12, 2013, 713-722

K.R. Chaurasiya, C. Ruslie, M.C. Silva, L. Voortman, P. Nevin, S. Lone, P.J. Beuning, M.C. Williams
Polymerase Manager Protein UmuD Directly Regulates *E. coli* DNA Polymerase III Binding to ssDNA, Nucleic Acids Research, 41, 2013, 8959-8968

SELECTED RESEARCH PROJECTS

Molecular Mechanisms of Polymerase Management
Principal Investigator, National Science Foundation

Distal Residues in Enzyme Catalysis and Protein Design
Co-Principal Investigator, National Science Foundation

DANA BROOKS

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Northeastern University, 1991
ece.neu.edu/people/brooks-dana

Scholarship focus: Biomedical signal and image processing, medical imaging, statistical signal processing, inverse problems, electrocardiography, bio-optical imaging, magnetic resonance imaging, transcranial neuromodulation, estimation of protein conformations from x-ray scattering, regularization, and optimization

Honors and awards: Søren Buus Outstanding Research Award, College of Engineering; Outstanding Mentor Award, College of Engineering

SELECTED PUBLICATIONS

S. Guler, M. Dannhauer, B. Erem, R. Macleod, D. Tucker, S. Turovets, P. Luu, D. Erdogmus, D.H. Brooks
Optimization of Focality and Direction in Dense Electrode Array Transcranial Direct Current Stimulation (tDCS), Journal of Neural Engineering, 13(3), 2016, 36020-36033

B. Erem, R. Martinez Orellana, D.E. Hyde, J.M. Peters, F.H. Duffy, P. Stovicek, S.K. Warfield, R.S. MacLeod, G. Tadmor, D.H. Brooks
Extensions to a Manifold Learning Framework for Time-series Analysis on Dynamic Manifolds in Bioelectric Signals, Physical Review E, 93, 2016, 042218

A.E. Onut, M, Akcakaya, J.P. Bardhan, D. Erdogmus, D.H. Brooks, L. Makowski
Constrained Maximum Likelihood Estimation of Relative Abundances of Protein Conformation in a Heterogeneous Mixture from Small Angle X-Ray Scattering Intensity Measurements, IEEE Transactions on Signal Processing, 63(20), 2015, 5383-5394

S. Kurugol, K. Kose, B. Park, J.G Dy, D.H. Brooks, M. Rajadhyaksha
Automated Delineation of Dermal-epidermal Junction in Reflectance Confocal Microscopy Image Stacks of Human Skin, Journal of Investigative Dermatology, 135(3), 2014

B. Erem, J. Coll-Font, R. Martinez-Orellana, P. Stovicek, D. Brooks
Using Transmural Regularization and Dynamic Modeling for non-Invasive Cardiac Potential Imaging of Endocardial Pacing with Imprecise Thoracic Geometry, IEEE Transactions on Medical Imaging, 3(3), 2014, 726-738

SELECTED RESEARCH PROJECTS

Center for Integrative Biomedical Computing
Principal Investigator, National Institutes of Health

Automated Image Guidance for Diagnosing Skin Cancer with Confocal Microscopy
Co-Investigator, National Institutes of Health

Collaborative Research: US-German Research Proposal Optimization of Human Cortical Stimulation
Principal Investigator, National Science Foundation

AHMED BUSNAINA

William Lincoln Smith and University Distinguished Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering, Electrical and Computer Engineering

PhD, Oklahoma State University, 1983
mie.neu.edu/people/busnaina-ahmed

Scholarship focus: nano engineering, nano and micro-contamination control, particulate and chemical contamination and defects, high rate nanomanufacturing, MEMS and NEMS devices with micro and nano-scale channels, nanomaterials

Honors and awards: Fellow, American Society of Mechanical Engineers; Fellow, the Adhesion Society; Fulbright Senior Scholar, Outstanding Translational Research Award, Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

H. Cho, S. Somu, J.-Y. Lee, H. Jeong, A. Busnaina
High–rate Nanoscale Offset Printing Process Using Directed Assembly and Transfer of Nanomaterials, Advanced Materials, 27, 2015, 1759-1766

C. Yilmaz, A.E. Cetin, G. Goutzamanidis, J. Huang, S. Somu, H. Altug, D. Wei, A. Busnaina
Three-dimensional Crystalline and Homogeneous Metallic Nanostructures Using Directed-assembly of Nanoparticles, ACS Nano, 8(5), 2014, 4547-4558

H.Y. Jung, Y.L. Kim, S. Park, A.A. Datar, H.–J. Lee, J. Huang, S. Somu, A. Busnaina, Y.J. Jung, Y.-K. Kwon
A High-performance H2S Detection by Redox Reactions in Semiconducting Carbon Nanotube-based Devices, Analyst, 138(23), 2013, 7206-7211

A. Malima, S. Siavoshi, T. Musacchio, J. Upponi, C. Yilmaz, S. Somu, W. Hartner, V. Torchilin, A. Busnaina
Highly Sensitive Microscale in Vivo Sensor Enabled by Electrophoretic Assembly of Nanoparticles for Multiple Biomarker Detection, Lab on a Chip, 12, 2012, 4748-4754

A. Busnaina
Nanomanufacturing Handbook, Taylor and Francis Group, CRC Press, 2007

SELECTED RESEARCH PROJECTS

Collaborative Research in Nanomanufacturing
Principal Investigator, Massachusetts Technology Collaborative

Novel Nanoprinting for Oral Delivery of Poorly Soluble Drugs
Co-Principal Investigator, National Science Foundation

Fabrication of Mechanical Metamaterials
Principal Investigator, Draper Laboratories

Development work Regarding Biomarker Sensor Systems, Sensor Fabrication and Carbon Nanotube Material Optimization
Principal Investigator, Nano-Bio Manufacturing Consortium

OCTAVIA CAMPS

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Washington, 1992
ece.neu.edu/people/camps-octavia

Scholarship focus: robust computer vision; image processing; and machine learning

SELECTED PUBLICATIONS

Y. Cheng, J.A. Lopez, O. Camps, M. Sznaier
A Convex Optimization Approach to Robust Fundamental Matrix Estimation, Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2015, 2170-2178

S. Markovic, L. Siyuan, M. Sznaier, O. Camps, M. Niedre
Computer Vision in Vivo Flow Cytometry of Low-abundance Circulating Cells, Bio-Optics: Design and Application Conference, 2015

C. Dicle, O. Camps, M. Sznaier
The Way They Move: Tracking Multiple Targets with Similar Appearance, IEEE International Conference on Computer Vision (ICCV), Sydney, Australia, 2013

M. Ayazoglu, B. Yilmaz, M. Sznaier, O. Camps
Finding Causal Interactions in Video Sequences, IEEE International Conference on Computer Vision (ICCV), Sydney, Australia, 2013

F. Xiong, Y. Cheng, O. Camps, M. Sznaier, C. Lagoa
Hankel Based Maximum Margin Classifiers: A Connection Between Machine Learning and Wiener Systems Identification, 2013 IEEE 52nd Annual Conference on Decision and Control, 2013, 6005-6010

SELECTED RESEARCH PROJECTS

Robust Identification of a Class of Structured Systems with High Dimensional Outputs and Applications
Co-Principal Investigator, National Science Foundation

LUCA CARACOGLIA

Associate Professor, Civil and Environmental Engineering

PhD, University of Trieste, 2001
civ.neu.edu/people/caracoglia-luca

Scholarship focus: structural dynamics; wind engineering; wind energy; wind-induced vibration; linear and nonlinear cable dynamics; climate change

Honors and awards: National Science Foundation Early CAREER Development Award

SELECTED PUBLICATIONS

L. Caracoglia
Comparison of Reduced-order Models to Analyze the Dynamics of a Tall Building under the Effects of Along-wind Loading Variability, ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering, 2(2), 2016

L. Caracoglia, G.-F. Giaccu, B. Barbiellini
Estimating the Standard Deviation of Eigenvalue Distributions for the Nonlinear Free-vibration Stochastic Dynamics of Cable Networks, Meccanica—An International Journal of Theoretical and Applied Mechanics AIMETA, 2016

W. Cui, L. Caracoglia
Exploring Hurricane Wind Speed along US Atlantic Coast in Warming Climate and Effects on Predictions of Structural Damage and Intervention Costs, Engineering Structures, 122, 2016, 209-225

T.-H. Le, L. Caracoglia
Modeling Vortex-shedding Effects for the Stochastic Response of Tall Buildings under Non-synoptic Winds, Journal of Fluids and Structures, 61, 2016, 461-491

W. Cui, L. Caracoglia
Physics-based Method for the Removal of Spurious Resonant Frequencies in High-frequency Force Balance Tests, ASCE Journal of Structural Engineering, 142(2), 2016

P. Pourazam, L. Caracoglia, M. Lackner, Y. Modarres-Sadeghi
Stochastic Analysis of Flow-induced Dynamic Instabilities of Wind Turbine Blades, Journal of Wind Engineering and Industrial Aerodynamics, 137, 2015, 37-45

P. Egger, L. Caracoglia
Analytical and Experimental Investigation on a Multiple-mass-element Pendulum Impact Damper for Vibration Mitigation, Journal of Sound and Vibration, 353, 2015, 38-57

SELECTED RESEARCH PROJECTS

Collaborative Research: Active Control of Nonlinear Flow-Induced Instability of Wind Turbine Blades under Stochastic Perturbations
Principal Investigator, National Science Foundation

Wavelet-Galerkin Analysis Method for the Dynamic Response of Vertical Structures against Transient Winds with a Focus on Tall Buildings and Wind Turbines
Principal Investigator, National Science Foundation

REBECCA L. CARRIER

Associate Professor, Chemical Engineering; Associate Chair of Research

PhD, Massachusetts Institute of Technology, 2000
che.neu.edu/people/carrier-rebecca

Scholarship focus: interaction between biological systems and materials, with specific applications in drug delivery and regenerative medicine; intestinal and retinal engineering; oral lipid systems

Honors and awards: College of Engineering Faculty Fellow; National Academy of Engineering Frontiers of Engineering and Frontiers of Engineering Education, Selected Attendee; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

J. Kundu J, A. Michaelson, K. Talbot, P. Baranov, M.J. Young, R.L. Carrier
Decellularized Retinal Matrix: Natural Platforms for Human Retinal Progenitor Cell Culture, Acta Biomater, 31, 2016, 61-70

H.M. Yildiz, L. Speciner, C. Ozdemir, D.E. Cohen, R.L. Carrier
Food-associated Stimuli Enhance Barrier Properties of Gastrointestinal Mucus, Biomaterials, 54, 2015, 1-8

H.M. Yildiz, T.L. Carlson, A.M. Goldstein, R.L. Carrier
Mucus Barriers to Microparticles and Microbes are Altered in Hirschsprung's Disease, Macromol Biosci, 5(5), 2015, 712-718

P. Baranov, A. Michaelson, J. Kundu, R.L. Carrier, M. Young
Interphotoreceptor Matrix-poly(caprolactone) Composite Scaffolds for Human Photoreceptor Differentiation, Journal of Tissue Engineering, 5, 2014

F. Buyukozturk, S. Di Maio, D.E. Budil, R.L. Carrier
Effect of Ingested Lipids on Drug Dissolution and Release with Concurrent Digestion: A Modeling Approach, Pharmaceutical Research, 30(12), 2013, 3131-3144

C.A. Pfluger, B.J. McMahon, R.L. Carrier, D.D. Burkey
Precise, Biomimetic Replication of the Multiscale Structure of Intestinal Basement Membrane using Chemical Vapor Deposition, Tissue Engineering, 19(5-6), 2013, 649-656

SELECTED RESEARCH PROJECTS

Impact of Lipids on Compound Absorption: Mechanistic Studies and Modeling
Principal Investigator, National Institutes of Health

Intestinal Mucus Barrier: Role in Necrotizing Enterocolitis (NEC) and Prophylactic "Mucus-strengthening" Treatment to Prevent NEC
Principal Investigator, March of Dimes

SRINATH CHAKRAVARTHY

Assistant Professor, Mechanical and Industrial Engineering

PhD, University of Connecticut, 2007
mie.neu.edu/people/chakravarthy-srinath

Scholarship focus: multi-scale (spatio temporal)/meso-scale numerical methods in development of predictive material modeling of micro/nanostructural features

SELECTED PUBLICATIONS

A.D. Orsi, S. Chakravarthy, P.K. Canavan, E. Peña, R. Goebel, A. Vaziri, H.Nayeb-Hashemi
The Effects of Knee Joint Kinematics on Anterior Cruciate Ligament Injury and Articular Cartilage Damage, Computer Methods in Biomechanics and Biomedical Engineering, 2015, 1-14

S. Chakravarthy, W.A. Curtin
Stress Gradient Plasticity: Concepts and Applications, Proceedia IUTAM, 10, 2014, 453-461

S. Olarnrithinun, S. Chakravarthy, W.A. Curtin
Discrete Dislocation Modeling of Fracture in Plastically Anisotropic Metals, Journal of the Mechanics and Physics of Solids, 61(6), 2013, 1391-1406

B.A. Szajewski, S. Chakravarthy, W.A. Curtin
Operation of a 3D Frank–read Source in a Stress Gradient and Implications for Size-dependent Plasticity, Acta Materialia, 61(5), 2012, 1469-1477

S. Chakravarthy, W.A. Curtin
New Algorithms for Discrete Dislocation Modeling of Fracture, Modelling and Simulation in Materials Science and Engineering, 19(4), 2011, 1-12

S. Chakravarthy, W.A. Curtin
Origin of Plasticity Length-scale Effects in Fracture, Physical Review Letters, 105, 2011, e115502

S. Chakravarthy, W.A. Curtin
Stress Gradient Plasticity, Proceedings of the National Academy of Sciences, 108(38), 2011, 15716-15720

PAUL CHAMPION

Professor and Chair, Physics; affiliated faculty, Bioengineering

PhD, University of Illinois at Urbana Champaign
bioe.neu.edu/people/champion-paul

Scholarship focus: experimental biological physics; inelastic light scattering; ultrafast pump-probe laser spectroscopy

Honors and awards: NIH Career Development Award; Fellow of the American Physical Society; Fellow, American Association for Advancement of Science; International Advisory Board: Japan Ministry of Education, Culture, Sports, Science and Technology; Board of Directors Telluride Science Research Center (2006-2008); Advisory Board NSF Frontier Center: University of Michigan; National Research Service Award; Fellow, Japanese Society for the Promotion of Science; NSF/CNRS Exchange Fellow; Divisional Editor Physical Review Letters (1994-2000); Visiting Fellow, Institute of Molecular Science (Japan); Editorial Board Journal of Raman Spectroscopy

SELECTED PUBLICATIONS

Y. Sun, A. Benabbas, W. Zeng, S. Muralidharan, E.M. Boon, P.M. Champion
Kinetic Control of O2 Reactivity in H-NOX Domains, Journal of Physical Chemistry B, 120, 2016, 5351-5358

B. Salna, A. Benabbas, J.T. Sage, J. van Thor, P.M. Champion
Wide-dynamic-range Kinetic Investigations of Deep Proton Tunnelling in Proteins, Nature Chemistry, 8, 2016

A. Benabbas, B. Salna, J.T. Sage, P.M. Champion
Deep Proton Tunneling in the Electronically Adiabatic and Non-adiabatic Limits: Comparison of the Quantum and Classical Treatment of Donor-Acceptor Motion, Journal of Chemical Physics, 142, 2015, 114101

V. Karunakaran, Y. Sun, A. Benabbas, P.M. Champion
Investigations of the Low Frequency Modes of Ferric Cytochrome c Using Vibrational Coherence Spectroscopy, Journal of Physical Chemistry B, 118, 2014, 6062-6070

Y. Sun, A. Benabbas, W. Zeng, J.G. Kleingardner, K.L. Bren, P.M. Champion
Investigations of Heme Distortion, Low-Frequency Vibrational Excitations, and Electron Transfer in Cytochrome c, Proceedings of the National Academy of Sciences, 111, 2014, 6570-6575

M.M. Warren, M. Kaucikas, A. Fitzpatrick, P.M. Champion, J. Timothy Sage, J.J. van Thor
Ground State Proton Transfer in the Photoswitching Reactions of the Fluorescent Protein Dronpa, Nature Communications, 2013

SELECTED RESEARCH PROJECTS

Femtosecond Stimulated Raman Scattering, Time Resolved Dynamics, and Electron-Nuclear Coupling in Biomolecules
Principal Investigator, National Science Foundation

SUNHO CHOI

Assistant Professor, Chemical Engineering

PhD, University of Minnesota, 2008
che.neu.edu/people/choi-sunho

Scholarship focus: demonstrating innovative processing strategies for nanostructured materials and functional hybrids engineered for challenging applications in clean and renewable energy

SELECTED PUBLICATIONS

D. Andirova, C.F. Cogswell, Y. Lei, S. Choi
Effect of the Structural Constituents of Metal Organic Frameworks on Carbon Dioxide Capture, Microporous and Mesoporous Materials, 219, 2016, 276-305

D. Andirova, Y. Lei, X. Zhao, S. Choi
Functionalization of Metal-organic Frameworks for Enhanced Stability under Humid Carbon Dioxide Capture Conditions, ChemSusChem, 8, 2015, 3405

S.A. Didas, S. Choi, W. Chaikittisilp, C.W. Jones
Amine–Oxide Hybrid Materials for CO2 Capture from Ambient Air, Accounts of Chemical Research, 48, 2015, 2680-2687

C.F. Cogswell, H. Jiang, J. Ramberger, D. Accetta, R.J. Willey, S. Choi
Effect of Pore Structure on CO2 Adsorption Characteristics of Aminopolymer Impregnated MCM-36, Langmuir, 31, 2015, 4534-4541

S. Choi, T. Watanabe, T-H. Bae, D.S. Sholl, C.W. Jones
Modification of Mg/DOBDC with Amines to Enhance CO2 Adsorption from Ultradilute Gases, Journal of Physical Chemistry Letters, 3, 2012, 1136-1141

S. Choi, M. L. Gray, C.W. Jones
Amine-tethered Solid Adsorbents Coupling High Adsorption Capacity and Regenerability for CO_2 Capture Applications Including the air Capture, ChemSusChem, 4(5), 2011, 628-635

S. Choi, J. Drese, M. Gray, R.R. Chance, P. Eisenberger, C. Jones
Application of Amine-tethered Solid Sorbents for Direct CO_2 Capture from the Ambient Air, Environmental Science and Technology, 45(6), 2011, 2420-2427

W. Kim, S. Choi, S. Nair
Swelling, Functionalization, and Structural Changes of the Nanoporous Layered Silicates AMH-3 and MCM-22, Langmuir, 27(12), 2011, 7892-7901

SELECTED RESEARCH PROJECTS

Amino-pillared Nanosheet (APN) Adsorbents for High Performance CO_2 capture
Principal Investigator, Northeastern University

CHUN-AN (JOE) CHOU

Assistant Professor, Mechanical and Industrial Engineering

PhD, Rutgers University, 2011
mie.neu.edu/people/chou-chun

Scholarship focus: applied large-scale optimization and data mining and analytics; interpretable decision-making models and predictive analytics for medical and healthcare intelligence

Honors and awards: Research Foundation for SUNY Collaboration Fund Award, 2013; Finalist of the INFORMS Data Mining Best Student Paper Award, 2011

SELECTED PUBLICATIONS

S. Khanmohammadi, C.-A. Chou
A New Gaussian Mixture Model Based Discretization Algorithm for Associative Classification of Medical Data, Expert Systems with Applications, 58, 2016, 119-129

S. Tutun, C.-A. Chou, E. Canıyılma
A New Forecasting Framework for Volatile Behavior in Net Electricity Consumption: A Case Study in Turkey, Energy, 93, 2015, 2406-2422

C.-A. Chou, T.O. Bonates, C. Lee, W. Art Chaovalitwongse
Multi-pattern Generation Framework for Logical Analysis of Data, Annals of Operations Research, 2015

V. Miskovic, X. Ma, C.-A. Chou, M. Fan, M. Owens, H. Sayama, B.E. Gibb
Developmental Changes In Spontaneous Electrocortical Activity And Network Organization From Early To Late Childhood, Neuroimage, 118, 2015, 237-247

C.-A. Chou, T.O. Bonates, C. Lee, W. Art Chaovalitwongse
Multi-Pattern Generation Framework for Logical Analysis of Data, Annals of Operations Research, 2015

C.-A. Chou, K. Kampa, S.H. Mehta, R.F. Tungaraza, W. Art Chaovalitwongse, T.J. Grabowski
Voxel Selection Framework in Multi-voxel Pattern Analysis of fMRI Signals for Prediction of Neural Response to Visual Stimuli, IEEE Transactions on Medical Imaging, 33(4), 925-934, 2014

C.-A. Chou, W. Art Chaovalitwongse et al.
Column Generation Framework of Nonlinear similarity Model for Reconstructing Sibling Groups, INFORMS Journal on Computing, 27(1), 2014, 35-47

K. Kampa, S.H. Mehta, C.-A. Chou, W. Art Chaovalitwongse, T.J. Grabowski
Sparse Optimization in Feature Selection: Application in Neuroimaging, Journal of Global Optimization, 59(2-3), 2014, 439-457

KAUSHIK CHOWDHURY

Associate Professor, Electrical and Computer Engineering

PhD, Georgia Institute of Technology, 2009
ece.neu.edu/people/chowdhury-kaushik

Scholarship focus: dynamic spectrum access, energy harvesting sensor networks, 5G technology, intra-body communication, and protocol design for wireless

Honors and awards: ONR Director of Research Early Career Award 2016; Chair of the IEEE Technical Committee on Simulation; National Science Foundation CAREER Award 2015

SELECTED PUBLICATIONS

P. Nguyen, U. Muncuk, A. Ashok, K.R. Chowdhury, et. al.
Battery-Free Identification Token for Touch Sensing Devices, ACM Conference on Embedded Networked Sensor Systems (SenSys), Stanford, CA, 2016

R. Doost-Mohammady, M.Y. Naderi, K.R. Chowdhury
Performance Analysis of CSMA/CA based Medium Access in Full-Duplex Wireless Communications, IEEE Transactions on Mobile Computing, 15(6), 2016, 1457-1470

M. Swaminathan, F.S. Cabrera, J.S. Pujol, U. Muncuk, G. Schirner, K.R. Chowdhury
Multi-path Model and Sensitivity Analysis for Galvanic Coupled Intra-body Communication through Layered Tissue, IEEE Transactions on Biomedical Circuits and Systems, 10(2), 2016, 339-351

M. Swaminathan, U. Muncuk, K.R. Chowdhury
Topology Optimization for Galvanic Coupled Wireless Intra-body Communication, IEEE International Conference on Computer Communications (INFOCOM), San Francisco, 2016

R.G. Cid-Fuentes, M.Y. Naderi, S. Basagni, K.R. Chowdhury, A. Cabellos-Aparicio, E. Alarcón
On Signaling Power: Communications over Wireless Energy, I IEEE International Conference on Computer Communications (INFOCOM), San Francisco, 2016

S. De, D. Mishra, K.R. Chowdhury
Charging Time Characterization for Wireless RF Energy Transfer, IIEEE Transactions on Circuits and Systems II, 64(4), 2015, 362-366

SELECTED RESEARCH PROJECTS

Cross Layer Approach to 5G Communications
Co-Principal Investigator, MathWorks

End-to-end Protocol Designs that Address the Challenges of Distributed Dynamic Spectrum Access Networks
Principal Investigator, Office of Naval Research

CAREER: IDEA: Integrated Data and Energy Access for Wireless Sensor Networks
Principal Investigator, National Science Foundation

JOHN W. CIPOLLA

Donald W. Smith Professor, COE Distinguished Professor, Mechanical and Industrial Engineering

PhD, Brown University, 1970
mie.neu.edu/people/cipolla-jr-john

Scholarship focus: mathematical methods and modeling; thermodynamics; fluid dynamics; kinetic theory of gases; thermophoresis of aerosols

Honors and awards: Fellow, American Society of Mechanical Engineers; Edwin F. Church Medal, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

G. Jia, Y. Yener, J.W. Cipolla
Thermophoresis of a Radiating Aerosol in Laminar Boundary Layer Flow, Journal of Thermophysics and Heat Transfer, 6(3), 1992, 476-482

G. Jia, Y. Yener, J.W. Cipolla
Radiation between Two Concentric Spheres Separated by a Participating Medium, Journal of Quantitative Spectroscopy and Radiative Transfer, 46(1), 1991, 11-19

D. DiGiovanni, T.F. Morse, J.W. Cipolla
Theoretical Modeling of the Incorporation of Phosphorus Doping in the MCVD Process, Journal of American Ceramic Society, 71(11), 1988, 914-923

J.W. Cipolla, T.F. Morse
Laser Modification of Thermophoretic Deposition, Journal of Colloid and Interface Science, 97(1), 1984, 137-148

J.W. Cipolla, M.B. Silevitch
On the Temporal Development of a Plasma Sheath, Journal of Plasma Physics, 25(3), 1981, 373-389

J.W. Cipolla, H. Lang, S.K. Loyalka
Kinetic Theory of Condensation and Evaporation II, Journal of Chemical Physics, 61(1), 1974, 69

J.W. Cipolla, T.F. Morse
Kinetic Theory of an Optically Pumped Gas, Physics of Fluids, 14(9), 1971, 1850

HEATHER CLARK

Professor, Pharmaceutical Sciences; affiliated faculty, Bioengineering, Chemical Engineering

PhD, University of Michigan, 1999
bioe.neu.edu/people/clark-heather

Scholarship focus: optical nanosensors for biological analysis

SELECTED PUBLICATIONS

T.T. Ruckh, C.G. Skipwith, W. Chang, A.W. Senko, V. Bulovic, P. Anikeeva, H.A. Clark
Ion-switchable FRET Rates in Ratiometric Nanocrystal Potassium Sensors, ACS Nano, 10(4), 2016, 4020-4030

W. Di, R.S. Czarny, N.A. Fletcher, M.D. Krebs, H.A. Clark.
Comparative Study of Poly(epsilon-caprolactone) and Poly(Lactic-co-Glycolic Acid)-Based Nanofiber Scaffolds for pH-sensing, Pharmaceutical Research, 2016

A. Sahari, T.T. Ruckh, R. Hutchings, H.A. Clark
Development of an Ultra-Selective Optical Nanosensor for Potassium Imaging, Analytical Chemistry, 87(21), 2015, 10684-10687

R.P. Walsh, J. Morales, C.G. Skipwith, T.T. Ruckh, H.A. Clark
Enzyme Linked DNA Dendrimers for the Detection of Acetylcholine, Nature Scientific Reports, 2015

J.M. Morales, C.G. Skipwith, H.A. Clark
Quadruplex Integrated DNA (QuID) Nanosensors for Monitoring Dopamine, Sensors, 15(8), 2015, 19912-19924

K.J. Cash, C. Li, L.V. Wang, H.A. Clark
Photoacoustic Imaging of Nanosensors for Therapeutic Drugs, In Vivo, ACS Nano, 9(2), 2015, 1692-1698

M.K. Balaconis, Y. Luo, H.A. Clark
Glucose-Sensitive Nanofiber Scaffolds Prevent Sensor Diffusion, In Vivo, Analyst, 140, 2015, 716-723 *selected as a HOT article

SELECTED RESEARCH PROJECTS

Polymer-free Nanosensors to Visualize Biochemical Dynamics in Dendritic Spines
Principal Investigator, National Institutes of Health

PAU CLOSAS

Assistant Professor, Electrical and Computer Engineering

PhD, Universitat Politècnica de Catalunya, 2009
ece.neu.edu/people/closas-pau

Scholarship focus: statistical and array signal processing; estimation and detection theory; Bayesian inference; stochastic filtering; robust statistics; and game theory, with applications to positioning systems; wireless communications, and mathematical biology

Honors and awards: Duran Farell for Technological Research; EURASIP Best PhD Thesis Award; Senior Member, Institute of Electrical and Electronics Engineers

SELECTED PUBLICATIONS

M.G. Amin, P. Closas, A. Broumandan, J.L. Volakis
Vulnerabilities, Threats, and Authentication in Satellite-based Navigation Systems [scanning the issue], Proceedings of the IEEE, 104(6), 2016, 1169-1173

J. Vilà-Valls, P. Closas, C. Fernández-Prades, J.A. López-Salcedo, G. Seco-Granados
Adaptive GNSS Carrier Tracking under Ionospheric Scintillation: Estimation vs Mitigation, IEEE Communications Letters, 19(6), 2015, 961-964

D. Dardari, P. Closas, P. Djuric
Indoor Tracking: Theory, Methods, and Technologies, IEEE Transactions on Vehicular Technology, 64(4), 2015, 1263-1278

J. Dampf, T. Pany, W. Bär, J. Winkel, C. Stöber, K. Fürlinger, P. Closas, J.A. Garcia-Molina
More Than We Ever Dreamed Possible: Processor Technology for GNSS Software Receivers in the Year 2015, Inside GNSS, 10(4), 2015, 62-72

X. Liu, M. Liang, Y. Morton, P. Closas, T. Zhang, Z. Hong
Performance evaluation of MSK and OFDM modulations for Future GNSS signals, GPS Solutions, 18(2), 2014, 13

A. Fernández, M. Wis, P. Closas, C. Fernández-Prades, J.A. García, F. Zanier, M. Crisci
Analysis of Signal Tracking Techniques for Multipath Mitigation, GPS World, 24(11), 2013, 44-50

A. Moragrega, P. Closas, C. Ibars
Supermodular Game for Power Control in TOA-based Positioning, IEEE Trans. on Signal Processing, 61(12), 2013, 3246-3259

P. Closas, C. Fernández-Prades, J. Vilà-Valls
Multiple Quadrature Kalman Filtering, IEEE Transactions on Signal Processing, 60(12), 2012, 6125-6137

P. Closas, C. Fernández-Prades, J.A. Fernández-Rubio
A Bayesian Approach to Multipath Mitigation in GNSS Receivers, IEEE Journal of Selected Topics in Signal Processing, 3(4), 2009, 695-706

ARTHUR COURY

University Distinguished Professor, Chemical Engineering

PhD, University of Minnesota, 1965
che.neu.edu/people/coury-arthur

Scholarship focus: polymeric biomaterials for medical products such as implantable electronic devices, hydrogel-based devices and drug delivery systems

Honors and awards: Fellow, American Chemical Society; Fellow, American Institute for Medical and Biological Engineering; Fellow, Biomaterials Science and Engineering; Member, National Academy of Engineering

SELECTED PUBLICATIONS

A. Coury
Forces and Imperatives in Translating Medical Concepts to the Marketplace, BE 502 "From Lab Bench to Marketplace" Department of Bioengineering, University of Pennsylvania, 2013

A. Coury
Issues in Translation of Advanced Composites from the Bench to the Medical Marketplace, MRS Conference, Boston, MA, 2013

A. Coury
Progress in the Prevention of Tissue Adhesions, Tenth International Symposium on Frontiers in Biomedical Polymers, Vancouver, British Columbia, Canada, 2013

A. Coury
Organic Chemistry: Passport to a "Hybrid" Career, Presentation to Department of Chemistry, University of Minnesota, upon Receipt of Distinguished Alumni Award, 2013

A. Coury
Technology, Service and Bucking Convention: A Prescription for a Rewarding Biomaterials Career, Transactions of Society for Biomaterials, 2(3), 101S-110S, in conjunction with receipt of 2013 C. William Hall Award, Boston, MA, 2013

A. Coury, P. Jarrett
Tissue Adhesives and Sealants for Surgical Applications, in Joining and Assembly of Medical Materials and Devices, Edited by Y.N. Zhou and M.D. Breyen (Woodhead Publishing Limited), 2013, 449-490

A. Coury
Tissue Engineering: Scope, Products, and Commercialization Strategies, Chapter 17, Scaffolds for Tissue Engineering: Biological Design, Materials, and Fabrication, Edited by Claudio Migliaresi and Antonella Motta, CRC Press (Taylor & Francis), 2014, 614-625

ERIN J. CRAM

Associate Professor, Biology; affiliated faculty, Bioengineering

PhD, University of California, Berkeley, 2000
bioe.neu.edu/people/cram-erin

Scholarship focus: cell migration and mechanotransduction in C elegans; improving production of drug compounds by medicinal plants

SELECTED PUBLICATIONS

A.D. Cecchetelli, J. Hugunin, H. Tannoury, E.J. Cram
CACN-1 is Required in the C. elegans Somatic Gonad for Proper Oocyte Development, Developmental Biology, 414(1), 2016, 58-71

N.F. Rizvi, J. Weaver, E.J. Cram, C.W.T Lee-Parsons
Silencing the Transcriptional Repressor, ZCT1, Illustrates the Tight Regulation of Terpenoid Indole Alkaloid Biosynthesis, PLoS One, 11(7), 2016

M.F. Doherty, G. Adelmant, A.D. Cecchetelli, J.A. Marto, E.J. Cram
Proteomic Analysis Reveals CACN-1 is a Component of the Spliceosome in C. elegans, Genes, Genomes and Genetics: G3, 2014

J.D. Weaver, S. Goklany, N.F. Rizvi, E.J. Cram, C.W.T. Lee-Parsons
Optimizing the Transient Fast Agro-mediated Seedling Transformation (FAST) Method in Catharanthus roseus Seedlings, Plant Cell Reports, 33(1), 2014, 89-97

I. Kovacevic, J.M. Orozco, E.J. Cram
Filamin and Phospholipase C Epsilon are Required for Calcium Signaling in the C. elegans Spermatheca, PLOS Genetics,10, 2013, 1371

SELECTED RESEARCH PROJECTS

In Vivo Analysis of Mechanotransduction
Principal Investigator, National Institutes of Health

Zinc Finger Transcription Factors: Regulators of Growth, Development, and Alkaloid Biosynthesis
Co-Principal Investigator, National Science Foundation

STEVEN CRANFORD

Assistant Professor, Civil and Environmental Engineering

PhD, Massachusetts Institute of Technology, 2012
civ.neu.edu/people/cranford-steven

Scholarship focus: materiomics and material design; full atomistic molecular modeling of materials; molecular dynamics; multiscale modeling and model development; nanomechanics and molecular mechanics; structural mechanics and engineering

Honors and awards: Civil and Environmental Engineering Excellence in Teaching Award

SELECTED PUBLICATIONS

S. Cranford
When is 6 Less Than 5? Penta- to Hexa-graphene Transition, Carbon, 96, 2016, 421-428

R.E. Roman, K. Kwan, S. Cranford
Mechanical Properties and Defect Sensitivity of Diamond Nanothreads, Nano Letters, 15(3), 2015, 1585-1590

J. Meng, Y. Zhang, S. Cranford, M. Minus
Nanotube Dispersion and Polymer Conformational Confinement in a Nano-composite Fiber: A Joint Computational Experimental Study, Journal of Physical Chemistry B, 118(31), 2014, 9476-9485

A. Kocsis, N.A. Yedama and S. Cranford
Confinement and Controlling the Effective Compressive Stiffness of Carbyne, Nanotechnology, 25(33), 2014, 335709, *IOP Select paper

R. Roman, S. Cranford
Strength and Toughness of Graphdiyne/Copper Nanocomposites, Advanced Engineering Materials, 16(7), 2014, 862–871

A. Meyer, N. Pugno, S. Cranford
Compliant Threads Maximize Spider Silk Connection Strength and Toughness, Journal of the Royal Society Interface, 11(98), 2014, 20140561

SELECTED RESEARCH PROJECTS

Multi-phase Topologically Controlled Structural Fuses Inspired by Nature
Principal Investigator, Haythornthwaite Research Initiation

Disease Diagnosis and Monitoring using Breath and Saliva Based Nano-bio Sensing System
Co-Principal Investigator, Northeastern University

THOMAS CULLINANE

Program Director, Engineering Management; Professor, Mechanical and Industrial Engineering; affiliated faculty, Business Administration

PhD, Virginia Polytechnic Institute and State University, 1972
mie.neu.edu/people/cullinane-thomas

Scholarship focus: analysis and design of efficient facilities focusing on inventory space control, materials handling and staffing levels

Honors and awards: Fellow, Institute of Industrial Engineers

SELECTED PUBLICATIONS

S. Erbis, S. Kamarthi, T. Cullinane, J.A. Isaacs
Multistage Stochastic Programming Model (MSP) for carbon Nanotube Production Capacity Expansion Planning, ACS Sustainable Chemistry and Engineering, 2(7), 2014, 1633-1641

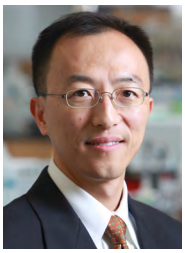
A. Topcu, J. Benneyan, T. Cullinane
A Simulation Optimization Approach for Reconfigurable Inventory Space Planning in Remanufacturing Facilities, International Journal of Business Performance and Supply Chain Modeling, 5(1), 2013, 86-114

T. Cullinane, T. Marion, J.H. Friar
A Multi-disciplinary New Product Development Course for Technological Entrepreneurs, Journal of the Academy of Business Education, 13, 2012, 71-89

SELECTED RESEARCH PROJECTS

A Computer Game to Teach Sustainability in Business and Engineering
Co-Principal Investigator, Northeastern University

GUOHAO DAI



Associate Professor, Bioengineering

PhD, Harvard—MIT Health Science and Technology, 2001
bioe.neu.edu/people/dai-guohao

Scholarship focus: 3-D bioprinting technology, stem cells technology and vascular bioengineering

Honors and awards: NSF Faculty Early CAREER Award; Rising Star Award, Biomedical Engineering Society Cellular and Molecular Bioengineering; American Heart Association National Scientist Development Award

SELECTED PUBLICATIONS

Y. Zheng, Y. Sun, X. Yu, Y. Shao, P. Zhang, G. Dai, J. Fu
Angiogenesis in Liquid Tumors: An In Vitro Assay for Leukemic Cell Induced Bone Marrow Angiogenesis, Advanced Healthcare Materials, 5(9), 2016, 1014-1024

X. Cui, Y.W. Lu, V. Lee, D. Kim, T. Dorsey, Q. Wang, Y. Lee, P. Vincent, J. Schwarz, G. Dai
Venous Endothelial Marker COUP-TFII Regulates the Distinct Pathologic Potentials of Adult Arteries and Veins, (Nature) Scientific Reports, 2015

G. Gao, A.F. Schilling, K. Hubbell, T. Yonezawa, D. Truong, Y. Hong, G. Dai, X. Cui
Improved Properties of Bone And Cartilage Tissue from 3D Inkjet-bioprinted Human Mesenchymal Stem Cells by Simultaneous Deposition and Photocrosslinking in PEG-GelMA, Biotechnology Letters, 37(11), 2015, 2349-2355

G. Gao, T. Yonezawa, K. Hubbell, G. Dai, X. Cui
Inkjet-bioprinted Acrylated Peptides and PEG Hydrogel with Human Mesenchymal Stem Cells Promote Robust Bone and Cartilage Formation with Minimal Printhead Clogging, Biotechnology Journal, 10(10), 2015, 1568-1577

G. Gao, A.F. Schilling, T. Yonezawa, J. Wang, G. Dai, X. Cui
Bioactive Nanoparticles Stimulate Bone Tissue Formation in Bioprinted Three-dimensional Scaffold And Human Mesenchymal Stem Cells, Biotechnology Journal, 9(10), 2014,1304-1311

SELECTED RESEARCH PROJECTS

Transcriptional Regulation of Arterial Venous Differentiation
Principal Investigator, American Heart Association

Integrated Platform to Construct and Image 3-D Perfused Vascular Network Within Thick Matrix
Principal Investigator, National Science Foundation

Differentiation Arterial and Venous Endothelial Cells from Embryonic Stem Cells
Principal Investigator, National Institutes of Health

CAREER: Engineer a Functional 3-D Vascular Niche to Support Neural Stem Cell Self-Renewal
Principal Investigator, National Science Foundation

MOHAMMAD DEHGHANI

Assistant Teaching Professor, Mechanical and Industrial Engineering

PhD, Western New England University, 2016
mie.neu.edu/people/dehghani-mohammad

Scholarship focus: simulation optimization; healthcare operation management; supply chain finance

SELECTED PUBLICATIONS

M. Demirtas, N. Ahmadi, M. Dehghanimohammadabadi
Highlighting the Main Factors of Internet Banking via Multiple Criteria Decision Analysis, ISERC Conference, Anaheim CA, USA, 2016

S.M. Hosseini, M. Dehghanimohammadabadi
A Weighted Monte Carlo Simulation Approach to Risk Assessment of Information Security Management System, International Journal of Enterprise Information Systems, 11(4), 2015, 63-79

M. Dehghanimohammadabadi, T. Keyser
Tradeoffs Between Objective Measures and Execution Speed in Iterative Optimization-based Simulation (IOS), Winter Simulation Conference, Huntington Beach CA, USA, 2015

M. Dehghanimohammadabadi, T. Keyser
Smart Simulation: Integration of SIMIO and MATLAB, Winter Simulation Conference, Huntington Beach CA, USA, 2015

M. Mobin, M. Dehghanimohammadabadi, C. Salmon
Food Product Target Market Prioritization Using MCDM Approaches, ISERC Conference, Montreal QC, Canada, 2014 CA,

M. Dehghanimohammadabadi, T. Keyser
Does the Iranian National Productivity and Excellence Award Get Leadership Buy–in, ISERC Conference, Montreal QC, Canada, 2014

JACK DENNERLEIN

Professor, Physical Therapy, Movement, and Rehabilitation Sciences; affiliated faculty, Bioengineering

PhD, University of California, Berkeley,1996
bioe.neu.edu/people/dennerlein-jack

Scholarship focus: musculoskeletal disorders; work place injury prevention and health; occupational biomechanics

SELECTED PUBLICATIONS

J.H. Lee, D.S. Asakawa, J.T. Dennerlein, D.L. Jindrich
Finger Muscle Attachments for an OpenSim Upper-extremity Model, PLoS One, 10(4), 2015, e0121712

M.B. Trudeau, D.S. Asakawa, D.L. Jindrich, J.T. Dennerlein
Two-handed Grip on a Mobile Phone Affords Greater Thumb Motor Performance, Decreased Variability, and a More Extended Thumb Posture Than a One-handed Grip, Applied Ergonomics, 52, 2015, 24-28

S.S. Kim, C. Okechukwu, L. Boden, J.T. Dennerlein, et al.
Association Between Work-family Conflict and Musculoskeletal Pain Among Hospital Patient Care Workers, American Journal of Industrial Medicine, 56(4), 2013, 488-495

P. Morency, L. Miranda-Moreno, W. Willett, J.T. Dennerlein, et al.
Bicycle Guidelines and Crash Rates on Cycle Tracks in the United States, American Journal of Public Health, 103(7), 2013, 1240-1248

J.G. Young, M.B. Trudeau, D. Odell, K. Marinelli, J.T. Dennerlein
Wrist and Shoulder Posture and Muscle Activity During Touch-screen Tablet use: Effects of Usage Configuration, Tablet Type, and Interacting Hand, Work: A Journal of Prevention, Assessment and Rehabilitation, 45(1), 2013, 59-71

SELECTED RESEARCH PROJECTS

Development and Evaluation of Contractor Safety Pre-qualification Tool
Principal Investigator, National Institute for Occupational Safety and Health

Enhancing Safety Climate through Leadership
Principal Investigator, National Institute for Occupational Safety and Health

Modifying the Workplace to Decrease Sedentary Behaviour and Improve Health
Co-Principal Investigator, National Institute for Occupational Safety and Health

Randomized Controlled Trial of a Whole Body Vibration Intervention in Truck Drivers
Principal Investigator, National Institute for Occupational Safety and Health

CHARLES DIMARZIO

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering, Mechanical and Industrial Engineering

PhD, Northeastern University, 1996
ece.neu.edu/people/dimarzio-charles

Scholarship focus: optics, microscopy, coherent detection, interaction of light and sound waves, hyperspectral imaging, diffusive optical tomography and ultrasound, landmine detection, magneto-optic sensors, multi-model imaging, and activities include: computer modeling, designing, building and testing of hardware, and processing the resulting data

SELECTED PUBLICATIONS

J.L. Hollmann, R. Horstmeyer, C. Yang, C.A DiMarzio
Diffusion Model for Ultrasound-Modulated Light, Journal of Biomedical Optics, 19(3), 2014, 035005

J.L. Hollmann, R.Horstmeyer, C. Yang, C.A. DiMarzio
Analysis and Modeling of an Ultrasound-Modulated Guide Star to Increase the Depth of Focusing in a Turbid Medium, Journal of Biomedical Optics, 18(2), 2013, 025004

Z. Lai, J. Kerimo, Y. Mega, C.A. DiMarzio
Stepwise Multiphoton Activation Fluorescence Reveals a New Method of Melanin Detection, Journal of Biomedical Optics,18(6), 2013, 061225

Z.R. Hoffman, C. DiMarzio
Structured Illumination Microscopy Using Random Intensity Incoherent Reflectance, Journal of Biomedical Optics, 2013

SELECTED RESEARCH PROJECTS

Coded-illumination Fourier Ptychography for High-content Multimodal Imaging
Principal Investigator, National Science Foundation

JENNIFER DY

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Purdue University, 2001
ece.neu.edu/people/dy-jennifer

Scholarship focus: machine learning; data mining; statistical pattern recognition; computer vision and image processing

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

S.M. Brown, A. Webb, R.S. Mangoubi, J.G. Dy
A Sparse Combined Regression-classification Formulation for Learning a Physiological Alternative to Clinical Post-Traumatic Stress Disorder Scores, Twenty-ninth AAAI Conference on Artificial Intelligence, 2015

J. Ross, P. Castaldi, M. Cho, J.G. Dy
Dual Beta Process Priors for Latent Cluster Discovery in Chronic Obstructive Pulmonary Disease, ACM SIGKDD Knowledge Discovery and Data Mining, 2014

D. Niu, J.G. Dy, M.I. Jordan
Iterative Discovery of Multiple Alternative Clustering Views, IEEE Transactions on Pattern Analysis and Machine Intelligence, 36(7), 2014, 1340-1353

Y. Yan, R. Rosales, G. Fung, J.G. Dy
Active Learning from Crowds, Proceedings of the 28th International Conference on Machine Learning (ICML), 2011, 1161-1168

Y. Guan, J.G. Dy, M.I. Jordan
A Unified Probabilistic Model for Global and Local Unsupervised Feature Selection, Proceedings of the 28th International Conference on Machine Learning (ICML), 2011, 1073-1080

M. Masaeli, G. Fung, J.G. Dy
From Transformation-Based Dimensionality Reduction to Feature Selection, Proceedings of the 27th International Conference on Machine Learning (ICML), 2010, 751-758

Y. Yan, R. Rosales, G. Fung, M. Schmidt, J.G. Dy, et al.
Modeling Annotator Expertise: Learning When Everybody Knows a Bit of Something, Proceedings of the Thirteenth International Conference on Artificial Intelligence and Statistics (AISTATS), 9, 2010, 932-939

SELECTED RESEARCH PROJECTS

Automated Image Guidance for Diagnosing Skin Cancer With Confocal Microscopy
Principal Investigator, National Institutes of Health

Genetic Epidemiology of COPD
Co-Principal Investigator, National Institutes of Health

Spatio-temporal Extremes and Associations Marine Adaptation and Survivorship under Climate Change and Rising Ocean Temperatures
Principal Investigator, National Science Foundation

ENO EBONG

Assistant Professor, Chemical Engineering
affiliated faculty, Bioengineering

PhD, Rensselaer Polytechnic Institute, 2006
che.neu.edu/people/ebong-eno

Scholarship focus: studying the means by which endothelial cell mechanotransduction occurs in order to prevent or promote atherosclerosis

Honors and awards: National Institutes of Health Career Development Award

SELECTED PUBLICATIONS

L.M. Cancel, E.E. Ebong, S. Mensah, C. Hirschberg, J.M. Tarbell
Endothelial Glycocalyx, Apoptosis and Inflammation in an Atherosclerotic Mouse Model, Atherosclerosis, 252, 2016, 136-146

M.J. Cheng, R. Kumar, S. Sridhar, T.J. Webster, E.E. Ebong
Endothelial Glycocalyx Conditions Influence Nanoparticle Uptake for Passive Targeting, International Journal of Nanomedicine, 11, 2016, 3305-3315

E. Ebong, S.V. Lopez-Quintero, V. Rizzo, D.C. Spray, J.M. Tarbell
Shear-induced Endothelial NOS Activation and Remodeling via Heparin Sulfate, Glypican-1, and Syndecan-1, Integrative Biology: Quantitative Biosciences from Nano to Macro, 6(3), 2014, 338-347

M. Thi, E. Ebong, D. Spray, S. Suadicani
Interaction of the Glycocalyx with the Actin Cytoskeleton, Neuromethods, Springer Publishing, 79, 2013, 43-62

E. Ebong, N. Depaola
Specificity in the Participation Of Connexin Proteins in Flow-induced Endothelial gap Junction Communication, European Journal of Physiology, 465(9), 2013, 1293-302

Y. Zeng, E. Ebong, B. Fu, J. Tarbell
The Structural Stability of the Endothelial Glycocalyx after Enzymatic Removal of Glycosaminoglycans, PLoS ONE, 7(8), 2012, e43168

E. Ebong, F. Macaluso, D. Spray, J. Tarbell
Imaging the Endothelial Glycocalyx In Vitro by Rapid Freezing/Freeze Substitution Transmission Electron Microscopy, Arteriosclerosis Thrombosis and Vascular Biology, 31(8), 2011, 1908-1915

SELECTED RESEARCH PROJECTS

Atheroprotective vs Atherogenic Glycocalyx Mechanotransduction Mechanisms
Principal Investigator, National Institutes of Health

MATTHEW ECKELMAN

Assistant Professor, Civil and Environmental Engineering; affiliated faculty: Chemical Engineering, Public Policy and Urban Affairs

PhD, Yale University, 2009
civ.neu.edu/people/eckelman-matthew

Scholarship focus: environmental engineering and sustainability; life cycle assessment; energy efficiency and emissions modeling; environmental assessment of bio and nanomaterials; material and energy use in urban buildings and infrastructure

Honors and awards: National Science Foundation CAREER Award; International Laudise Prize in Industrial Ecology

SELECTED PUBLICATIONS

S.M. Rahman, M.J. Eckelman, A. Onnis-Hayden, A.Z. Gu
Life-cycle Assessment of Advanced Nutrient Removal Technologies for Wastewater Treatment, Environmental Science and Technology, 50(6), 2016, 3020-3030

M. Montazeri, M.J. Eckelman
Life-Cycle Assessment of Catechols from Lignin Depolymerization, ACS Sustainable Chemistry and Engineering, 4(3), 2016, 708-718

M.J. Eckelman
Life-Cycle Inherent Toxicity: A Novel LCA-based Algorithm for Evaluating Chemical Synthesis Pathways, Green Chemistry, 18(11), 2016, 3257-3264

P. Zhai, J.A. Isaacs, M.J. Eckelman
Net Energy Benefits of Carbon Nanotube Applications, Applied Energy, 173, 2016, 624-634

M. Montazeri, L. Soh, P. Pérez-López, J.B. Zimmerman, M.J. Eckelman
Time-dependent Life Cycle Assessment of Microalgal Biorefinery co-products, Biofuels, Bioproducts, and Biorefining, 2016

L. Pourzahedi, M.J. Eckelman
Comparative Life Cycle Assessment of Silver Nanoparticle Synthesis Routes, Environmental Science: Nano, 2(4), 2015, 361-369

SELECTED RESEARCH PROJECTS

Air Climate and Energy Center—SEARCH: Solutions for Energy AiR Climate and Health
Senior Personnel, Environmental Protection Agency

CAREER: Building Chemical Synthesis Networks for Life Cycle Hazard Modeling
Principal Investigator, National Science Foundation

Ethics Education in Life Cycle Design, Engineering, and Management
Principal Investigator, National Science Foundation

RSB: A Decision and Design Framework for Multi-hazard Resilient and Sustainable Buildings
Co-Principal Investigator, National Science Foundation

ADAM EKENSEAIR

Assistant Professor, Chemical Engineering; affiliated faculty, Bioengineering

PhD, University of Texas at Austin, 2010
che.neu.edu/people/ekenseair-adam

Scholarship focus: synthesis and application of novel polymeric biomaterials for tissue engineering and regenerative medicine

SELECTED PUBLICATIONS

O.M. Pehlivaner Kara, A.K. Ekenseair
In Situ Spray Deposition of Cell-loaded, Thermally and Chemically Gelling Hydrogel Coatings for Tissue Regeneration, Journal of Biomedical Materials Research, Part A, 2016

T.N. Vo, A.K. Ekenseair, P.P. Spicer, B.M. Watson, S.N. Tzouanas, T.T. Roh, A.G. Mikos
In Vitro and In Vivo Evaluation of Self-mineralization and Biocompatibility of Injectable, Dual-gelling Hydrogels for Bone Tissue Engineering, Journal of Controlled Release, 205, 2015, 25-35

S.N. Tzouanas, A.K. Ekenseair, F.K. Kasper, A.G. Mikos
Mesenchymal Stem Cell and Gelatin Microparticle Encapsulation in Thermally and Chemically Gelling Injectable Hydrogels for Tissue Engineering, Journal of Biomedical Materials Research, Part A, 102(5), 2014, 1222-1230

A.K. Ekenseair, F.K. Kasper, A.G. Mikos
Perspectives on the Interface of Drug Delivery and Tissue Engineering, Advanced Drug Delivery Reviews, 65, 2013, 89-92

A.K. Ekenseair, N.A. Peppas
Network Structure and Methanol Transport Dynamics in Poly(methyl methacrylate), AIChE Journal, 58(5), 2012, 1600-1609

A.K. Ekenseair, K.W.M. Boere, S.N. Tzouanas, T.N. Vo, F.K. Kasper, A.G. Mikos
Structure-property Evaluation of Thermally and Chemically Gelling Injectable Hydrogels for Tissue Engineering, Biomacromolecules, 13, 2012, 2821-2830

SELECTED RESEARCH PROJECTS

Biomanufactured Nerve Guidance Channels for Complex Nerve Repair
Co-Principal Investigator, Northeastern University

Injectable, Multifunctional Polymeric Nanocomposites for Osteochondral Tissue Repair
Principal Investigator, Northeastern University

Solid Supported Lipase Inhibitors for the Treatment of Acute Pancreatitis
Co-Principal Investigator, Northeastern University

RANDALL ERB

Assistant Professor, Mechanical and Industrial Engineering

PhD, Duke University, 2009
mie.neu.edu/people/erb-randall

Scholarship focus: structure/property relationships in composites and ceramics, magnetic manipulation, colloidal physics

SELECTED PUBLICATIONS

R.M. Erb, J.J. Martin, R. Soheilian, C. Pan, J.R. Barber
Actuating Soft Matter with Magnetic Torque, Advanced Functional Materials, 26(22), 2016, 3859-3880

J.S. Sander, R.M. Erb, L. Li, A. Gurijala, Y.-M. Chiang
High-performance Battery Electrodes via Magnetic Templating, Nature Energy, 1, 2016, 16099

J.J. Martin, B.E. Fiore, R.M. Erb
Designing Bioinspired Composite Reinforcement Architectures via 3D Magnetic Printing, Nature Communications, 6, 2015, 8641

J.J. Martin, M.S. Riederer, M.D. Krebs, R.M. Erb
Understanding and Overcoming Shear Alignment of Fibers During Extrusion, Soft Matter, 11, 2015, 400-405

R. Soheilian, Y. Choi, A.E. David, H. Abdi, C.E. Maloney, R.M. Erb
Toward Accumulation of Magnetic Nanoparticles into Tissues of Small Porosity, Langmuir, 31(30), 2015, 8267-8274

R. M. Erb, R. L. Libanori, N. Rothfuchs, A.R. Studart
Composites Reinforced in Three Dimensions by Using Low Magnetic Fields, Science, 335, 2012, 199-204

R.M. Erb, H.S. Son, B. Samanta, V.M. Rotello, B.B. Yellen
Magnetic Assembly of Colloidal Superstructures with Multipole Symmetry, Nature, 457, 2009, 999-1002

SELECTED RESEARCH PROJECTS

CPS: Breakthrough: A Cyber-physical Framework for MRI Guided Magnetic NanoParticles
Principal Investigator, National Science Foundation

The Roles of Heterogeneities and Anisotropy in Fracture Toughness and Crack Propagation
Co-Principal Investigator, National Science Foundation

Incorporating Composite Design into Biopolymer Hydrogels for Strong Scaffolds in Bone Regeneration
Co-Principal Investigator, AO Foundation

Aligning Boron Nitride Patriciles within Dense Ceramics-reinforced Polymer Films
Principal Investigator, Rogers Corporation

DENIZ ERDOGMUS

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Florida, 2002
ece.neu.edu/people/erdogmus-deniz

Scholarship focus: brain computer interfaces, cognitive and interactive systems, nonlinear and statistical signal processing, information theory, and machine learning

Honors and awards: National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering; College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

B.S. Oken, U. Orhan, B. Roark, D. Erdogmus, A. Fowler, A. Mooney, B. Peters, M. Miller, M. Fried Oken
BrainComputer Interface with Language ModelEEG Fusion for Lockedin Syndrome, Neurorehabilitation and Neural Repair, 28(4), 2014, 387-394

A. Fowler, B. Roark, U. Orhan, D. Erdogmus, M. Fried-Oken
Improved Inference and Autotyping in EEGbased BCI Typing Systems, ASSETS 2013, Bellevue, WA, Oct 2013

H. Nezamfar, U. Orhan, S. Purwar, K. Hild, B. Oken, D. Erdogmus
Decoding of Multichannel EEG Activity from the Visual Cortex in Response to Pseudorandom Binary Sequences of Visual Stimuli, International Journal of Imaging Systems and Technology, 21(2), 2011, 139-147

Y. Huang, D. Erdogmus, M. Pavel, S. Mathan, K.E. Hild II
A Framework for Rapid Visual Image Search using Singletrial Brain Evoked Responses, Neurocomputing, 74, 2011, 2041-2051

D. Erdogmus
BCI: A Timely Opportunity for Projectbased Learning, National Academy of Engineering Frontiers in Engineering Education Workshop, Irvine, California, Dec 2010

SELECTED RESEARCH PROJECTS

CAREER: Signal Models, Channel Capacity, and Information Rate for Noninvasive Brain Interfaces
Principal Investigator, National Science Foundation

Automated Classification of Retinopathy of Prematurity using Machine Learning
Investigator, National Institutes of Health

Strengthening Human Adaptive Reasoning and Problem Solving (SHARP)
Co-Principal Investigator, Intelligence Advanced Research Projects Activity

The Rehabilitation Engineering Research Center on Augmentative and Alternative Communication
Co-Principal Investigator, U.S. Department of Education

ÖZLEM ERGUN

Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Electrical and Computer Engineering

PhD, Massachusetts Institute of Technology, 2001
mie.neu.edu/people/ergun-ozlem

Scholarship focus: design and management of large-scale networks, supply chain design, collaboration, humanitarian logistics

Honors and awards: National Science Foundation CAREER Award; Winner, EURO/INFORMS 2007 Management Science Strategic Innovation Prize

SELECTED PUBLICATIONS

M. Jahre, J. Kembro, T. Rezvanian, Ö. Ergun, S. J. Håpnes, P. Berling
Integrating Supply Chains for Emergencies and Ongoing Operations in UNHCR , Journal of Operations Management, 45, 2016, 1-134

M. Celik, Ö. Ergun, P. Keskinocak
The Post-disaster Debris Clearance Problem with Incomplete Information, Operations Research, 63(1), 2015, 65-85

L. Gui, A. Atasu, Ö. Ergun, B. Toktay
Fair and Efficient Implementation of Collective Extended Producer Responsibility Legislation, Management Science, 2014, 1-56

Ö. Ergun, L. Gui, J.L. Heier Stamm, P. Keskinocak, J.L. Swann
Improving Humanitarian Operations through Collaboration, Production and Operations Management special issue on Humanitarian Operations and Crisis Management, 23(6), 2014, 1002-1014

Ö. Özener, Ö. Ergun, M. Savelsbergh
Allocating Cost of Service to Customers in Inventory Routing, Operations Research, 61(1), 2013, 112-125

Ö. Ergun, G. Karakus, P. Kerl, P. Keskinocak, J. Swann, et al.
Disaster Response Planning in the Private Sector and the Role of Operations Research, Handbook of Operations Research for Homeland Security, Springer, 183, 2012, 197-217

SELECTED RESEARCH PROJECTS

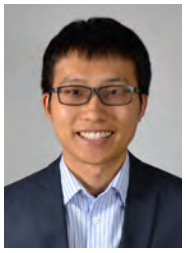
Multi-agent Modeling Framework for Mitigating Distributed Disruptions in Critical Supply Chains
Co-Principal Investigator, National Science Foundation

Food Aid Quality Review Phase III Program
Principal Investigator, subcontract from Tufts University's USAID grant

Staff Reassignment: Negotiations and Compromises to Enhance Stable Matching
Co-Principal Investigator, National Science Foundation

Resource Allocation with Learning in Dynamic and Partially Observable Networks
Principal Investigator, National Science Foundation

HUI FANG



Assistant Professor, Electrical and Computer Engineering

PhD, University of California, Berkeley, 2014
ece.neu.edu/people/fang-hui

Scholarship focus: nano-electronics, bio-integrated electronics, and nano-physics

SELECTED PUBLICATIONS

K.J. Yu, D. Kuzum, S.-W. Hwang, B.H. Kim, H. Juul, N.H. Kim, S.M. Won, K. Chiang, M. Trumpis, A.G. Richardson, H. Cheng, H. Fang, et. al.
Bioresorbable Silicon Electronics for Transient Spatiotemporal Mapping of Electrical Activity from the Cerebral Cortex, Nature Materials, 15, 2016, 782-791

H. Fang, C. Battaglia, C. Carraro, S. Nemsak, B. Ozdol, J. S. Kang, H.A. Bechtel, S.B. Desai, et. al.
Strong Interlayer Coupling In Van Der Waals Heterostructures Built From Single-layer Chalcogenides, IEEE Proceedings of the National Academy of Sciences, 111, 2014, 6198-6202

H. Fang, H.A. Bechtel, E. Plis, M. C. Martin, S. Krishna, E. Yablonovitch, A. Javey
Quantum of Optical Absorption in Two-dimensional Semiconductors, Proceedings of the National Academy of Sciences,110, 2013, 11688-11691

H. Fang, M. Tosun, G. Seol, T-C. Chang, K. Takei, J. Guo, A. Javey
Degenerate n-doping of Few-layer Transition Metal Dichalcogenides by Potassium, Nano Letters, 13, 2013, 1991-1995

H. Fang, S. Chuang, T. C. Chang, K. Takei, T. Takahashi, A. Javey
High-performance Single Layered WSe2 p-FETs with Chemically Doped Contacts, Nano Letters, 12, 2012, 3788-3792

J. Nah, H. Fang, C. Wang, K. Takei, M. H. Lee, E. Plis, S. Krishna, A. Javey
III–V Complementary Metal–oxide–semiconductor Electronics on Silicon Substrates, Nano Letters, 12, 2012, 3592-3595

H. Fang, S. Chuang, K. Takei, H. S. Kim, E. Plis, C.-H. Liu, S. Krishna, Y.-L. Chueh, A. Javey
Ultrathin-body, High-mobility InAsSb-on-insulator Field-effect Transistors, IEEE Electron Device Letters, 33, 2012, 504-506

K. Takei, H. Fang, S. B. Kumar, R. Kapadia, Q. Gao, M. Madsen, H. S. Kim, C.-H. Liu, et. al.
Quantum Confinement Effects in Nanoscale-thickness InAs Membranes, Nano Letters, 11, 2011, 5008–5012

QIANQIAN FANG

Assistant Professor, Bioengineering

PhD, Dartmouth College, 2005
bioe.neu.edu/people/fang-qianqian

Scholarship focus: innovations in translational medical imaging devices to better diagnose cancers, low-cost point-of-care diagnostic tools to delivery life-saving medicines to the resource-poor regions, and high performance computing tools to facilitate the development of the next-generation imaging methods

Honors and awards: Leading Innovation in Reimagining Global Health, Innovation Countdown 2030 Initiative

SELECTED PUBLICATIONS

R. Yao, X. Intes, Q. Fang
Generalized Mesh-based Monte Carlo for Wide-field Illumination and Detection Via Mesh Retessellation, Biomedical Optics Express, 7(1), 2016, 171-184

B. Deng, M. Fradkin, J.M. Rouet, R.H. Moore, D.B. Kopans, D.A. Boas, M. Lundqvist, Q. Fang
Characterizing Breast Lesions Through Robust Multi-modal Data Fusion Using Independent Diffuse Optical and X-ray Breast Imaging, Journal of Biomedical Optics Letters, 20(8), 2015, 080502, 1-4

B. Deng, D. H. Brooks, D. A. Boas, M. Lundqvist, Q. Fang
Characterization of Structural-prior Guided Optical Tomography Using Realistic Breast Models Derived from Dual-energy X-ray Mammography, Biomedical Optics Express, 6(7), 2015, 2366-2379

Q. Fang, J. Selb, S. A. Carp, et al.
Combined Optical and Tomosynthesis Breast Imaging, Radiology, 258(1), 2011, 89-97 *cover article

Q. Fang
Mesh-based Monte Carlo Method Using Fast Ray-tracing in Plücker Coordinates, Biomedical Optics Express, 1(1), 2010, 165-175 *top-downloaded paper

SELECTED RESEARCH PROJECTS

A Versatile High-performance Optical Mammography Co-imager
Principal Investigator, National Institutes of Health

GPU-Accelerated Monte Carlo Photon Transport Simulation Platform
Principal Investigator, National Institutes of Health

Non-contact Mobile Oximeter for Rapid Birth Asphyxia and Childhood Pneumonia Assessment
Principal Investigator, US Agency for International Development

DAVID FANNON

Assistant Professor, School of Architecture; jointly appointed, Civil and Environmental Engineering

MS, University of California, Berkeley, 2015
civ.neu.edu/people/fannon-david

Scholarship focus: sustainable and high performance building design; development of sustainable building technologies; human comfort within the built environment

SELECTED PUBLICATIONS

H. Zhang, E. Arens, M. Taub, D. Dickerhoff, F. Bauman, M. Fountain, W. Pasut, D. Fannon, Y. Zhai, M. Pigman
Using Footwarmers in Offices for Thermal Comfort and Energy Savings, Energy and Buildings, 104, 2015, 233-243

SELECTED RESEARCH PROJECTS

Decision Frameworks for Resilient and Sustainable Buildings
Co-Investigator, National Science Foundation

Building Resilience: A Tool for Adaptability Planning and Decision-making
Co-Principal Investigator, Northeastern University

Cost-effective Thermal Envelope Retrofits in Wood-frame Residential Buildings
Co-Principal Investigator, Northeastern University

NASSER FARD

Associate Professor, Mechanical and Industrial Engineering

PhD, University of Arizona, 1982
mie.neu.edu/people/fard-nasser

Scholarship focus: systems reliability; accelerated life testing in reliability prediction; big data-data driven decision making in spatiotemporal streaming environment; life data (survival data) analysis; robust design of experiments

Honors and awards: American Statistical Association Natrella Scholarship Award; Outstanding Presentation Award from the Reliability and Maintainability Symposium; Associate Editor, IEEE Transactions on Reliability; Associate Editor, International Journal of Reliability, Quality and Safety Engineering; Certified Quality Engineer by American Society for Quality (#11909)

SELECTED PUBLICATIONS

N. Fard, K. Sadeghzadeh
Complex Data Classification in Weighted Accelerated Failure Time Model, IEEE Xplore Annual Reliability and Maintainability Symposium (RAMS), 2016

N. Fard, H. XU, Y. Fang
Coherent System Reliability Improvement Using PCA Based Multi-response Optimization Method, IEEE Xplore Annual Reliability and Maintainability Symposium (RAMS), 2016

N. Fard, H. Xu, Y. Fang
A Unique Solution for Principal Component Analysis-based Multi-response Optimization Problems, International Journal of Advanced Manufacturing Technology, 79, 2015, 1-4

N. Fard, K. Sadeghzadeh
Heuristic Ranking Classification Method for Complex Large-scale Survival Data, Advances in Intelligent Systems and Computing, 360, 2015, 47-55

K. Sadeghzadeh, N. Fard
Nonparametric Data Reduction Approach for Large-scale Survival Data Analysis, IEEE Xplore, 2015, 1-6

K. Sadeghzadeh, N. Fard
Variable Selection Methods for Right-censored Time-to-event Data with High-dimensional Covariate, Journal of Quality and Reliability Engineering, 795154, 2015, 1-9

A. Mendes, N. Fard
Accelerated Failure Time Models Comparison to the Proportional Hazard Model for Time-dependent Covariates with Recurrent Events, International Journal of Reliability, Quality and Safety Engineering, 21(2), 2014, 1450010

A. Mendes, N. Fard
Binary Logistic Regression and PHM Analysis for Reliability Data, International Journal of Reliability, Quality and Safety Engineering, 21(5), 2014, 1450023

YUNSI FEI

Associate Professor, Electrical and Computer Engineering

PhD, Princeton University, 2004
ece.neu.edu/people/fei-yunsi

Scholarship focus: computer architecture, embedded systems, hardware-oriented security, design automation, mobile computing, and underwater sensor networks

Scholarship focus: National Science Foundation CAREER Award; College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

Y. Han, Y. Fei
DAP-MAC: A Delay-aware Probability-based MAC Protocol for Underwater Acoustic Sensor Networks, Elsevier Ad Hoc Networks (ADHOC), 48, 2016, 80-92

P. Luo, C. Li, Y. Fei
Concurrent Error Detection for Reliable SHA-3 Design, Association for Computing Machinery Great Lake Symposium on VLSI (GLSVLSI), 2016

Z. Jiang, Y. Fei, D.R. Kaeli
A Complete Key Recovery Timing Attack on a GPU, International Symposium on High-Performance Computer Architecture (HPCA), 2016

L. Zhang, A.A. Ding, Y. Fei, P. Luo
A Unified Metric for Quantifying Information Leakage of Cryptographic Devices Under Power Analysis Attacks, Asiacrypt, 2015

C. Luo, Y. Fei, P. Luo, S. Mukherjee, D. Kaeli
Side-channel Power Analysis of a GPU AES Implementation, International Conference on Computer Design (ICCD), 2015

B. Jiang, Y. Fei
Smart Home in Smart Microgrid: A Cost-effective Energy Ecosystem with Intelligent Hierarchical Agents, IEEE Transactions on Smart Grid (TSG), 6(1), 2015, 3-13

SELECTED RESEARCH PROJECTS

TWC: Medium: Automating Countermeasures and Security Evaluation Against Software Side-channel Attacks
Principal Investigator, National Science Foundation

Embedded Hardware-based Security and Side Channel Analysis
Principal Investigator, Analog Devices

MRI: Development of a Testbed for Side-Channel Analysis and Security Evaluation-TeSCASE
Principal Investigator, National Science Foundation

STARSS: Side-Channel Analysis and Resiliency Targeting Accelerators
Co-Principal Investigator, National Science Foundation and Semiconductor Research Corporation

SAMUEL FELTON

Assistant Professor, Mechanical and Industrial Engineering

PhD, Harvard University, 2015
mie.neu.edu/people/felton-samuel

Scholarship focus: soft robots; transformable robots; self-folding machines; rapid prototyping; biomimetic design

Honors and awards: National Defense Science and Engineering Graduate Fellowship

SELECTED PUBLICATIONS

S. Felton, K. Becker, D. Aukes, R. Wood
Self-folding with Shape Memory Composites at the Millimeter Scale, Journal of Micromechanics and Microengineering, 25(8), 2015, 085004

M. Tolley, S. Felton, S. Miyashita, D. Aukes, D. Rus, R. Wood
Self-folding Origami: Shape Memory Composites Activated by Uniform Heating, Smart Materials and Structures, 23, 2014, 094006

S. Felton, M. Tolley, E. Demaine, R. Rus, R. Wood
A Method for Building Self-folding Machines, Science, 345(6197), 2014, 644-646

S. Felton, D. Lee, K. Cho, R. Wood
A Passive, Origami-inspired, Continuously Variable Transmission, IEEE International Conference on Robotics and Automation, 2014, 2913-2918

S. Felton, M. Tolley, B. Shin, C. Onal, E. Demaine, D. Rus, R. Wood
Self-Folding with Shape Memory Composites, Soft Matter, 9(32), 2013, 7688-7694

S. Felton, T. Gaige, T. Benner, R. Wang, T. Reese, V. Wedeen, R. Gilbert
Associating the Mesoscale Fiber Organization of the Tongue with Local Strain Rate During Swallowing, Journal of Biomechanics, 41, 2008, 1782-1789

HICHAM FENNIRI

Professor, Chemical Engineering

PhD, Université Louis Pasteur, 1994
che.neu.edu/people/fenniri-hicham

Scholarship focus: nanomaterials science and engineering, supramolecular chemistry, theranostics, targeted drug delivery, sensors

Honors and awards: National Science Foundation CAREER Award, Cottrell Teacher-Scholar Award, Canada Foundation for Innovation Leaders Award, Xerox UAC Award, 3M Young Investigator Award, Visiting Professor at: College de France, Université de Strasbourg, Regensburg University, Taiwan National Normal University, and University of Colorado

SELECTED PUBLICATIONS

H. Fenniri, G.A. Tikhomirov, D.H. Brouwer, S. Bouatra, et al.
High Field Solid-state NMR Spectroscopy Investigation of 15N-Labeled Rosette Nanotubes: Hydrogen Bond Network and Channel-Bound Water, Journal of the American Chemical Society, 138, 2016, 6115-6118

U.D. Hemraz, M. El Bakkari, T. Yamazaki, J.-Y. Cho, R.L. Beingessner, H. Fenniri
Chiromers: Conformation-driven Mirror-image Supramolecular Chirality Isomerism Identified in a New Class of Helical Rosette Nanotubes, Nanoscale, 6, 2014, 9421-9427 featured on cover

K.J. Ong, T.J. MacCormack, R.J. Clark, J.D. Ede, L. Felix, V. Ortega, M.K.M. Dang, G. Ma, H. Fenniri, et al.
Widespread Nanoparticle-assay Interference: Implications for Nanotoxicity Testing, PLoS One, 9, 2014

A. Childs, U.D. Hemraz, N.J. Castro, H. Fenniri, L.G. Zhang
Novel Biologically-inspired Rosette Nanotube PLLA Scaffolds for Improving Human Mesenchymal Stem Cell Chondrogenic Differentiation, Biomedical Materials, 8(6), 2013

A. Durmus, G. Gunbas, S.C. Farmer, M.M. Olmstead, M. Mascal, B. Legesse, J.-Y. Cho, R.B. Beingessner, T. Yamazaki, H. Fenniri
Synthesis of N-Substituted Pyrido[4,3-d]pyrimidines for the Large Scale Production of Self-assembled Rosettes and Nanotubes, Journal of Organic Chemistry, 78, 2013, 11421-11426

B.-L. Deng, R.L. Beingessner, R.S. Johnson, N.K. Girdhar, C. Danumah, T. Yamazaki, H. Fenniri
Covalent Capture of Self-assembled Rosette Nanotubes, Macromolecules, 45, 2012, 7157-7162

SELECTED RESEARCH PROJECTS

RNA Nanoparticles as Carriers of Therapeutic miRNAs for the Treatment of Inflammation and Atherosclerotic Plaques
Principal Investigator, Kostas

Novel Nanomolecules to Reduce Antimicrobial Use to Reduce Gut Bacterial Burden
Principal Investigator, University of Saskatchewan

LORETTA FERNANDEZ

Assistant Professor, Civil and Environmental Engineering; jointly appointed, Marine and Environmental Sciences

PhD, Massachusetts Institute of Technology, 2010
civ.neu.edu/people/fernandez-loretta

Scholarship focus: environmental organic chemistry; passive sampling methods for organic contaminants in water and sediments; transport, transformation, and biological exchange of organic contaminants in the environment

Honors and awards: National Research Council, Research Associateship; National Science Foundation, Graduate Research Fellowship

SELECTED PUBLICATIONS

B.D. Drollette, K. Hoelzer , N.R. Warner, T.H. Darrah, O. Karatum, M.P. O'Connor, R.K. Nelson, L.A. Fernandez, C.M. Reddy, A. Vengosh, R.B. Jackson, M. Elsner, D.L. Plata
Elevated Levels of Diesel Range Organic Compounds in Groundwater Near Marcellus Gas Operations are Derived from Surface Activities, Proceedings of the National Academies of Science, 112(43), 2015, 13184-13189

L. Fernandez, P.M. Gschwend
Predicting Bioaccumulation of Polycyclic Aromatic Hydrocarbons in Soft-shelled Clams (Mya arenaria) Using Field Deployments of Polyethylene Passive Samplers, Environmental Toxicology and Chemistry, 34(5), 2015, 993-1000

L. Fernandez, W. Lao, K. A. Maruya, R. M. Burgess
Calculating the Diffusive Flux of Persistent Organic Pollutants Between Sediments and the Water Column on the Palos Verdes Shelf Superfund Site Using Polymeric Passive Samplers, Environmental Science & Technology, 48, 2014, 3925-3924

SELECTED RESEARCH PROJECTS

Non-equilibrium Passive Sampling for Quantitative Thermodynamic Exposure Assessment (Q-TEA)
Principal Investigator, US Army Environmental Laboratory

STEPHEN FLYNN

Professor, Political Science; co-Director, George J. Kostas Research Institute for Homeland Security; affiliated faculty, Civil and Environmental Engineering

PhD, Tufts University, 1991
civ.neu.edu/people/flynn-stephen

Scholarship focus: critical infrastructure resilience; public policy

SELECTED PUBLICATIONS

S. Flynn
The Role of Community Resilience in Advancing Security, State, Society, and National Security: Challenges and Opportunities in the 21st Century, Jayakumar, S. (Ed.) Singapore: World Scientific Publishing, 2016

I. Linkov, D. Eisenberg, M. Bates, D. Chang, M. Convertino, J. Allen, S. Flynn, T. Seager
Measurable Resilience for Actionable Policy, Environmental Science and Technology, 47(18), 2013, 10108-10110

N. Bakshi, S. Flynn, N. Gans
Countering the Threat of Nuclear Terrorism at Domestic and Foreign Ports, Informed Decisions on Catastrophic Risks, The Wharton School, University of Pennsylvania, 57(1), 2012

N. Bakshi, S. Flynn, N. Gans
Estimating the Operational Impact of Container Inspections at International Ports, Management Science, 57(1), 2011, 1-20

L. Wein,Y. Liu, Z. Cao, S. Flynn
The Optimal Spatiotemporal Deployment of Radiation Portal Monitors can Improve Detection at Overseas Ports, Science and Global Security, 15(2), 2008, 211-233

S. Flynn
Drug Trafficking, the International System, and Decision Constraints: A Policy-making Simulation, International Studies Perspectives, 1(1), 2000, 45-55

SELECTED RESEARCH PROJECTS

Bolstering Counter-proliferation Efforts with Global Supply Chains
Principal Investigator, MacArthur Foundation

Center for Resilience Studies Network: Learning from Major Disasters that Disrupt Lifeline-infrastructure
Principal Investigator, Department of Homeland Security

Devising Economic Incentives for Advancing Infrastructure Resilience
Principal Investigator, Department of Homeland Security

Infrastructure Resilience Metrics for Man-made (explosive) and Natural Hazard Incidents
Principal Investigator, Department of Homeland Security

YUN RAYMOND FU

Associate Professor, Electrical and Computer Engineering; jointly appointed, Computer and Information Science

PhD, University of Illinois, 2008
ece.neu.edu/people/fu-yun

Scholarship focus: machine learning and computational intelligence, social media analytics, human-computer interaction, and cyber-physical systems

Honors and awards: Office of Naval Research Young Investigator Award; Army Research Office Young Investigator Award; International Neural Network Society's Young Investigator Award; Søren Buus Outstanding Research Award; Grainger Foundation Frontiers of Engineering Award

SELECTED PUBLICATIONS

S. Li, Y. Fu
Learning Balanced and Unbalanced Graphs via Low-rank Coding, IEEE Transactions on Knowledge and Data Engineering (T-KDE), 27(5), 2015, 1274-1287

Y. Fu
Human-centered Social Media Analytics, Springer, 2014

Y. Kong, Y. Jia, Y. Fu
Interactive Phrases: Semantic Descriptionsfor Human Interaction Recognition, IEEE Transactions on Pattern Analysis and Machine Intelligence, 36(9), 2014, 1775-1788

Y. Fu
Low-rank and Sparse Modeling for Visual Analysis, Springer, 2014

K. Li, Y. Fu
Prediction of Human Activity by Discovering Temporal Sequence Patterns, IEEE Transactions on Pattern Analysis and Machine Intelligence, 36(8), 2014, 1644-1657

SELECTED RESEARCH PROJECTS

Pinpoint Geolocation using Multi-source Multi-dimensional Big Data from Social Media
Principal Investigator, Naval Postgraduate School

Deep Structures Boosted Self-organized Behavior Pattern Learning for Anomaly Detection
Principal Investigator, Office of Naval Research

Wireless Sensing of Speech Kinematics & Acoustics for Remediation
Co-Principal Investigator, National Science Foundation

Intention Sensing Through Video-based Imminent Activity Prediction
Principal Investigator, Army Research Office

Methods for Multimedia Search and Retrieval by Fusing Data Across Various Sources or Domains
Principal Investigator, MIT Lincoln Laboratory

Multimodal Speech Translation for Assistive Communication
Co-Principal Investigator, National Institutes of Health

Sensing and Modeling Behavior in Response to Environmental Changes
Principal Investigator, Air Force Office of Scientific Research

PETER FURTH

Professor, Civil and Environmental Engineering

PhD, Massachusetts Institute of Technology, 1981
civ.neu.edu/people/furth-peter

Scholarship focus: traffic signal control; bicycle transportation; transit operations modeling; transit data collection and sampling

SELECTED PUBLICATIONS

M.B. Lowry, P. Furth, T. Hadden-Loh
Prioritizing New Bicycle Facilities to Improve Low-stress Network Connectivity, Transportation Research, 86, 2016, 124-140

B. Cesme, P. Furth
Self-organizing Traffic Signals using Secondary Extension and Dynamic Coordination, Transportation Research Part C, 48, 2014, 1-15

P. Furth, B. Cesme, T.H.J. Muller
Lost Time and Cycle Length for an Actuated Traffic Signal, Transportation Research Record: Journal of the Transportation Research Board, 2009, 2128, 152-160

P. Furth, T.H. Muller
Conditional Bus Priority at Signalized Intersections: Better Service with Less Traffic Disruption, Journal of the Transportation Research Board, 1731, 2000, 23-30

SELECTED RESEARCH PROJECTS

Self-organizing Traffic Signals
Principal Investigator, National Science Foundation

Bicycle Network Analysis
Principal Investigator, Delaware Department of Transportation

AUROOP GANGULY

Associate Professor, Civil and Environmental Engineering

PhD, Massachusetts Institute of Technology, 2002
civ.neu.edu/people/ganguly-auroop

Scholarship focus: climate extremes and water sustainability; critical infrastructures security and resilience; applied data sciences for complex systems

SELECTED PUBLICATIONS

U. Bhatia, D. Kumar, E. Kodra, A.R. Ganguly
Network Science Based Quantification of Resilience Demonstrated on the Indian Railways Network, PLoS One, 10(11), 2015

D. Wang, T.C. Gouhier, B.A. Menge, A.R. Ganguly
Intensification and Spatial Homogenization of Coastal Upwelling Under Climate Change, Nature, 518, 2015, 390-394

E.A. Kodra, A.R. Ganguly
Asymmetry of Projected Increases in Extreme Temperature Distributions, Scientific Reports, 4, 2014, 5884

A.R. Ganguly, E.A. Kodra, et al.
Toward Enhanced Understanding And Projections of Climate Extremes Using Physics-guided Data Mining Techniques, Nonlinear Processes in Geophysics, 21, 2014, 777-795

S. Ghosh, D. Das, S.-C. Kao, A.R. Ganguly
Lack of Uniform Trends but Increasing Spatial Variability in Observed Indian Rainfall Extremes, Nature Climate Change, 2, 2012, 86-91

A.R. Ganguly, K. Steinhaeuser, D.J. Erickson, M. Branstetter, E.S. Parish, N. Singh, J.B. Drake, L. Buja
Higher Trends but Larger Uncertainty and Geographic Variability In 21st Century Temperature and Heat Waves, Proceedings of the National Academy of Sciences of the United States of America, 106(37), 2009, 15555-15559

SELECTED RESEARCH PROJECTS

High-dimensional Statistical Machine Learning for Spatio-Temporal Data, with applications to Climate Science
Principal Investigator, National Science Foundation

Expeditions in Computing: Understanding Climate Change: A Data-driven Approach
Co-Principal Investigator, National Science Foundation

Spatio-temporal Extremes & Association: Marine Adaptation and Survivability under Climate change and rising Ocean Temperatures
Co-Principal Investigator, National Science Foundation

EDGAR GOLUCH

Associate Professor, Chemical Engineering; affiliated faculty, Bioengineering

PhD, University of Illinois, 2007
che.neu.edu/people/goluch-edgar

Scholarship focus: detection of biomolecules at the nanoscale, specifically inside micro and nanofluidic channels. This is applied to a broad range of scientific fields including: biophysics, micro and systems biology, ecology, environmental sensing, and analytical instrumentation

SELECTED PUBLICATIONS

H.J. Sismaet, A. Banerjee, S. McNish, Y. Choi, M. Torralba, S. Lucas, A. Chan, V.K. Shanmugam, E.D. Goluch
Electrochemical Detection of Pseudomonas in Wound Exudate Samples from Patients with Chronic Wounds, Wound Repair and Regeneration, 24(2), 2016, 366-372 *featured in a George Washington University press release

T.A. Webster, H.J. Sismaet, I.J. Chan, E.D. Goluch
Electrochemically Monitoring the Antibiotic Susceptibility of Pseudomonas aeruginosa Biofilms, Analyst, 140, 2015, 7195-7201

P.N. Abadian, N. Yildirim, A.Z. Gu, E.D. Goluch
SPRi-based Adenovirus Detection using a Surrogate Antibody Method, Biosensors and Bioelectronics, 74, 2015, 808-814

K. Mathwig, T. Albrecht, E.D. Goluch, L. Rassaei
Challenges of Biomarker Detection at the Nanoscale: Nanopores and Microelectrodes, Analytical Chemistry, 87, 2015, 5470-5475

T.A. Webster, H.J. Sismaet, A.F. Sattler, E.D. Goluch
Improved Monitoring of P. aeruginosa on Agar Plates, Analytical Methods, 7, 2015, 7150-7155 *emerging investigator themed issue

G.E. Aninwene II, P.N. Abadian, V. Ravi, E.N. Taylor, D.M. Hall, A. Mei, G.D. Jay, E.D. Goluch, T.J. Webster
Lubricin: a Novel Means to Decrease Bacterial Adhesion and Proliferation, Journal of Biomedical Materials Research, Part A, 103, 2015, 451-462

P.N. Abadian, E.D. Goluch
Using Surface Plasmon Resonance Imaging (SPRi) to Evaluate Bacterial Adhesion on Surface Coatings, Analytical Methods, 7, 2015, 115-122, *featured as a hot article in Analytical Methods

H.J. Sismaet, T.A. Webster, E.D. Goluch
Up-regulating Pyocyanin Production by Amino Acid Addition for Early Identification of Pseudomonas aeruginosa, Analyst, 139, 2014, 4241-4246, *featured as a hot warticle in the Analyst

SELECTED RESEARCH PROJECTS

IDBR: TYPE A Nano-constriction Devices for Isolation and Cultivation of Environmental Microbes
Principal Investigator, National Science Foundation

TARIK GOUHIER

Assistant Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, McGill University, 2010
civ.neu.edu/people/gouhier-tarik

Scholarship focus: dynamical models of ecological and environmental processes for marine species; adaptive management strategies of interconnected coastal ecosystems

SELECTED PUBLICATIONS

B. Spiecker, T.C. Gouhier, F. Guichard
Reciprocal Feedbacks Between Spatial Subsidies and Reserve Networks in Coral Reef Meta-ecosystems, Ecological Applications, 26(1), 2016, 264-278

D. Wang, T.C. Gouhier, B.A. Menge, A.R. Ganguly
Intensification and Spatial Homogenization of Coastal Upwelling Under Climate Change, Nature, 518, 2015, 390-394

T.C. Gouhier, F. Guichard
Synchrony: Quantifying Variability in Space and Time, Methods in Ecology and Evolution, 5(6), 2014, 524-533

P. Pillai, T.C. Gouhier, S.V. Vollmer
The Cryptic Role of Biodiversity in the Emergence of Host-microbial Mutualisms, Ecology Letters, 17(11), 2014, 1437-1446

T.C. Gouhier, F. Guichard, B.A. Menge
Designing Effective Reserve Networks for Non-equilibrium Metacommunities, Ecological Applications, 23(6), 2013, 1488-1503

T.C. Gouhier, F. Guichard, B.A. Menge
Ecological Processes Can Synchronize Marine Population Dynamics Over Continental Scales, Proceedings of the National Academy of Sciences of the United States of America, 107(18), 2010, 8281-8286

SELECTED RESEARCH PROJECTS

Coral-microbial Interactions as Determinants of Disease Dynamics
Principal Investigator, National Science Foundation

Integrating Broad-scale Regional Variation in Environmental Forcing and Benthic-pelagic Coupling
Co-Principal Investigator, National Science Foundation

Spatio-temporal Extremes and Association: Marine Adaptation and Survivability under Climate change and rising Ocean Temperatures
Co-Principal Investigator, National Science Foundation

ANDREW GOULDSTONE

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering, Chemical Engineering

PhD, Massachusetts Institute of Technology, 2001
mie.neu.edu/people/gouldstone-andrew

Scholarship focus: biomechanics; material science; engineering mechanics

Honors and awards: College of Engineering Faculty Fellow; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

T. Hu, S. Zhalehpour, A. Gouldstone, et al.
A Method for the Estimation of the Interface Temperature in Ultrasonic Joining, Metallurgical And Materials Transactions A-Physical Metallurgy And Materials Science, 45A(5), 2014, 2545-2552

C.T. Nguyen, H.M. Gonnermann, Y. Chen, A. Gouldstone
Film Drainage and the Lifetime of Bubbles, Geochemistry Geophysics Geosystems, 14(9), 2013, 3616-3631

J.H. Kim, A. Gouldstone, C.S. Korach
Analysis of Spherical Indentation of an Elastic Bilayer Using a Modified Perturbation Approach, MEMS and Nanotechnology, 4, 2011, 53-57

B. Choi, Y. Wu, S. Sampath, A. Gouldstone
Modified Indentation Techniques to Probe Inelasticity in Ni5%Al Coatings from Different Processes, Journal of Thermal Spray Technology, 18(1), 2009, 65-74

L.H. Weng, A. Gouldstone, Y.H. Wu, W.L. Chen
Mechanically Strong Double Network Photocrosslinked Hydrogels from N,N-Dimethylacrylamide and Glycidyl Methacrylated Hyaluronan, Biomaterials, 29(14), 2008, 2153-2163

SELECTED RESEARCH PROJECTS

GARDE: An Interdisciplinary Approach to Accommodate Fine Motor Control Disorders
Co-Principal Investigator, National Science Foundation

JONATHAN GRABOWSKI

Associate Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, University of North Carolina at Chapel Hill, 2012
civ.neu.edu/people/grabowski-jonathan

Scholarship focus: environmental science and policy, fisheries, ecological economics

SELECTED PUBLICATIONS

P.S.E. Zu Ermgassen, J.H. Grabowski, J.R. Gair, S.P. Powers
Quantifying Fish and Mobile Invertebrate Production from a Threatened Nursery Habitat, Journal of Applied Ecology, 53, 2016, 596-606

L.F. Dodd, J.H. Grabowski, M.F. Piehler, I. Westfield, J.B. Ries
Ocean Acidification Impairs Crab Foraging Behavior, Proceedings of the Royal Society B, 282, 2015

D.L. Kimbro, J.E. Byers, J.H. Grabowski, A.R. Hughes, M.F. Piehler
The Biogeography of Trophic Cascades on U.S. Oyster Reefs, Ecology Letters, 17, 2014, 845-854

A.B. Rodriguez, F.J. Fodrie, J.T. Ridge, N. Lindquist, E.J. Theuerkauf, S.E. Coleman, J.H. Grabowski, et al.
Will Oyster Reefs Keep their Heads Above Water?, Nature Climate Change, 2014, 493-497

M.D. McMahan, D.C. Brady, D. Cowan, J.H. Grabowski, G.D. Sherwood
Using Fine-scale Acoustic Telemetry to Observe the Effects of a Groundfish Predator (Atlantic cod, Gadus morhua) on the Movement Behavior of the American Lobster (Homarus americanus), Canadian Journal of Fisheries and Aquatic Sciences 70(11), 2013, 1625-1634

J.H. Grabowski, R.D. Brumbaugh, R. Conrad, A.G. Keeler, et al.
Economic Valuation of Ecosystem Services Provided by Oyster Reefs, BioScience, 632, 2012, 900-909

P.S.E. Zu Ermgassen, M.D. Spalding, B. Blake, L.D. Coen, B. Dumbauld, S. Geiger, J.H. Grabowski, et al.
Historical Ecology with Real Numbers: Past and Present Extent and Biomass of an Imperiled Estuarine Habitat, Proceedings of the Royal Society B, 279, 2012, 3393-3400

SELECTED RESEARCH PROJECTS

Aligning Coastal Restoration with Ecological and Societal Needs
Principal Investigator, National Center for Ecological Analysis and Synthesis

Assessing Social Impacts in Groundfish Fishing Communities
Principal Investigator, National Oceanic and Atmospheric Administration

Social and Ecological Factors Influencing Shoreline Hardening in the Northeast: Implications for Vulnerability, Resilience and Informed Decision Making
Principal Investigator, Northeast Sea Grant College Consortium

JACKIE GRIFFIN

Assistant Professor, Mechanical and Industrial Engineering

PhD, Georgia Institute of Technology, 2012
mie.neu.edu/people/griffin-jacqueline

Scholarship focus: health care resource allocation with multi-objective resource allocation models

Honors and awards: ARCS (Achievement Rewards for College Scientists) Foundation; George Fellowship, Health Systems Institute, Georgia Institute of Technology

SELECTED PUBLICATIONS

J. Griffin, J. Swann, P. Keskinocak
Allocating Scarce Healthcare Resources in Developing Countries: A Case for Malaria Prevention, Handbook of Healthcare Operations Management. Ed. Brian Denton, International Series in Operations Research & Management Science, Springer Science + Business Media New York 2013

J. Griffin, P. Keskinocak
Patient-bed Assignment Policies in Hospital Systems, INFORMS 2013 Annual Meeting, Chicago, IL, 2013

J. Griffin, P. Keskinocak, C. Stokes, N. O'Hara, A. Vats
Development of Patient-bed Assignment Algorithms to Support Bed Management Processes for Improvements in the Rate of Overflow Assignments and Average Request to Assign Metrics, Critical Care Medicine, 40(12), 2012, 48

J.A. Griffin, S. Xia, S. Peng, P. Keskinocak
Improving Patient Flow in an Obstetric Unit, Health Care Management Science, 15(1), 2012, 1-14

D.V. Laborde, J.A. Griffin, H.K. Smalley, P. Keskinocak, G. Mathew
A Framework for Assessing Patient Crossover and Health Information Exchange Value, Journal of the American Medical Informatics Association, 18(5), 2011, 698-703

SELECTED RESEARCH PROJECTS

Design of New Orthopedic Clinics Via Simulation
Principal Investigator, Boston Children's Hospital

Improving Patient Flow in New Musculoskeletal Floor of the 'Brigham Building for the Future'
Principal Investigator, Brigham and Women's Hospital

Patient Flow Simulation Projects in Dermatology and Cardiology Clinics
Principal Investigator, Brigham and Women's Hospital

CRISP Type 1: Multi-agent Modeling Framework for Mitigating Distributed Disruptions in Critical Supply Chains
Principal Investigator, National Science Foundation

CRISP Type 2: Identification and control of uncertain, highly interdependent processes involving humans with applications to resilient emergency health response
Co-Principal Investigator, National Science Foundation

APRIL GU

Associate Professor, Civil and Environmental Engineering, Director of Graduate Studies; affiliated faculty, Bioengineering

PhD, University of Washington, 2003
civ.neu.edu/people/gu-april

Scholarship focus: application of biotechnology for water quality improvement; biological treatment processes and bioremediation; ecotoxicology and toxicity assessment; biosensors for water quality monitoring

Honors and awards: College of Engineering Faculty Fellow; National Science Foundation CAREER Award; National Science Foundation Education BRIGE Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

J. Lan, N. Gou, S. Rahman, C. Gao, M. He, A. Gu
A Quantitative Toxicogenomics Assay for High-throughput and Mechanistic Genotoxicity Assessment and Screening of Environmental Pollutants, Environmental Science and Technology, 50(6), 2016, 3202–3214

S. Rahman, M. Eckelman, A. Onnis-Hayden, A. Gu
Life Cycle Assessment of Advanced Nutrient Removal Technologies for Wastewater Treatment, Environmental Science and Technology, 50(6), 2016, 3020-3030

D. Li, S. Zeng, M. He, A. Gu
Water Disinfection Byproducts Select for Antibiotic Resistance-Role of Environmental Pollutants in Resistance Phenomena, Environmental Science and Technology, 50(6), 2016, 3193-3201

Y. Li, X. Wang, A. Onnis-Hayden, K.-T. Wan, A. Gu
Universal Quantifier Derived from AFM Analysis Links Cellular Mechanical Properties and Cell-surface Integration Forces with Microbial Deposition and Transport Behavior, Environmental Science and Technology, 48(3), 2014, 1769-1778

N. Yildirim, F. Long, C. Gao, M. He, H.C. Shi, A. Gu
Aptamer-based Optical Biosensor for Rapid and Sensitive Detection of 17 ß-Estradiol in Water Samples, Environmental Science and Technology, 46(6), 2012, 3288-3294

SELECTED RESEARCH PROJECTS

CRECE-Center for Research on Early Childhood Exposure and Development in Puerto Rico
Project Principal Investigator, National Institute of Environmental Health Sciences

Exploring Analysis of Environment and Health Through Multiple Alternative Clustering
Co-Principal Investigator, National Science Foundation

PROTECT-The Puerto Rico Testsite for Exploring Contamination Threats Program
Co-Principal Investigator, National Institute of Environmental Health Sciences

Mechanistic and Predictive Genotoxicity Assessment of Nanomaterials
Principal Investigator, National Science Foundation

SURENDRA M. GUPTA

Professor, Mechanical and Industrial Engineering

PhD, Purdue University, 1977
mie.neu.edu/people/gupta-surendra

Scholarship focus: green manufacturing; green supply chains; disassembly modeling; remanufacturing; reverse logistics; managing end of life products; environmentally conscious manufacturing; manufacturing sustainability; reverse and closed-loop supply chains; just-in-time (jit) manufacturing and materials management; operations research: stochastic and simulation modeling

Honors and awards: Søren Buus Outstanding Research Award, College of Engineering; Best Dissertation Advisor National Award: American Society for Engineering Management; Outstanding IE Professor Award

SELECTED PUBLICATIONS

C.B. Kalayci, O. Polat, S.M. Gupta
A Hybrid Genetic Algorithm for Sequence-dependent Disassembly Line Balancing Problem, Annals of Operations Research, 242(2), 2016, 321-354

A. ElSayed, E. Kongar, S.M. Gupta
Fuzzy Linear Physical Programming for Multiple Criteria Decision-making Under Uncertainty, International Journal of Computers, Communications, and Control, 11(1), 2016, 25-37

M.A. Ilgin, S.M. Gupta, O. Battaia
Use of MCDM Techniques in Environmentally Conscious Manufacturing and Product Recovery: State of the Art, Journal of Manufacturing Systems, 37(3), 2015, 746-758

S.M. McGovern, S.M. Gupta
Unified Assembly-and Disassembly-line Model Formulae, Journal of Manufacturing Technology Management, 26(2), 2015, 195-212

O. Ondemir, S.M. Gupta
A Multi-criteria Decision Making Model for Advanced Repair-to-Order and Disassembly-to-order System, European Journal of Operational Research, 233(2), 2014, 408-419

C.B. Kalayci, S.M. Gupta
A Tabu Search Algorithm for Balancing a Sequence-dependent Disassembly Line, Production Planning and Control, 25(2), 2014, 149-160

A. Korugan, S.M. Gupta
An Adaptive CONWIP Mechanism for Hybrid Production Systems, International Journal of Advanced Manufacturing Technology, 74(5-8), 2014, 715-727

M.A. Ilgin, O. Ondemir, S.M. Gupta
An Approach to Quantify the Financial Benefit of Embedding Sensors into Products for End-of-life Management: A Case Study, Production Planning and Control, 25(1), 2014, 26-43

O. Ondemir, S.M. Gupta
Quality Management in Product Recovery using the Internet of Things: An Optimization Approach, Computers in Industry, 65(3), 2014, 491-504

JEROME HAJJAR

CDM Smith Professor and Chair, Civil and Environmental Engineering

PhD, Cornell University, 1988
civ.neu.edu/people/hajjar-jerome

Scholarship focus: steel and composite steel/concrete structures; earthquake engineering; structural stability; large-scale experimental testing of structures; computational simulation

Honors and awards: Fellow, American Society of Civil Engineers; Fellow, Structural Engineering Institute; Norman Medal, American Society of Civil Engineers; Shortridge Hardesty Award, American Society of Civil Engineers; Moisseiff Award, American Society of Civil Engineers; T.R. Higgins Lectureship Award, American Institute of Steel Construction; Special Achievement Award, American Institute of Steel Construction; Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers; Breakthrough Award, Popular Mechanics; Clemens Hershel Award, Boston Society of Civil Engineers

SELECTED PUBLICATIONS

J.S. Steelman, L.A. Fahnestock, J.F. Hajjar, J.M. LaFave
Performance of Non-seismic PTFE Sliding Bearings when Subjected to Seismic Demands, Journal of Bridge Engineering, ASCE, 21(1), 2016

M.D. Denavit, J.F. Hajjar, T. Perea, R.T. Leon
Seismic Performance Factors for Moment Frames with Steel-concrete Composite Columns and Steel Beams, Earthquake Engineering and Structural Dynamics, Special Issue on Earthquake-induced Collapse of Structural Systems, 45(10), 2016, 1685-1703

M.R. Denavit, J.F. Hajjar, T. Perea, R.T. Leon
Stability Analysis and Design of Composite Structures, Journal of Structural Engineering, ASCE, 142(3), 2016

V. Valamanesh, A.T. Myers, S.R. Arwade, J.F. Hajjar, E.M. Hines, W. Pang
Wind-wave Prediction Equations for Probabilistic Offshore Hurricane Hazard Analysis, Natural Hazards, 2016, 1-22

T. Perea, R.T. Leon, J.F. Hajjar, M.D. Denavit
Full-scale Tests of Slender Concrete-filled Steel Tubes: Interaction Behavior, Journal of Structural Engineering, 140(9), 2014

S. Szyniszewski, B.H. Smith, J.F. Hajjar, B.W. Schafer, S.R. Arwade
The Mechanical Properties of a Sintered, Hollow Sphere, Steel Foam, Materials and Design, 54, 2014, 1083-1094

M.R. Eatherton, X. Ma, H. Krawinkler, G.G. Deierlein, J.F. Hajjar
Quasi-static Behavior of Controlled Rocking Steel Frames, Journal of Structural Engineering, ASCE, 140(11), 2014

SELECTED RESEARCH PROJECTS

Collaborative Research: Transforming Building Structural Resilience Through Innovation in Steel Diaphragms
Co-Principal Investigator, National Science Foundation

Deconstructable Systems for Sustainable Design of Steel and Composite Structures
Principal Investigator, National Science Foundation

Fast and Accurate Infrastructure Modeling and Inspection with Low-flying Robots
Principal Investigator, National Science Foundation

ROBERT HANSON

Professor, Medicinal Chemistry; affiliated faculty, Bioengineering

PhD, University of California, Berkeley, 1973
bioe.neu.edu/people/hanson-robert

Scholarship focus: bioorganic and medicinal chemistry

Honors and awards: Fellow, National Science Foundation; Fellow, National Institutes of Health

SELECTED PUBLICATIONS

R.N. Hanson, P. Tongcharoensirikul, K. Barnesley, M.J. Ondrechen, A. Hughes, E.R. DeSombre
Synthesis and Evaluation of 2-halogenated-1,1-bis(4-hydroxyphenyl)-2-(3-hydroxyphenyl)-Ethylenes as Potential Estrogen Receptor-targeted Radiodiagnostic and Radiotherapeutic Agents, Steroids, 96, 2015, 50-62

P.T. Weiser, C.-Y. Chang, DP. McDonnell, R.N. Hanson
Synthesis and Preliminary Evaluation of 4,4'-Unsymmetrically Substituted 3,3' Biphenyls as Alpha Helical Proteomimetics, Bioorganic and Medicinal Chemistry, 22, 2014, 917-926

E.B. Corcoran, R.N. Hanson
Imaging EGFR and HER2 by PET and SPECT: A Review, Medicinal Research Reviews, 34(3), 2013, 596-643

SELECTED RESEARCH PROJECTS

CaNCURE: Cancer Nanomedicine Co-ops for Undergraduate Research Experiences
Co-Principal Investigator, National Institutes of Health

Combinatorial-designed Nano-platforms to Overcome Tumor Drug Resistance
Co-Principal Investigator, National Institutes of Health

VINCENT G. HARRIS

University Distinguished Professor, William Lincoln Smith Professor, Electrical and Computer Engineering; jointly appointed, Chemical Engineering

PhD, Northeastern University, 1990
ece.neu.edu/people/harris-vincent

Scholarship focus: design and processing of advanced materials with emphasis on high frequency device applications for radar, communication, and sensing

Honors and awards: Fellow, American Association for the Advancement fo Science, Distinguished Scientist Award, The Materials, Minerals, and Metals Society; Fellow, Institute of Electrical and Electronics Engineers; Fellow, American Physical Society; Fellow, Institute of Physics; Fellow, Institute of Engineering and Technology; Institute of Metal Research's Lee Hsun Lecture Award; Fulbright Senior Fellow; Søren Buus Outstanding; Research Award, College of Engineering

SELECTED PUBLICATIONS

A.S. Sokolov, M. Geiler, V.G. Harris
Broadband Ferromagnetic Resonance Linewidth Measurement by a Microstripline Transmission Resonator, Applied Physics Letters, 108(17), 2016

P. Taheri, R. Barua, J. Hsu, M. Zamanpour, Y. Chen, V.G. Harris
Structure, Magnetism, and Magnetostrictive Properties of Mechanically Alloyed Fe 81 Ga 19, Journal of Alloys and Compounds, 661, 2016, 306-311

X. Wu, S. Yan, W. Liu, Z. Feng, Y. Chen, V.G. Harris
Influence of Particle Size on the Magnetic Spectrum of NiCuZn Ferrites for Electromagnetic Shielding Applications, Journal of Magnetism and Magnetic Materials, 401, 2016, 1093-1096

M. Bi, X. Wang, H. Lu, L. Deng, K.J. Sunday, M.L. Taheri, V.G. Harris
Magnetic and Microwave Properties of Amorphous FeCoNbBCu Thin Films, Journal of Applied Physics, 119(2), 2016

F. Chen, X. Wang, Y. Nie, Q. Li, J. Ouyang, Z. Feng, Y. Chen, V.G. Harris
Ferromagnetic Resonance Induced Large Microwave Magnetodielectric Effect in Cerium Doped Y3Fe5O12 Ferrites, Scientific Reports, 6, 2016, 28206

Z. Su, Q. Li, X Wang, B. Hu, Z. Feng, Y. Chen, V.G. Harris
Room Temperature Magnetoelectric Effect of YFeO3-Y3Fe5O12 Ferrite Composites, Journal of Alloys and Compounds, 656, 2016, 465-469

SELECTED RESEARCH PROJECTS

Accelerated Development of Magnetodielectrics Having Equivalent Permeability and Permittivity for RF Applications
Principal Investigator, Rogers Corp

Magnetodielectric Heterostructures and Composites
Principal Investigator, Rogers Corp

Nonlinear Properties of Ferrite Materials
Principal Investigator, Raytheon

FERDI HELLWEGER

Associate Professor, Civil and Environmental Engineering; affiliated faculty, Bioengineering

ScD, Columbia University, 2004
civ.neu.edu/people/hellweger-ferdinand

Scholarship focus: surface water quality, microbial ecology and systems bioecology (the combination of systems biology and systems ecology)

Honors and awards: Environmental Merit Award, U.S. Environmental Protection Agency

SELECTED PUBLICATIONS

F.L. Hellweger
100 Years Since Streeter and Phelps: It is Time to Update the Biology in Our Water Quality Models, Environmental Science and Technology, 49(11), 2015, 6372-6373

F.L. Hellweger, N. Fredrick, J.A. Berges
Age-correlated Stress Resistance Improves Fitness of Yeast: Support from Agent-based Simulations, BMC Systems Biology, 8(18), 2014, 1-10

F.L. Hellweger, E. van Sebille, N.D. Fredrick
Biogeographic Patterns in Ocean Microbes Emerge in a Neutral Agent-based Model, Science, 345(6202), 2014, 1346-1349

J.-U. Kreft, C. Plugge, V. Grimm, F. Hellweger, et al.
Mighty Small: Observing and Modeling Individual Microbes Becomes Big Science, PNAS, 110(45), 2013, 18027-18028

N. Fredrick, J.A. Berges, B. Twining, D. Nuñez-Milland, F.L. Hellweger
Exploring Mechanisms of Intracellular P Heterogeneity in Cultured Phytoplankton Using Agent Based Modeling, Applied and Environmental Microbiology, 79(14), 2013

F.L. Hellweger
Escherichia Coli Adapts to Tetracycline Resistance Plasmid (pBR322) by Mutating Endogenous Potassium Transport: in Silico Hypothesis Testing, FEMS Microbiology Ecology, 83(3), 2013, 622-631

SELECTED RESEARCH PROJECTS

Dimensions: Collaborative Research: Anthropogenic Nutrient Input Drives Genetic, Functional and Taxonomic Biodiversity in Hypereutrophic Lake Taihu, China
Principal Investigator, National Science Foundation

Collaborative Research: Causes and Mechanisms of Cell Death in Freshwater Phytoplankton
Principal Investigator, National Science Foundation

Consortium for Ocean Sensing In the Nearshore Environment (COSINE)
Principal Investigator, National Oceanic and Atmospheric Administration

BRIAN HELMUTH

Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, University of Washington, 1997
civ.neu.edu/people/helmuth-brian

Scholarship focus: ecological forecasting and resilience of coastal environments

Honors and awards: Google Science Communications Fellow

SELECTED PUBLICATIONS

K.J. Kroeker, E. Sanford, J.M. Rose, C.A. Blanchette, F. Chan, F.P. Chavez, B. Gaylord, B. Helmuth, T.M. Hill, G.E. Hofmann, M.A. McManus, B.A. Menge, K.J. Nielsen, P.T. Raimondi, A.D. Russell, L. Washburn
Interacting Environmental Mosaics Drive Geographic Variation in Mussel Performance and Species Interactions, Ecology Letters, 19, 2016, 771-779

B. Helmuth, B.D. Russell, S.D. Connell, Y. Dong, C.D.G. Harley, F.P. Lima, G. Sará, G.A. Williams, N. Mieszkowska
Beyond Long-term Averages: Making Biological Sense of a Rapidly Changing World, Climate Change Responses, 1, 2014, 10-20

L.E. Petes, J.F. Howard, B. Helmuth, E.K. Fly
Science Integration into US Climate and Ocean Policy, Nature Climate Change, 4(8), 671-677

R. Griffis, J. Howard, E. Babij, B. Helmuth, A. Himes-Cornell, P. Niemier, M. Orbach, L. Petes et. al
Oceans and Marine Resources in a Changing Climate: A Technical Input to the 2013 National Climate Assessment, Island Press, 2013

M. Kearney, A. Matzelle, B. Helmuth
Biomechanics Meets the Ecological Niche: The Importance of Temporal Data Resolution, Journal of Experimental Biology, 215, 2012, 922-933

D.S. Wethey, L.D. Brin, B. Helmuth, K.A.S. Mislan
Predicting Intertidal Organism Temperatures with Modified Land Surface Models, Ecological Modeling, 222, 2011, 3568-3576

SELECTED RESEARCH PROJECTS

Predicting how Fine-scale Temperature Variation will Affect the Spatial Distribution and Temporal Stability of Species and Communities under Climate Change
Principal Investigator, National Science Foundation

Using an Energetics Framework to Forecast the Interactive Effects of Abiotic and Biotic Stressors on Intertidal Mussels
Principal Investigator, National Science Foundation

CARLOS HIDROVO

Assistant Professor, Mechanical and Industrial Engineering

PhD, Massachusetts Institute of Technology, 2001
mie.neu.edu/people/hidrovo-chavez-carlos

Scholarship focus: multiscale and multiphase flow and transport phenomena, surface tension interactions in micro/nanoengineered structures, and electrokinetic ion transport in porous media for applications in energy storage, portable biochemical diagnostics, thermal management, and water treatment systems

Honors and awards: National Science Foundation CAREER Award; Defense Advanced Research Projects Agency Young Faculty Award; American Society of Mechanical Engineers Robert T. Knapp Award

SELECTED PUBLICATIONS

A. Shahriari, M. Kim, S. Zamani, N. Phillip, B. Nasouri, C.H. Hidrovo
Flow Regime Mapping of High Inertial Gas-liquid Droplet Microflows in Flow-focusing Geometries, Microfluidics and Nanofluidics, 20(1), 2016, 1-13

S. Salamat, C.A. Rios Perez, C. Hidrovo
Performance Characterization of a Capacitive Deionization Water Desalination System With an Intermediate Solution and Low Salinity Water, Journal of Energy Resources Technology, 138(3), 2016, 032003-032005

T.J. Kim, M. Kim, S. Hann, J. Trejo, C.H. Hidrovo
Thermal Characterization of Microheated Microchannels with Spatially Resolved Two-color Fluorescence Thermometry, Journal of Microelectromechanical Systems, 24(1), 2015, 115-125

R.S. Hale, R. Ranjan, C.H. Hidrovo
Capillary Flow through Rectangular Micropillar Arrays, International Journal of Heat and Mass Transfer, 75, 2014, 710-717

O.N. Demirer, C.H. Hidrovo
Laser Induced Fluorescence Visualization of Ion Transport in a Pseudo-porous Capacitive Deionization Microstructure, Microfluidics and Nanofluidics, 16(1-2), 2014, 109-122

SELECTED RESEARCH PROJECTS

Advanced Thermo-adsorptive Battery Climate Control System
Co-Principal Investigator, Advanced Research Projects Agency-energy

CAREER: Inertial Two-phase Gas-liquid Droplet Microflows
Principal Investigator, National Science Foundation

HANCHEN HUANG

Professor and Chair, Department of Mechanical and Industrial Engineering

PhD, University of California at Los Angeles, 1995
mie.neu.edu/people/huang-hanchen

Scholarship focus: development of a theoretical framework for nanorod growth and innovation of metallic glue for ambient environments; and atomistic simulation methods

Honors and awards: Fellow, Society of Engineering Science; Fellow, American Society of Mechanical Engineers; Member, Connecticut Academy of Sciences and Engineering; Senior Member, Chinese Mechanical Engineering Society; Royal Society of London KTP Visiting Professor in Hong Kong; Hsue Shen Tsien Engineering Science Professor in China; and Connecticut Clean Energy Endowed Professor in US

SELECTED PUBLICATIONS

Stephen P. Stagon, Hanchen Huang
Low Temperature Bonding and Sealing with Spaced Nanorods, US, 2016, 0172327-A1

S.P. Stagon, Alex Knapp, P.R. Elliot, H. Huang
Metallic Glue for Ambient Environments Making Strides, Advanced Materials and Processes, 174, 2016, 22-25

X. B. Niu, S.P. Stagon, H. Huang, J.K. Baldwin, A. Misra
Smallest Metallic Nanorods Using Physical Vapor Deposition, Physical Review Letters, 110(13), 2013, 136102

L.G. Zhou, H. Huang
A Characteristic Length Scale of Nanorods Diameter during Growth, Physical Review Letters, 101(26), 2008, 266102

H. Huang
Insight: Multiscale Modeling and Simulation, Sandia Technology, 2007, 8-9

J. Wang, H. Huang, S.V. Kesapragada, D. Gall
Growth of Y-shaped Nanorods through Physical Vapor Deposition, Nano Letters, 5(12), 2005, 2505-2508

SELECTED RESEARCH PROJECTS

A New Characteristic Length Scale on Surfaces
Principal Investigator, National Science Foundation

Characteristic Length Scales of Growing Nanorods
Principal Investigator, Department of Energy Office of Basic Energy Science Core Program

Characteristic Length Scales of Growing Nanorods
Principal Investigator, Defense Threat Reduction Agency

Collaborative Nuclear Fellowship Program Applied Research in Radiation Damage and Mitigation
Principal Investigator, Nuclear Regulatory Commission

Collaborative Research: Atomistic Mechanisms of Stabilizing Oxide Nanoparticles in Oxide-dispersion Strengthened Structural Materials
Principal Investigator, National Science Foundation

From Nanofabrication to Commercial Production of Solar Cells
Principal Investigator, National Science Foundation

A. RANDALL HUGHES

Assistant Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, University of California-Davis, 2006
civ.neu.edu/people/hughes-randall

Scholarship focus: marine community ecology and biodiversity

SELECTED PUBLICATIONS

T.C. Hanley, A.R. Hughes, B. Williams, H. Garland, D.L. Kimbro
Effects of Intraspecific Diversity on Survivorship, Growth, and Recruitment of the Eastern Oyster Across Sites, Ecology, 97, 2016, 1518-1529

A.R. Hughes, T.C. Hanley, N.P. Orozco, R.A. Zerebecki
Consumer Trait Variation Influences Tritrophic Interactions in Salt Marsh Communities, Ecology and Evolution, 5, 2015, 2659-2672

A.R. Hughes, D.A. Mann, D.L. Kimbro
Predatory Fish Sounds can Alter Crab Foraging Behavior and Influence Bivalve Abundance, Proceedings of the Royal Society B, 281, 2014

A.R. Hughes, A.F.P. Moore, M.F. Piehler
Independent and Interactive Effects of Two Facilitators on Their Habitat-providing Host Plant, Spartina alterniflora, Oikos 123, 2014, 488-499

A.R. Hughes, K.E. Lotterhos
Genotypic Diversity at Multiple Spatial Scales in the Foundation Marsh Species, Spartina alterniflora, Marine Ecology Progress Series, 497, 2014, 105-117

P.I. Macreadie, A.R. Hughes, D.L. Kimbro
Loss of 'Blue Carbon' from Coastal Salt Marshes Following Habitat Disturbance, PLoS One, 8, 2013

A.R. Hughes
Neighboring Plant Species Creates Associational Refuge for Consumer and Host, Ecology, 93, 2012, 1411-1420

SELECTED RESEARCH PROJECTS

Effects of Genetic Diversity, Epigenetic Change, and Root-associated Fungal Colonization on Trait Variation in the Foundation Plant Spartina alterniflora
Principal Investigator, National Science Foundation

Alabama Center for Ecological Resilience
Principal Investigator, Gulf of Mexico Research Initiative

Massachusetts Living Shorelines for Habitat Enhancement and Coastal Resilience
Principal Investigator, National Fish and Wildlife Federation

FRANCISCO HUNG

Associate Professor, Chemical Engineering

PhD, North Carolina State University, 2005
che.neu.edu/people/hung-francisco

Scholarship focus: molecular modeling of interfacial and solvated systems relevant to materials, manufacturing, energy and the environment

Honors and awards: NSF CAREER Award; ORAU Ralph E. Powe Award

SELECTED PUBLICATIONS

Y. Shen, X. He, F.R. Hung
Structural and Dynamical Properties of a Deep Eutectic Solvent Confined Inside a Slit Pore, Journal of Physical Chemistry C, 119, 2015, 2489-24500

X. He, Y. Shen, F.R. Hung, E.E. Santiso
Molecular Simulation of Homogeneous Nucleation of Crystals of an Ionic Liquid from the Melt, Journal of Chemical Physics, 143, 2015, 124506

T.P. Liyana-Arachchi, Z. Zhang, H. Vempati, A.K. Hansel, C. Stevens, A.T. Pham, F.S. Ehrenhauser, K.T. Valsaraj, F. R. Hung
Green Leaf Volatiles on Atmospheric Air/Water Interfaces: A Combined Experimental and Molecular Simulation Study, Journal of Chemical & Engineering Data, 59, 2014, 3025-3035

N.N. Rajput, J. Monk, F.R. Hung
Ionic Liquids Confined in a Realistic Activated Carbon Model: A Molecular Simulation Study, Journal of Physical Chemistry C, 118, 2014, 1540-1553

R. Singh, N.N. Rajput, X. He, J. Monk, F.R. Hung
Molecular Dynamics Simulations of the Ionic Liquid [EMIM+] [TFMSI-] Confined Inside Rutile (110) Slit Nanopores, Physical Chemistry Chemical Physics, 15, 2013, 16090-16103

N.N. Rajput, J. Monk, R. Singh, F.R. Hung
On the Influence of Pore Size and Pore Loading on Structural and Dynamical Heterogeneities of an Ionic Liquid Confined in a Slit Nanopore, Journal of Physical Chemistry C, 116, 2012, 5169-5181

T.P. Liyana-Arachchi, K.T. Valsaraj, F.R. Hung
A Molecular Simulation Study of the Adsorption of Naphthalene and Ozone on Atmospheric Air/Ice Interfaces, Journal of Physical Chemistry A, 115, 2011, 9226-9236

SELECTED RESEARCH PROJECTS

CAREER: Molecular Modeling of Solidification of Nanoconfined Ionic Liquids
Principal Investigator, National Science Foundation

VINAY INGLE

Associate Professor, Electrical and Computer Engineering

PhD, Rensselaer Polytechnic Institute, 1981
ece.neu.edu/people/ingle-vinaykumar

Scholarship focus: multidimensional signal processing and Hyperspectral imaging

SELECTED PUBLICATIONS

E. Truslow, S. Golowich, D. Manolakis, V. Ingle
Performance Metrics and Evaluation of Chemical Identification Systems, Optical Engineering, SPIE , 55(2), 2016

R. Herrero, V. Ingle
Backward and Forward Linear Prediction Applied to Ultraspectral Image Processing—Effects on Rate Distortion, Signal Image and Video Processing, 10(4), 2016, 639-646

R. Herrero, V. Ingle
Ultraspectral Image Compression using Two-stage Prediction: Prediction Gain and Rate-distortion Analysis, Signal Image and Video Processing, 10(4), 2016, 729-736

M. Pieper, D. Manolakis, E. Truslow, V. Ingle, T. Cooley, M. Brueggeman, A. Weisner, J. Jacobson
Comparison of Hyperspectral Change Detection Algorithms, SPIE Conference, Imaging Spectrometry XX, 2015

M. Pieper, D. Manolakis, V. Ingle, T.W. Cooley, M. Brueggeman, A. Weisner, J. Jacobson
New Insights and Practical Considerations in Hyperspectral Change Detection, IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 2015

E. Truslow, S. Golowich, D. Manolakis, V. Ingle
Metrics for the Comparative Evaluation of Chemical Plume Identification Algorithms, SPIE DSS Conference, 2015

E. Truslow, M. Pieper, V. Ingle, S. Golowich
Performance Evaluation of a Remote-sensing Chemical Identification Algorithm, IEEE IGARSS, 2015

SELECTED RESEARCH PROJECTS

Algorithms for Vector Time Series Data Analysis
Principal Investigator, Massachusetts Institute of Technology Lincoln Lab

Hyperspectral Detection Algorithms with False Alarm Mitigation
Principal Investigator, Massachusetts Institute of Technology

Signal Processing of Long Wave Hyperspectral Imagery
Principal Investigator, Massachusetts Institute of Technology Lincoln Lab

STRATIS IOANNIDIS

Assistant Professor, Electrical and Computer Engineering

PhD, University of Toronto, 2009
ece.neu.edu/people/ioannidis-stratis

Scholarship focus: distributed systems, networking, machine learning, big data, and privacy

SELECTED PUBLICATIONS

S. Ioannidis, E. Yeh
Adaptive Caching Networks with Optimality Guarantees, International Conference on Measurements and Modeling of Computer Systems (SIGMETRICS), Antibes San Juan Les Pins, 2016

K. Nayak, X.S. Wang, S. Ioannidis, U. Weinsberg, N. Taft, E. Shi
GraphSC: Parallel Secure Computation Made Easy, Symposium on Security and Privacy (S&P), San Jose, CA, 2015

A. Karbasi, S. Ioannidis, L. Massoulié
From Small-world Networks to Comparison-based Search, IEEE Transactions on Information Theory (IT), 2015

Y. Sun, S. Ioannidis, A. Montanari
Learning Mixtures of Linear Classifiers, International Conference on Machine Learning (ICML), Beijing, China, 2014

SELECTED RESEARCH PROJECTS

Privacy-preserving Data Mining over FPGAs in the Datacenter
Principal Investigator, Google Faculty Research Award

Assistive Integrative Support Tool for Retinopathy of Prematurity
Principal Investigator, National Science Foundation

JACQUELINE ISAACS

Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in the School of Public Policy and Urban Affairs

PhD, Massachusetts Institute of Technology, 1991
mie.neu.edu/people/isaacs-jacqueline

Scholarship focus: economic-environmental assessment of materials processing towards sustainable design and manufacturing, ethical, societal and legal implications of nanomanufacturing, development and assessment of educational games for engineering students and for K-12 outreach activities

Honors and awards: National Science Foundation CAREER Award; ELATE Fellow; College of Engineering Excellence in Mentoring Award; Northeastern University Excellence in Teaching Award; Northeastern University Aspiration Award

SELECTED PUBLICATIONS

P. Zhai, J.A. Isaacs, M.E. Eckelman
Net Energy Benefits of Carbon Nanotube Applications, Applied Energy, 173, 2016, 624-634

S. Erbis, Z.D. Ok, S. Kamarthi, J.C. Benneyan, J.A. Isaacs
Review of Research Trends and Methods in Nano Environmental, Health, and Safety Risk Analysis, Risk Analysis, 2016

W.C. Walker, L. Pourzahedi, J.A. Isaacs, M. Eckelman, C.J. Bosso
Integrating Life Cycle Assessment Into Managing Potential EHS Risks of Engineered Nanomaterials: Reviewing Progress to Date, Journal of Nanoparticle Research, 17, 2015, 344

A. Hakimian, S. Kamarthi, S. Erbis, T.P. Cullinane, K.M. Abraham, J.A. Isaacs
Economic Analysis of CNT Lithium-ion Battery Manufacturing, Environmental Science: Nano, 2, 2015, 463-476

V.H. Grassian, A.J. Haes, I.A. Mudunkotuwa, P. Demokritou, A.B. Kane, C.J. Murphy, J.E. Hutchison, J.A. Isaacs, et. al.
NanoEHS – Defining Fundamental Science Needs: No Easy Feat when the Simple itself is Complicated, Perspective in Environmental Science: Nano, 3, 2015, 15-27

J.A. Isaacs, C.L. Alpert, M. Bates, C.J. Bosso, M.J. Eckelman, I. Linkov, W.C. Walker
Engaging Stakeholders in Nano-EHS Risk Governance, Editorial, Environment Systems and Decisions, 35, 2015, 24-28

SELECTED RESEARCH PROJECTS

Designing and Integrating LCA Methods for Nanomanufacturing Scale-up
Principal Investigator, National Science Foundation

Ethics Education in Life Cycle Design, Engineering, and Management
Co-Principal Investigator, National Science Foundation

Research Collaborative Networks: Sustainable Energy Systems
Co-Principal Investigator, National Science Foundation

NADER JALILI

Professor and Associate Chair for Graduate Studies and Research, Mechanical and Industrial Engineering; affiliated faculty appointment in Bioengineering

PhD, University of Connecticut, 1998
mie.neu.edu/people/jalili-nader

Scholarship focus: piezoelectric-based actuators and sensors, dynamic modeling and vibration control of distributed-parameters systems, dynamics and control of MEMS and NEMS sensors and actuators, control and manipulation at the nanoscale

Honors and awards: Fellow, American Society of Mechanical Engineers; National Science Foundation CAREER Award; Northeastern University Excellence in Teaching Award; College of Engineering Translational Research Award; College of Engineering Martin Essigman Outstanding Teaching Award

SELECTED PUBLICATIONS

M. Khabiry, N. Jalili
A Microfluidic Platform Containing Sidewall Microgrooves for Cell Positioning and Trapping, Nanobiomedicine, 2015

S. Faegh, N. Jalili, S. Sridhar
A Novel Sensor System Utilizing Piezoelectric Microcantilever Coupled with Resonating Circuit, US Patent, 2015

S. Faegh, N. Jalili, S. Sridhar
Ultrasensitive Piezoelectric-based Microcantilever Biosensor: Theory and Experiment, IEEE/ASME Transactions on Mechatronics, 20(1), 2015, 308-312

S. Eslami, N. Jalili
Model Development and Boundary Interaction Force Control of A Piezoresistive-based Microcantilever, Robotica, 2014, 1-19

S. Faegh, N. Jalili
Comprehensive Distributed-parameters Modeling and Experimental Validation of Microcantilever-based Biosensor with Application to Ultrasmall Biological Species Detection, Journal of Micromechanics and Microengineering, 23(2), 2013, 025007

N. Jalili
Piezoelectric-based Vibration Control: From Macro to Micro/Nano Scale Systems, Springer, New York, NY, 1st Ed., 2010, 517 pages, with 293 figures

SELECTED RESEARCH PROJECTS

High Temperature and High Acceleration End-effector Pads for Semiconductor Applications – Phases I-III: Carbon Nanotube (CNT)-based Surface Treatment for Improved Adhesion and Friction Properties
Principal Investigator, Brooks Automation Inc.

Robotic Leg Advancement Device
Principal Investigator, National Science Foundation

The Gear Bearing Drive: A Novel Compact Actuator for Robotic Joints
Principal Investigator, National Science Foundation

XIAONING JIN

Assistant Professor, Mechanical and Industrial Engineering

PhD, University of Michigan, 2012
mie.neu.edu/people/jin-xiaoning

Scholarship focus: developing advanced models for prognostics and health management using physics-based models and data analytics; designing preventive strategies for manufacturing operations

SELECTED PUBLICATIONS

J. Ni, X. Gu, and X. Jin
Preventive Maintenance Opportunities For Large Production Systems, CIRP Annals Manufacturing Technology, 64(1), 2015, 447-450

X. Gu, X. Jin, and J. Ni
Prediction of Passive Maintenance Opportunity Windows on Bottleneck Machines in Complex Manufacturing Systems, ASME Transactions on Journal of Manufacturing Science and Engineering, 137(3), 2015, 031017

T. Xia, X. Jin, L. Xi
Operating Load Based Real-time Rolling Grey Forecasting for Machine Health Prognostics in Dynamic Maintenance Schedule, Journal of Intelligent Manufacturing, 26(2), 2015, 269-280

X. Liang, X. Jin, J. Ni
Forecasting Product Returns for Remanufacturing Systems, Journal of Remanufacturing, 4(1), 2014, 1-18

H. Dong, X. Jin, J. Ni
Lithium-ion Battery State of Health Monitoring and Remaining Useful Life Prediction based on Support Vector Regression-Particle Filter, Journal of Power Sources, 271, 2014, 114-123

S.G.L. Peters, J. Ni, X. Jin, P. Yi, M. Colledani
Automotive Manufacturing Technologies—an International Viewpoint, Manufacturing Review, 1, 2014

X. Jin, S.J. Hu, J. Ni, G. Xiao
Assembly Strategies for Product Remanufacturing with Variable Quality Returns, IEEE Transactions on Automation Science and Engineering, 10(1), 2013, 76-85

X. Jin, J. Ni
Joint Production and Preventive Maintenance Strategy for Manufacturing Systems with Stochastic Demand, ASME Transactions on Manufacturing Science and Engineering, 135(3), 2013

J. Ni, X. Jin
Decision Support Systems for Effective Maintenance Operations, CIRP Annals-Manufacturing Technology, 61(1), 2012, 411-414

YUNG JOON JUNG

Associate Professor, Mechanical and Industrial Engineering

PhD, Rensselaer Polytechnic Institute, 2003
mie.neu.edu/people/jung-yung-joon

Scholarship focus: synthesis of low dimensional nanomaterials and engineering their molecular structures; assembly, transfer and integration of nanomaterials and nanostructured architectures and study properties and underlying fundamental science; nanoelectronics, flexible devices, chemical sensors and energy application

SELECTED PUBLICATIONS

B. Li, Y. He, S. Lei, S. Najmaei, Y. Gong, X. Wang, J. Zhang, L. Ma, Y. Yang, S. Hong, J. Hao, G. Shi, A. George, K. Keyshar, P. Dong, L. Ge, R. Vajtai, J. Lou, Y.J. Jung, P. Ajayan
Scalable Transfer of Suspended Two Dimensional Single Crystals, Nano Letters, 15(8), 2015, 5089-5097

H. Jung, S. Kar, J. Kong, M.S. Dresselhaus, Y.J. Jung, et al.
Sculpting Carbon Bonds: Allotropic Transformation Through Solid-state re-engineering of–sp^2 carbon, Nature Communications, 5(4941), 2014

Y. Kim, H. Jung, S. Park, B. Li, F. Liu, J. Hao, Y.J. Jung, et al.
Voltage-switchable Photocurrents in Single-wall Carbon Nanotube – Silicon Junctions for Analogue and Digital optoelectronics, Nature Photonics, 8, 2014, 239-243

M.G. Hahm, H. Wang, H.Y. Jung, M. Upmanyu, Y.J. Jung, et al.
Bundling Dynamics Regulates the Active Mechanics and Transport in Carbon Nanotube Networks and their Nanocomposites, Nanoscale, 4, 2012, 3584-3590, *This article was selected for Cover Page

H.Y. Jung, M.B. Karimi, M.G. Hahm, P.M. Ajayan, Y.J. Jung
Transparent, Flexible Supercapacitors from Nano-engineered Carbon Films, Scientific Report, Nature Publishing Group, 2(773), 2012

B. Li, M. G. Hahm, Y.L. Kim, H.Y. Jung, S. Kar, Y.J. Jung
Highly Organized Two and Three-dimensional Single-walled Carbon Nanotubes-polymer Hybrid Architectures, ACS Nano, 5, 2011, 4826-4834

SELECTED RESEARCH PROJECTS

Developing Strong, High Thermal Resistant, and Light Weight Materials and their Processing for the High Performance Automotive Lighting System
Principal Investigator, Ministry of Industry, Korea

DMREF: Engineering Strong, Highly Conductive Nanotube Fibers Via Fusion
Principal Investigator, National Science Foundation

Hierarchically Arranged 3D QDs Network-carbon Nanocone-polymer Hybrid Films for Flexible Multiband Photodetector
Co-Principal Investigator, Army Research Office

DAVID KAELI

COE Distinguished Professor, Electrical and Computer Engineering; affiliated faculty: Bioengineering, Computer and Information Science

PhD, Rutgers University, 1992
ece.neu.edu/people/kaeli-david

Scholarship focus: computer architecture; GPUs; heterogeneous computing; performance analysis; security and information assurance; hardware reliability and recovery; Big Data analytics; workload characterization

Honors and awards: Fellow, Institute of Electrical and Electronics Engineers; Distinguished Scientist, Associate of Computing Machinery; Distinguish Professor, Heterogeneous Systems Architecture Foundation; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

S. Mukherjee, Y. Sun, P. Blinzer, A.K. Ziabari, D. Kaeli
A Comprehensive Performance Analysis of HSA and OpenCL 2.0, Proceedings of the IEEE International Symposium on Performance Analysis of Systems and Software, 2016, 183-192

Z.-H. Jiang, Y. Fei, D. Kaeli
A Complete Key Recovery Timing Attack on a GPU, Proceedings of the IEEE International Symposium on High Performance Computer Architecture, 2016, 394-405

A.K. Ziabari, J.L. Abellan, R. Ubal, C. Chen, A. Joshi, D. Kaeli
Leveraging Silicon-photonic NOC for Designing Scalable GPUs, Proceedings of the 29th ACM International Conference on Supercomputing, 2015, 273-282

D. Kaeli, P. Mistry, D. Schaa, D. Zhang
Heterogeneous Computing with OpenCL 2.0, Morgan Kaufmann Publishing, 2015

SELECTED RESEARCH PROJECTS

Development of a Testbed for Side-channel Analysis and Security Evaluation
Co-Principal Investigator, National Science Foundation

Engineering Strong, Highly Conductive Nanotube Fibers via Fusion
Co-Principal Investigator, National Science Foundation

Exploring Analysis of Environment and Health Through Multiple Alternative Clustering
Co-Principal Investigator, National Science Foundation

Leveraging Intra-chip/Inter-chip Silicon Photonic Networks for Designing Next-generation Accelerators
Principal Investigator, National Science Foundation

Multi-agent Modeling Framework for Mitigating Distributed Disruptions in Critical Supply Chains
Co-Principle Investigator, National Science Foundation

Puerto Rico Testsite for Exploring Environmental Contamination Threats
Co-Principal Investigator, National Institutes of Environmental Health Sciences

Side-channel Analysis and Resiliency Targeting Accelerators
Principle Investigator, National Science Foundation and Semiconductor Research Corporation

SAGAR KAMARTHI

Associate Professor, Mechanical and Industrial Engineering

PhD, Pennsylvania State University, 1994
mie.neu.edu/people/kamarthi-sagar

Scholarship focus: industrial engineering; smart and sustainable manufacturing; personalized disease management; sensor based diagnostics and prognostics

Honors and awards: Society of Manufacturing Engineers, Dell K. Allen Outstanding Young Manufacturing Engineer Award

SELECTED PUBLICATIONS

S. Radhakrishnan, A. Duvvuru, S. Sultornsanee, S. Kamarthi
Phase Synchronization Based Minimum Spanning Trees for Analysis of Financial Time Series with Nonlinear Correlations, Physica A: Statistical Mechanics and its Applications, 444, 2016, 259-270

S. Kamarthi, S. Sultornsanee, A. Zeid
Recurrence Quantification Analysis to Estimating Surface Roughness in Finish Turning Processes, International Journal of Advanced Manufacturing Technology, 2016, 1-10

S. Erbis, Z. Ok, J.A. Isaacs, J.C. Benneyan, S. Kamarthi
Review of Research Trends and Methods in Nano Environmental, Health And Safety Risk Analysis, Risk Analysis: An International Journal, 2016, 1-18

A. Hakimian, S. Kamarthi, S. Erbis, K.M. Abraham, T.P. Cullinane, J.A. Isaacs
Economic Analysis of CNT Lithium-ion Battery Manufacturing, Environmental Science: Nano, 2(5), 2015, 463-476

G.M. Uddin, K.S. Ziemer, I. Zeid, S. Kamarthi
Monte Carlo Study of the Molecular Beam Epitaxy Process for Manufacturing Magnesium Oxide Nano Scale Films, IIE Transactions, 47(2), 2015, 125-140

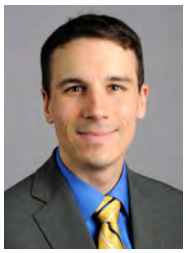
S. Erbis, S. Kamarthi, T. Cullinane, J. Isaacs
Multi-stage Stochastic Programming (MSP) Model for Carbon Nanotube Production Capacity Expansion Planning, ACS Sustainable Chemistry and Engineering, 2(7), 2014, 1633-1641

SELECTED RESEARCH PROJECTS

Smart Manufacturing Performance Assurance (Mpass) Through Equipment Monitoring
Principal Investigator, National Institute of Standards and Technology

TRANSFORMing Liberal Arts Careers to Meet Demand for Advanced Manufacturing Workforce
Co-Principle Investigator, National Science Foundation

MICHAEL KANE



Assistant Professor, Civil and Environmental Engineering

PhD, University of Michigan 2014
civ.neu.edu/people/kane-michael

Scholarship focus: model predictive control; wireless control systems; automatic control of complex infrastructure systems

SELECTED PUBLICATIONS

M.W. Häckell, R. Rolfes, M.B. Kane, J.P. Lynch
Three-tier Modular Structural Health Monitoring Framework Using Environmental and Operational Condition Clustering for Data Normalization: Validation on an Operational Wind Turbine System, Proceedings of the IEEE, PP(99), 2016, 1-15

M.B. Kane, J. Scruggs, J.P. Lynch
Model-predictive Control Techniques for Hydronic Systems Implemented on Wireless Sensor and Actuator Networks, 2014 American Control Conference, 2014, 3542-3547

ALIREZA KARIMI

Assistant Professor, Mechanical and Industrial Engineering

PhD, Virginia Polytechnic Institute and State University, 2012
mie.neu.edu/people/karimi-alireza

Scholarship focus: collective behavior of swimming microorganisms, formation and development of biofilms, nonlinear dynamics and chaos, pattern formation and spatiotemporal chaos in fluidic systems, multiphase flow in porous media, computational fluid dynamics, high performance computing and parallel processing

Honors and awards: Liviu Librescu Memorial Scholarship Award

SELECTED PUBLICATIONS

A. Karimi, D. Karig, A. Kumar, A.M. Ardekani
Interplay of Physical Mechanisms and Biofilm Processes: Review of Microfluidic Methods, Lab on a Chip, 15(1), 2015, 23-42

G.-J. Li, A. Karimi, A.M. Ardekani
Effect of Solid Boundaries on Swimming Dynamics of Microorganisms in a Viscoelastic Fluid, Rheologica Acta, 53(12), 2014, 911-926

A. Karimi, M. R. Paul
Bioconvection in Spatially Extended Domains, Physical Review E, 87, 2013, 053016

A. Karimi, A.M. Ardekani
Gyrotactic Bioconvection at Pycnoclines, Journal of Fluid Mechanics, 733, 2013, 245-267

A. Karimi, S. Yazdi, A.M. Ardekani
Hydrodynamic Mechanisms of Cell and Particle Trapping in Microfluidics, Biomicrofluidics, 7, 2013, 021501

A. Karimi, M.R. Paul
Length Scale of a Chaotic Element in Rayleigh-Bénard Convection, Physical Review E, 86, 2012, 066212

A. Karimi, M.R. Paul
Quantifying Spatiotemporal Chaos in Rayleigh-Bénard Convection, Physical Review E, 85, 2012, 046201

ALAIN KARMA

Professor, Physics; affiliated faculty, Bioengineering,

PhD, University of California at Santa Barbara, 1985
coe.neu.edu/people/karma-alain

Scholarship focus: computational modeling of cardiac arrhythmia mechanisms from cellular to organ scales including systems biology approaches

Honors and awards: Fellow of the American Physical Society, Northeastern University Robert D. Klein Lecturer, College of Arts and Sciences Distinguished Professor, Northeastern University

SELECTED PUBLICATIONS

Z. Song, A. Karma, J.N. Weiss, Z. Qu
Long-lasting Sparks: Multi-metastability and Release Competition in the Calcium Release Unit Network, Speech Communication, 12(1), 2016, e1004671

D. Terentyev, C.M. Rees, W. Li, L.L. Cooper, H.K. Jindal, X. Peng, Y. Lu, R. Terentyeva, K.E. Odening, J. Daley, K. Bist, B.-R. Choi, A. Karma, G. Koren
Hyperphosphorylation of RyRs Underlies Triggered Activity in Transgenic Rabbit Model of LQT2 Syndrome, Circulation Research, 115(11), 2014, 919-928

P.S. Skardal, A. Karma, J.G. Restrepo
Spatiotemporal Dynamics of Calcium-driven Cardiac Alternans, Physical Review E, 89(5), 2014, 052707

A. Karma
Physics of Cardiac Arrhythmogenesis, Annual Review of Condensed Matter Physics, 4, 2013, 313-337

J.N. Weiss, A. Karma, W.R. MacLellan, M. Deng, C.D. Rau, C.M. Rees, J. Wang, N. Wisniewski, Eskin E, S Horvath, Z Qu, Y Wang, A.J. Lusis
Good Enough Solutions and the Genetics of Complex Diseases, Circulation Research, 111, 2012, 493-504

SELECTED RESEARCH PROJECTS

Systems Approach to Unraveling the Genetic Basis of Heart Failure
Principal Investigator, National Institutes of Health

A Multi-Scale Approach to Cardiac Arrhythmia: from the Molecule to the Organ
Co-Principal Investigator, National Institutes of Health

YONG-BIN KIM

Professor, Electrical and Computer Engineering

PhD, Colorado State University, 1996
ece.neu.edu/people/kim-yong-bin

Scholarship focus: integrated circuit design and for nanoelectronics and nano technology, high speed system integration for signal processing and communication applications, bio-chip and bio-sensor interface circuit design, electronic neuron circuit design, low power adaptive robot controller circuit design; high performance and low power VLSI design, system-on-chip (soc), and Physical VLSI CAD

SELECTED PUBLICATIONS

W. Wei, K. Namba, F. Lombardi, Y.-B. Kim
A Novel Scheme for Tolerating Single Event/Multiple Bit Upsets (SEU/MBU) in Non-volatile Memories, IEEE Transactions on Computers, 65(3), 2016, 781-790

Y. Choi, Y.-B. Kim
A Novel On-Chip Impedance Calibration Method for LPDDR4 Interface Between DRAM and AP/SoC, Association for Computing Machinery GLSVLSI Conference, 2016, 215-219

H. Zhu, R. Kapusta, Y.-B. Kim
Noise Reduction Technique Through Bandwidth Switching for Switched-capacitor Amplifier, IEEE Transactions on Circuits and Systems 1(TCAS1), 62(7), 2015, 1707-1715

I. Jung, Y.-B. Kim
A 12-bit 32MS/s SAR ADC Using Built-in Self Calibration Technique To Minimize Capacitor Mismatch, 2014 IEEE International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems(DFT), August 3-6, Amsterdam, Netherlands, 2014, 275-279

Y. Choi, Y.-B. Kim
A Mixed-signal Self-calibration Technique for Baseband Filters in System-on-chip Mobile Transceivers, 2014 ACM GLSVLSI Conference(GLSVLSI 2014), Houston, 2014, 312-316

H. Chauhan, Y. Choi, M. Onabajo, I. Jung, Y.-B. Kim
Accurate and Efficient On-chip Spectral Analysis for Built-in Testing and Calibration Approaches, IEEE Transactions on VLSI Systems, 22(3), 2014, 497-506

T.M. Rookmmaker, M.S. Kim, Y.-B. Kim
Design and Analysis of the Quadfferential Amplifier, Elsevier Microelectronics, 43(10), 2012, 697-707

SELECTED RESEARCH PROJECTS

Semi-self Calibration of High Speed Transceiver for DRAM Interface
Principal Investigator, Hynix Semiconductor

Compact and Power Efficient Integrated Voltage Tunable RF Multiferroic Inductors with Wide Tunable Inductance
Principal Investigator, Winchester Technology

ENGIN KIRDA

Professor, Electrical and Computer Engineering; jointly appointed, Computer and Information Science

PhD, Technical University of Vienna, 2002
ece.neu.edu/people/kirda-engin

Scholarship focus: malware analysis and detection; web security; social network security; reverse engineering; intrusion detection

SELECTED PUBLICATIONS

M. Weissbacher, W. Robertson, E. Kirda, C. Kruegel, G. Vigna
ZigZag: Automatically Hardening Web Applications Against Client-side Validation Vulnerabilities, In USENIX Security Symposium, Washington DC, 2015

C. Mulliner, W. Robertson, E. Kirda
Hidden GEMs: Automated Discovery of Access Control Vulnerabilities in Graphical User Interfaces, In IEEE Symposium on Security and Privacy (S&P), San Jose, CA, 2014

S. Le Blonde, A. Uritesc, C. Gilbert, Z. Leong Chua, P. Saxena, E. Kirda
Look at Targeted Attacks through the Lense of an NGO, In USENIX Security Symposium, San Diego, CA, 2014

K. Onarlioglu, C. Mulliner, W. Robertson, E. Kirda
PrivExec: Private Execution as an Operating System Service, In IEEE Symposium on Security and Privacy (S&P), San Francisco, CA, 2013

L. Bilge, E. Kirda, C. Kruegel, M. Balduzzi
EXPOSURE: Finding Malicious Domains Using Passive DNS Analysis, In Network and Distributed Systems Security Symposium (NDSS) San Diego, CA, 2011

SELECTED RESEARCH PROJECTS

Continuum: Finding Space and Time Vulnerabilities in Java Programs
Co-Principal Investigator, Defense Advanced Research Projects Agency

DarkDroid: Exposing the Dark Side of Android Marketplaces
Principal Investigator, Defense Advanced Research Projects Agency

Firmalice: Modeling and Identifying Malice in Firmware
Principal Investigator, Defense Advanced Research Projects Agency

TWC: Medium: Collaborative: Automated Reverse Engineering of Commodity Software
Co-Principal Investigator, National Science Foundation

ZIGZAG: Secure Execution of Client-Side Web Application Components
Principal Investigator, Office of Naval Research

MIECZYSLAW KOKAR

Professor, Electrical and Computer Engineering

PhD, Wroclaw University of Technology, 1973
ece.neu.edu/people/kokar-mieczyslaw

Scholarship focus: Cognitive radio; software engineering-self-controlling software; information fusion

SELECTED PUBLICATIONS

L. Lechowicz, M.M. Kokar
Cognitive Radio: Interoperability Through Waveform Reconfiguration, Artech House, Norwood, MA, 2015

Y. Chen, M.M. Kokar, J. Moskal, D. Suresh
Mapping Spectrum Consumption Models to Cognitive Radio Ontology for Automatic Inference, Wireless Innovation Forum Conference on Wireless Communications Technologies and Software Defined Radio, Wireless Innovation Forum, 2015, *Best paper award

D. Suresh, M.M. Kokar, J. Moskal, Y. Chen
Updating CRO to CRO2, In Wireless Innovation Forum Conference on Wireless Communications Technologies and Software Defined Radio, Wireless Innovation Forum, 2015

B.E. Ulicny, J.J. Moskal, M.M. Kokar, K. Abe, J. Smith
Inference and Ontologies, In A. Kott, C. Wang, and R. F. Erbacher, editors, Cyber Defense and Situational Awareness, Springer, 2014, 167-199

L. Grande, M. Sherman, H. Zhu, M.M. Kokar, J. Stine
IEEE DySPAN 1900.5 Efforts To Support Spectrum Access Standardization, 2013 IEEE Military Communications Conference (MILC OM 2013), San Diego, 2013

D. Suresh, M.M. Kokar, J. Moskal
Prototyping SCA Transceiver APIs Using a Generic Reasoner API, SDR Winn-Comm: Wireless Innovation Forum Conference on Wireless Communications Technologies and Software Defined Radio, Washington D.C., 2013

B. Ulicny, J. Moskal, M.M. Kokar
Situational Awareness from Social Media, Proceedings of the Eighth Conference on Semantic Technologies for Intelligence, Defense, and Security, Fairfax, VA, 2013, 87-92

L. Lechowicz, M.M. Kokar
Waveform Reconstruction from Ontological Description, Journal of Analog Integrated Circuits and Signal Processing, Published electronically, 2013

S. Li, M.M. Kokar
Flexible Adaptation in Cognitive Radios, Springer, Springer New York Heidelberg Dordrecht London, 2012

SELECTED RESEARCH PROJECTS

Detection and Learning of Unexpected Behaviors of Systems of Dynamical Systems by Using the Q2 Abstractions
Principal Investigator, Air Force Research Laboratory

YING-YEE KONG

Associate Professor, Speech Language Pathology and Audiology; affiliated faculty, Bioengineering

PhD, University of California, Irvine, 2004
bioe.neu.edu/people/kong-ying-yee

Scholarship focus: auditory perception in hearing-impaired and cochlear-implant listeners

SELECTED PUBLICATIONS

Y.-Y. Kong, A. Mullangi, K. Kokkinakis
Classification of Fricative Consonants for Speech Enhancement in Hearing Devices, PLOS One, 9(4), 2014, e95001

R.W. Schlosser, Howard C. Shane, Ying-Yee Kong, et al.
Effects of Environmental Sounds on the Guessability of Animated Graphic Symbols, Augmentative and Alternative Communication, 30(4), 2014, 298-313

T. Lee, S. Yu, M. Yuan, T. Wong, Y.-Y. Kong
The Effect of Enhancing Temporal Periodicity Cues on Cantonese Tone Recognition by Cochlear Implantees, International Journal of Audiology, 53(8), 2014, 546-557

Y.-Y. Kong, A. Mullangi
Using a Vocoder-based Frequency-lowering Method and Spectral Enhancement to Improve Place-of-articulation Perception for Hearing-impaired Listeners, Ear and Hearing, 34, 2013, 300-312

Y.-Y. Kong, A. Mullangi
On the Development of a Frequency-Lowering System that Enhances Place-of-Articulation Perception, Speech Communication 54, 2012, 147-160

SELECTED RESEARCH PROJECTS

Hearing Acuity Cognitive Aging and Memory for Speech
Principal Investigator, National Institutes of Health

Speech Perception with Combined Electric and Acoustic Stimulation
Principal Investigator, National Institutes of Health

ABIGAIL KOPPES

Assistant Professor, Chemical Engineering

PhD, Rensselaer Polytechnic Institute, 2013
che.neu.edu/people/koppes-abigail

Scholarship focus: bioelectric medicine, development of novel interventions and tissue engineered platforms for nerve regeneration and repair, body-on-a-chip for enteric-gut interactions

SELECTED PUBLICATIONS

A.N. Koppes, K.W. Keating, A.L. McGregor, R.A. Koppes, K.R. Kearns, et. al.
Robust Neurite Extension Following Exogenous Electrical Stimulation within Single Walled Carbon Nanotube-composite Hydrogels, Acta Biomaterialia, 39, 2016, 34-43

S. Hosic, S.K. Murthy, A.N. Koppes
Microfluidic Sample Preparation for Single Cell Analysis, Analytical Chemistry, 88(1), 2015, 354-380

A.N. Koppes, D.M. Thompson
Neural Innervation of Engineered Musculoskeletal Tissues, Regenerative Engineering of Musculoskeletal Tissues and Interfaces, 2015, 293-323

D.M. Thompson, A.N. Koppes, J.G. Hardy, C.E. Schmidt
Electrical Stimuli in the Central Nervous System Microenvironment, Annual Review of Biomedical Engineering,16, 2014, 397-430

A.N. Koppes, N.W. Zaccor, C.J Rivet, L.A. Williams, J.M. Piselli, R.J. Gilbert, D.M. Thompson
Neurite Outgrowth on Electrospun PLLA Fibers is Enhanced by Exogenous Electrical Stimulation, Journal of Neural Engineering, 11(4), 2014, 046002

A.N. Koppes, A.L. Nordberg, G. Paolillo, H. Darwish, et al.
Electrical Stimulation of Schwann Cells Promotes Sustained Increases in Neurite Outgrowth, Tissue Engineering A, 20(3-4), 2014, 494-506

B. Behan, D. DeWitt, D. Bogdanowicz, A.N. Koppes, et al.
Cytotoxicity of Single Walled Carbon Nanotubes on Schwann Cells in 2D and 3D Microenvironments towards the Development of an Electrically Conductive Hydrogel for Neural Engineering, Journal of Biomedical Materials Research Part A, 96(1), 2011, 46-57

A.N. Koppes, A.M. Seggio, D.M. Thompson
Neurite Outgrowth is Significantly Increased by the Simultaneous Presentation of Schwann Cells and Moderate Exogenous Electric Fields, Journal of Neural Engineering, 8(4), 2011, 046023

RYAN KOPPES

Assistant Professor, Chemical Engineering

PhD, Rensselaer Polytechnic Institute, 2013
che.neu.edu/people/koppes-ryan

Scholarship focus: neural interface technology; tissue engineering; and musculoskeletal biomechanics

SELECTED PUBLICATIONS

R. Koppes, D. Swank, et al.
A New Experimental Model to Study Force Depression: The Drosophila Jump Muscle, Journal of Applied Physiology, 166(12), 2014, 1543-1550

C. Lu, U.P. Froriep, R. Koppes, et al.
Polymer Fiber Probes Enable Optical Control of Spinal Cord and Muscle Function in Vivo, Advanced Functional Materials, 24(42), 2014, 6594-6600 *Cover Art

N. Schiele, R. Koppes, D. Chrisey, D.T. Corr
Engineering Cellular Fibers for Musculoskeletal Soft Tissues Using Directed Self-assembly, Tissue Engineering: Part A, 19(9-10), 2013, 1223-1232

S. Park, R.A. Koppes, U.P. Froriep, X. Jia, A. Harapanahalli, B. McLaughlin, P. Anikeeva
Optogenetic Control of Nerve Growth, Scientific Reports, 5(9669), 2015

A. Canales, X. Jia, U.P. Froriep, R.A. Koppes, C.M. Tringides, J. Selvidge, C. Lu, C. Hou, L. Wei, Y. Fink, P. Anikeeva
Multimodality Fibers for In-Vivo Simultaneous Optical, Electrical and Chemical Communications with Neural Circuits, Nature Biotechnology, 33(3), 2015, 277-284

HARIS KOUTSOPOULOS

Professor, Civil and Environmental Engineering

PhD, Massachusetts Institute of Technology, 1986
civ.neu.edu/people/koutsopoulos-haris

Scholarship focus: urban transportation networks and informatics, urban mobility, intelligent transportation systems, public transportation operations

SELECTED PUBLICATIONS

G. Goulet Langlois, H.N. Koutsopoulos, J. Zhao
Inferring Patterns in the Multi-week Activity Sequences of Public Transport Users, Transportation Research C, 64, 2016, 1-16

G. Sanchez-Martinez, H.N. Koutsopoulos, N.H.M. Wilson
Real-time Holding Control for High-frequency Transit with Dynamics, Transportation Research B, 83, 2016, 1–19

E. Van der Hurk, H.N. Koutsopoulos, N.H.M. Wilson, L.G. Kroon, G. Maroti
Shuttle Planning for Link Closures in Urban Public Transport Networks, Transportation Science, 2016

A. O'Sullivan, F. Pereira, J. Zhao, H.N. Koutsopoulos
Uncertainty in Bus Arrival Time Predictions: Treating Heteroscedasticity with a Meta-Model Approach, IEEE Intelligent Transportation Systems Transactions, 2016

A. Tympakianaki, H.N. Koutsopoulos, E. Jenelius
c-SPSA: Cluster-wise Simultaneous Perturbation Stochastic Approximation Algorithm and its Application to Dynamic Origin-destination Matrix Estimation, Transportation Research Part C, 55, 2015, 231-245

E. Jenelius, H.N. Koutsopoulos
Impact of Sampling Protocol on Bias and Consistency in Travel Time Estimation of Probe Vehicle Data, Transportation Research Part B, 71, 2015, 120-137

E. Jenelius, H.N. Koutsopoulos
Probe Vehicle Data Sampled by Time or Space: Consistent Travel Time Allocation and Estimation, Transportation Research Part B: Methodological, 71, 2015, 120-137

SELECTED RESEARCH PROJECTS

Transport for London (TfL) Research Partnership
Principal Investigator, TfL

Mass Transit Railway (MTR) Research Partnership
Principal Investigator, MTR

GREGORY KOWALSKI

Director, Professional Maters of Science in Energy Systems Program; Associate Professor, Mechanical and Industrial Engineering

PhD, University of Wisconsin, 1978
mie.neu.edu/people/kowalski-gregory

Scholarship focus: energy related and calorimeter studies related to pharmaceutical developments; simulation of thermal effects on laser beam propagation through heated materials; simulating microscale heat transfer phenomena and its effects on laser beam propagation; Simulation of laser welding processes

Honors and awards: Fellow, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

A.J. Conway, W.M. Saadi, F.L. Sinatra, G.J. Kowalski, D. Larson, J. Fiering
Dispersion of a Nanoliter Bolus in Microfluidic Co-flow, Journal of Micromechanics and Microengineering: Structures, Devices, and Systems, 24(3), 2014, 034006

U. Piana, G.J. Kowalski, M. Zenouzi
Incorporating Reliability and Failure Models into Energy System Analysis, Proceedings of the 8th International Conference on Energy Sustainability co-located with the 12th Fuel Cell Science, Engineering & Technology Conference, Boston, MA, 2014, 1-9

A. Emdadi, Y. Emami, M. Zenouzi, A. Lak, B. Panahirad, A. Lotfi, F. Lak, G.J. Kowalski
Potential Of Electricity Generation By The Salinity Gradient Energy Conversion Technologies in the System of Urmia Lake-Gadarchay River, Proceedings of the 8th International Conference on Energy Sustainability Co-located with the 12th Fuel Cell Science, Engineering & Technology Conference, Boston, MA, 2014, 1-8

G.J. Kowalski, M. Modaresifar, M. Zenouzi
Significance of Transient Exergy Terms in a New Tray Design Solar Desalination Device, Journal of Energy Resources Technology, 137(1), 2014, 1-8

SELECTED RESEARCH PROJECTS

Energy Storage Systems
Principal Investigator, 3 Phase Renewables

ARTHUR F. KRAMER

Senior Vice Provost for Research & Graduate Education, Office of the Provost; Professor, Department of Psychology; Professor, Mechanical and Industrial Engineering

PhD, University of Illinois, 1984
mie.neu.edu/people/kramer-arthur

Scholarship focus: cognitive psychology, cognitive neuroscience, aging, and human factors

Honors and awards: NIH Ten Year MERIT Award; Fellow, American Psychological Association; Fellow, American Psychological Society

SELECTED PUBLICATIONS

L. Chaddock-Heyman, K.I. Erickson, M.A. Chappel, C.L. Johnson, C. Kienzler, A. Knecht, E.S. Drolette, L.B. Raine, M.R. Scudder, S.C. Kao, C.H. Hillman, A.F. Kramer
Aerobic Fitness is Associated with Greater Hippocampal Cerebral Blood Flow in Children, Developmental Cognitive Neuroscience, 20, 2016, 52-58

D.M. Pindus, E.S. Drollette, M.R. Scudder, N.A. Khan, L.B. Raine, L.B. Sherar, D.W. Esliger, A.F. Kramer, C.H. Hillman
Associations Among Moderate to Vigorous Physical Activity, Indices of Cognitive Control, and Academic Achievement in Preadolescents, The Journal of Pediatrics, 173, 2016, 136-142

M.W. Voss, T.B. Weng, A.Z. Burzynska, C.N. Wong, R. Clark, J. Fanning, R. Awick, E.O. Olson, E. McAuley, A.F. Kramer
Fitness, but not Physical Activity, is Related to Functional Integrity of Brain Networks Associated with Aging, Neuroimage, 131, 2016, 113-125

J.G. Gaspar, N. Ward, M.B. Neider, J. Crowell, R. Carbonari, H. Kaczmarski, R.V. Ringer, A.P. Johnson, A.F. Kramer, L. Loschky
Measuring the Useful Field of View with Gaze-contingent Displays, Human Factors, 58(4), 2016, 630-641

L.E. Oberlin, T.D. Verstynen, A.Z. Burzynska, M.W. Voss, R.S. Prakash, L. Chaddock-Heyman,C. Wong, J. Fanning, E., Awick, N. Gothe, S.M. Phillips, E. Maliey, D. Ehlers, E. Olson,T.Wojiciki, E. Mcauley, A.F. Kramer, K.I. Erickson
White Matter Microstructure Mediates the Relationship Between Cardiorespiratory Fitness and Spatial Working Memory in Older Adults, Neuroimage, 131, 2016, 91-101

SELECTED RESEARCH PROJECTS

Enhancing Children's Cognitive and Brain Health Through Physical Activity Training
Principal Investigator, National Institute of Child Health and Human Development

Reshaping the Path of Mild Cognitive Impairment by Refining Exercise Prescription: Understanding Training Type and Exploring Mechanisms
Principal Investigator, Canadian Institutes of Health

PHILIP LARESE-CASANOVA

Associate Professor, Civil and Environmental Engineering

PhD, University of Iowa, 2006
civ.neu.edu/people/larese-casanova-philip

Scholarship focus: environmental chemistry and mineralogy; transformation and remediation of water pollutants; nanomaterial sorbents for water treatment

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

N. Cai, D. Peak, P. Larese-Casanova
Factors Influencing Natural Organic Matter Sorption onto Commercial Graphene Oxides, Chemical Engineering Journal, 273, 2015, 568-579

A.E.P. Schellenger, A. Onnis-Hayden, D. Jaisi, P. Larese-Casanova
Oxygen Kinetic Isotope Effects in Selenate during Microbial Reduction, Applied Geochemistry, 63, 2015, 261-271

P. Paydary, P. Larese-Casanova
Separation and Quantification of Quantum Dots and Dissolved Metal Cations by Size Exclusion Chromatography-ICP-MS, International Journal of Environmental Analytical Chemistry, 95(15), 2015, 1450-1470

N. Cai, P. Larese-Casanova
Sorption of Carbamazepine by Commercial Graphene Oxides: A Comparative Study with Granular Activated Carbon and Multiwalled Carbon Nanotubes, Journal of Colloid and Interface Science, 426, 2014, 152-161

A.E.P. Schellenger, P. Larese-Casanova
Oxygen Isotope Indicators of Selenate Reaction with Fe(II) and Fe(III) Hydroxides, Environmental Science and Technology, 47(12), 2013, 6254-6262

SELECTED RESEARCH PROJECTS

CAREER: Quantum Dot Degradation in Aquatic Environments
Principal Investigator, National Science Foundation

Insights to Selenium Cycling and Remediation Revealed by Stable Oxygen Isotopes
Principal Investigator, National Science Foundation

Recrystallization of Stable Iron Oxides in Reducing Environments
Principal Investigator, National Science Foundation

CAROLYN LEE-PARSONS

Associate Professor, Chemical Engineering; jointly appointed, Chemistry; affiliated faculty, Bioengineering

PhD, Cornell University, 1995
che.neu.edu/people/lee-parsons-carolyn

Scholarship focus: production of valuable pharmaceutical compounds from plant cell cultures, specifically the production of important anti-cancer drug molecules from cell cultures of *Catharanthus roseus*

Honors and awards: National Science Foundation CAREER Award; College of Engineering Outstanding Teaching Award

SELECTED PUBLICATIONS

L. Kirchner, A. Wirshing, L. Kurt, T. Reinard, J. Glick, E.J. Cram, H-J. Jacobsen, C.W.T. Lee-Parsons
Identification, Characterization, and Expression of Diacylglycerol Acyltransferase Type-1 from *Chlorella vulgaris*, Algal Research, 13, 2016, 167-181

N. Rizvi, M. Cornejo, K. Stein, J. Weaver, E.J. Cram, C.W.T. Lee-Parsons
An Efficient Transformation Method for Estrogen-inducible Transgene Expression in *Catharanthus roseus* Hairy Roots, Plant Cell, Tissue and Organ Culture (PCTOC), 120(2), 2015, 475-487

J. Weaver, S. Goklany, N. Rizvi, E.J. Cram, C.W.T. Lee-Parsons
Optimizing the Transient Fast Agro-mediated Seedling Transformation (FAST) Method in *Catharanthus roseus* Seedlings, Plant Cell Reports, 33(1), 2014, 89-97

S. Goklany, N. Rizvi, R.H. Loring, E.J. Cram, C.W.T. Lee-Parsons
Jasmonate-dependent Alkaloid Biosynthesis in *Catharanthus roseus* is Correlated with the Relative Expression of Orca and Zct Transcription Factors, Biotechnology Progress, 29(6), 2013, 1367-1376

N. Rizvi, S. Goklany, E.J. Cram, C.W.T. Lee-Parsons
Rapid Increases of Key Regulators Precede the Increased Production of Pharmaceutically Valuable Compounds in *Catharanthus roseus*, Pharmaceutical Engineering, 33(6), 2013, 1-8

R.M. Gathungu, J.T. Oldham, S.S. Bird, C.W.T. Lee-Parsons, P. Vouros, R. Kautz
Application of an Integrated LC-UV-MS-NMR Platform to the Identification of Secondary Metabolites from Cell Cultures: Benzophenanthridine Alkaloids from Elicited *Eschscholzia californica* (California poppy) Cell Cultures, Analytical Methods, 4, 2012, 1315-1325

SELECTED RESEARCH PROJECTS

Transcriptional Control of Alkaloid Biosynthesis in *Catharanthus roseus* Cultures
Principal Investigator, National Science Foundation

Zinc Finger (ZCT) Transcription Factors: Pivotal Regulators of Growth, Development, and Alkaloid Biosynthesis in *Catharanthus roseus*
Principal Investigator, National Science Foundation

MIRIAM LEESER

Professor and Interim Chair, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Cambridge University, 1988
ece.neu.edu/people/leeser-miriam

Scholarship focus: accelerators for compute intensive applications: reconfigurable hardware and graphics processing units (GPUs); applications including biocomputing, machine learning, software-defined radio; uses and implementations of computer arithmetic

SELECTED PUBLICATIONS

M. Sabbagh, M. Uecker, A.J. Powell, M. Leeser, M.H. Moghari
Cardiac MRI Compressed Sensing Image Reconstruction with a Graphics Processing Unit, International Symposium on Medical Information and Communication Technology (ISMICT), 2016

R. Subramanian, B. Drozdenko, E. Doyle, R. Ahmed, M. Leeser, K.R. Chowdhury
High-level System Design of IEEE 802.11b Standard-compliant Link Layer for MATLAB-based SDR, IEEE Access, 4, 2016, 149-1509

B. Drozdenko, M. Zimmermann, T. Dao, K. Chowdhury, M. Leeser
Modeling Considerations for the Hardware-Software Co-design of Flexible Modern Wireless Transceivers, 22nd International Conference on Field Programmable Logic and Applications (FPL), 2016

X. Fang, M. Leeser
Open-source Variable-precision Floating-point Library for Major Commercial FPGAs, ACM Transactions on Reconfigurable Technology Systems, 9(3), 2016

N. Moore, M. Leeser, L. Smith
King Kernel Specialization Provides Adaptable GPU Code for Particle Image Velocimetry, IEEE Transactions on Parallel and Distributed Systems, 26(4), 2015, 1049-1058

M. Leeser, S. Mukherjee, J. Brock
Fast Reconstruction of 3D Volumes from 2D CT Projection Datawith GPUs, Biomed Central Research Notes, 7(528), 2014

X. Wang, M. Leeser
VFloat: A Variable Precision Fixed and Floating-point Library for Reconfigurable Hardware, ACM Transactions on Reconfigurable Technology and Systems, 3(3), 2010, 1-34

X. Wang, M. Leeser
K-means Clustering for Multispectral Images Using Floating point Divide, IEEE Symposium on Field-programmable Custom Computing Machines (FCCM), 2007, 151-162

SELECTED RESEARCH PROJECTS

Ensuring Reliability and Portability of Scientific Software for Heterogeneous Architectures
Co-Principal Investigator, National Science Foundation

Hardware/Software Implementations of WiFi and LTE Communications
Principal Investigator, Mathworks

BRAD LEHMAN

Professor, Electrical and Computer Engineering

PhD, Georgia Institute of Technology, 1992
ece.neu.edu/people/lehman-bradley

Scholarship focus: power electronics; dc-dc converters; pulse width modulation; motion control; electric motor drives; analog circuits; control theory; differential equations; time delays; nonlinear systems and control; industrial control

SELECTED PUBLICATIONS

J.-H. Huang, Y. Zhao, B.Lehman
Fast Reconfigurable Photovoltaic Switching Cell Integrated within DC-DC Converters, Proceedings of the IEEE Applied Power Electronics Conference and Exposition (APEC), Fort Worth, TX, 2014, 629-636

S. Chen, P. Li, B. Lehman, R. Ball, J.F. de Palma
A New Topology of Bridge-Type Non-Superconducting Fault Current Limiter, IEEE Applied Power Electronics Conference and Exposition (APEC), Long Beach, CA, 2013

S. Chen, P. Li, D. Brady, B. Lehman
Determining the Optimum Grid-Connected Photovoltaic Inverter Size, Solar Energy, 87, 2013, 96-116

Y. Zhao, B. Lehman, R. Ball and J.-F. de Palma
Graph-based Semi-supervised Learning for Fault Detection and Classification in Solar Photovoltaic Arrays, in Fifth IEEE Energy Conversion Congress & Exposition (ECCE), Denver, CO, 2013

Y. Zhao, J. de Palma, J. Mosesian, R. Lyons, B. Lehman
Line-line Fault Analysis and Protection Challenges in Solar Photovoltaic Arrays, IEEE Transactions on Industrial Electronics, IEEE Transactions on Industrial Electronics, 60(9), 2013, 3784-3795

SELECTED RESEARCH PROJECTS

A Multi-Model Machine Learning-Solar Forecasting Technology
Principal Investigator, United States Department of Energy

Advanced 100W Solar Blanket for Squad Power
Principal Investigator, Department of Defense

DANIELLE LEVAC

Assistant Professor, Physical Therapy, Movement and Rehabilitation Science; affiliated faculty, Bioengineering

PhD, McMaster University, 2012
bioe.neu.edu/people/levac-danielle

Scholarship focus: virtual reality; video games; motor learning; rehabilitation; physical therapy; cerebral palsy; stroke; knowledge translation

SELECTED PUBLICATIONS

D. Levac, J. Nawrotek, E. Deschenes, T. Giguere, J. Serafin, M. Bilodeau, H. Sveistrup
Development and Reliability Evaluation of the Movement Rating Instrument for Virtual Reality Video Game Play, JMIR Serious Games, 4(1), 2016

C. Dematteo, M. Rubinoff, D. Greenspoon, D. Levac
Evaluating the Contribution of the Nintendo Wii in Assessing Return to Activity Readiness in Youth With Mild Traumatic Brain Injury, Physical and Occupational Therapy in Pediatrics, 34(3), 2014, 229-244

D. Levac, P. Miller
Integrating Virtual Reality Video Games into Therapy: Clinician's Experiences, Physiotherapy Theory Practice, 29(7), 2013, 504-512

D. Levac, C. Missiuna, L. Wishart, C. DeMatteo, V. Wright
The Motor Learning Strategy Instrument: Inter-rater Reliability Within Usual and Virtual Reality Physical Therapy Interventions, Pediatric Physical Therapy, 25(1), 2013, 53-60

D. Levac, J. Galvin
When is Virtual Reality 'Therapy'?, Archives of Physical Medicine and Rehabilitation, 94(4), 2013, 795-798

J. Janssen, O. Verschuren, D. Levac, J. Ermers, M. Ketelaar
Structured Game-related Group Therapy for an Adolescent with Acquired Brain Injury: A Case Report, Journal of Pediatric Rehabilitation Medicine, 5(2), 2012, 125-132

D. Levac, L. Rivard, C. Missiuna
Describing the Active Ingredients of Interactive Computer Play Interventions for Children with Neuromotor Impairments: A Scoping Review, Research in Developmental Disabilities, 33, 2012, 214-223

D. Levac, P. Miller, C. Missiuna
Usual and Virtual Reality Video Game-based Physiotherapy Interventions for Children and Youth with Acquired Brain Injuries, Physical and Occupational Therapy in Pediatrics, 32(3), 2012, 180-195

SELECTED RESEARCH PROJECTS

Usability Evaluation of the FITBoard: A Motivating, Movement-based Rehabilitation Tool for Children with Disabilities
Principal Investigator, Deborah C. Noonan Memorial Research Fund

Does Narrative Feedback Enhance Motor Learning of a Virtual Balance Task for Children with Cerebral Palsy?
Co-Principal Investigator, Northeastern University

HANOCH LEV-ARI

Professor, Electrical and Computer Engineering

PhD, Stanford University, 1984
ece.neu.edu/people/lev-ari-hanoch

Scholarship focus: adaptive filtering; statistical signal processing; spectrum analysis and estimation; networked dynamic state estimation

Honors and awards: Fellow, Institute of Electrical and Electronics Engineers

SELECTED PUBLICATIONS

P. Hajiyani, H. Lev-Ari and A.M. Stankovic
Mitigating Bad Data and Measurement Delay in Nonlinear Dynamic State Estimation, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), Montreal, Canada, 2016

P. Ren, H. Lev-Ari, A. Abur
Robust Continuous-discrete Kalman Filter for Estimating Machine States with Model Uncertainties, 19th Power Systems Computation Conference (PSCC), Genoa, Italy, 2016

P. Argyropoulos, H. Lev-Ari, A. Abur
Subband Transmission Line Modeling for Robust Power System Transient Simulation, IEEE PES General Meeting, Denver, 2015

P.E. Argyropoulos, H. Lev-Ari
Wavelet Customization for Improved Fault Location Quality in Power Networks, IEEE Transactions on Power Delivery, 30(5), 2015, 2215-2223

B. Yan, H. Lev-Ari, A.M. Stankovic
Robust Continuous-discrete Kalman Filter for Time-stamped Delay Mitigation in Networked Estimation and Control Systems, 46th North American Power Symposium, Pullman, 2014

L. Peng, H. Lev-Ari
Estimating the Autocorrelation Function of an Arbitrarily Time-variant System Response, IEEE International Conference on Acoustics, Speech and Signal Processing, Vancouver, BC, May 2013, 6249-6253

P. Argyropoulos, H. Lev-Ari, A.M. Stankovic
IIR Phasor-banks: Causal, Delay-free, Numerically Robust, Customizable Uniform-DFT-Like Perfect Reconstruction Filter Banks, IEEE International Conference on Acoustics, Speech and Signal Processing, Vancouver, BC, 2013, 5613-5617

SELECTED RESEARCH PROJECTS

Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks (CURENT)
Co-Principal Investigator, National Science Foundation

Cyber-physical Models for Estimation, Control and Fault Management in Naval Energy Systems
Principal Investigator, Office of Naval Research

YIANNIS LEVENDIS

COE Distinguished Professor, Mechanical and Industrial Engineering

PhD, California Institute of Technology, 1987
mie.neu.edu/people/levendis-yiannis

Scholarship focus: gasification and combustion of solid fuels, generation and containment of combustion-generated pollution, synthesis and characterization of combustion-generated materials, fire suppression – fire extinction, engine design and operation

Honors and awards: Fellow, American Society of Mechanical Engineers; Fellow, Society of Automotive Engineers; Søren Buus Outstanding Research Award, College of Engineering; George Westinghouse Gold Medal, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

J. Chase, C. Zhuo, Y.A. Levendis
A Feasibility Study on Power Generation from Waste Plastics with Partial Pre-Combustion Carbon Capture and Conversion, Journal of Energy Engineering (ASCE), 141(2), 2015

A. Ruscio, F. Kazanc, Y.A. Levendis
Characterization of Particulate Matter Emitted from Combustion of Various Biomasses in O_2/N_2 and O_2/CO_2 Environments, Energy and Fuels, 28, 2014, 685-696

J. Riaza, R. Khatami, Y.A. Levendis, L. Álvarez, et al.
Combustion of Single Particles of Waste Biomasses in Air and in Oxy-Fuel Conditions, Biomass & Bioenergy, 64, 2014, 162-174

C. Zhuo, W. Nowak, Y.A. Levendis
Oxidative Heat Treatment of 316L Stainless Steel for Effective Catalytic Growth of Carbon Nanotubes, Applied Surface Science, 313, 2014, 227-236

A. Davies, R. Soheilian, C. Zhuo, Y.A. Levendis
Pyrolytic Conversion of Biomass Residues to Gaseous Fuels for Electricity Generation, Journal of Energy Resources Technology, Transactions of ASME, 136(2), 2014, 021101-021106

J. Riaza, R. Khatami, Y.A. Levendis, L. Álvarez, et al.
Single Particle Ignition and Combustion of Anthracite, Semi-anthracite and Bituminous Coals in Air and Simulated Oxy-fuel Conditions, Combustion and Flame, 161, 2014, 1096-1108

C. Zhuo, Y.A. Levendis
Up-cycling Waste Plastics into Carbon Nanomaterials: A Review, Journal of Applied Polymer Science, 131, 2014, 39931-39944

SELECTED RESEARCH PROJECTS

Co-firing Illinois Bituminous Coals with Highly-fragmenting Lignite Coals for SO_x/HCl Control
Principal Investigator, Illinois Clean Coal Institute

KIM LEWIS

University Distinguished Professor, Director, Antimicrobial Discovery Center, Biology; affiliated faculty, Bioengineering

PhD, Moscow University, 1980
bioe.neu.edu/people/lewis-kim

Scholarship focus: molecular microbiology; antimicrobial drug tolerance; drug discovery

SELECTED PUBLICATIONS

B.P. Conlon, S.E. Rowe, A. Brown Gandt, A.S. Nuxoll, N.P. Donegan, E.A. Zalis, G. Clair, J.N. Adkins, A.L. Cheung, K. Lewis
ATP Depletion is Associated with Antibiotic Tolerance in *Staphylococcus aureus*, Nature Microbiology, 1, 2016, 1-7

M.A. Schumacher, P. Balani, J. Min, N.B. Chinnam, S. Hansen, M. Vulic, K. Lewis*, R.G. Brennan*
HipAB–promoter Structures Reveal the Basis of Heritable Multidrug Tolerance, Nature, 524, 2015, 59-64
*co-corresponding authors

L.L. Ling, T. Schneider, A.J. Peoples, A.L. Spoering, I. Engels, B.P. Conlon, A. Mueller, T.F. Schäberle, D.E. Hughes, S. Epstein, M. Jones, L. Lazarides, V.A. Steadman, D.R. Cohen, C.R. Felix, K.A. Fetterman, W.P. Millett, A.G. Nitti, A.M. Zullo, C. Chen, K. Lewis
A New Antibiotic Kills Pathogens Without Detectable Resistance, Nature, 517, 2015, 455-459

B. Sharma, A.V. Brown, N.E. Matluck, L.T. Hu, K. Lewis
Borrelia burgdorferi, the Causative Agent of Lyme Disease, Forms Drug-tolerant Persister Cells, Antimicrob Agents Chemother, 59, 2015, 4616-4624

E. Gavrish, C.S. Sit, S. Cao, O. Kandror, A. Spoering, A. Peoples, L. Ling, A. Fetterman, D. Hughes, A. Bissell, H. Torrey, T. Akopian, A. Mueller, S. Epstein, A. Goldberg, J. Clardy, K. Lewis
Lassomycin, a Ribosomally Synthesized Peptide, Kills Mycobacterium Tuberculosis by Targeting the ATP-dependent Protease ClpC1P1P2, Chemistry and Biology, 21, 2014, 509-518

B.P. Conlon, E.S. Nakayasu, L.E. Fleck, M.D. LaFleur, V.M. Isabella, K. Coleman, S.N. Leonard, R.D. Smith, J.N. Adkins, K. Lewis
Activated ClpP Kills Persisters and Eradicates a Chronic Biofilm Infection, Nature, 503, 2013, 365-370

K. Lewis
Platforms for Antibiotic Discovery, Nature Reviews Drug Discovery, 12, 2013, 371-387

I. Keren, Y. Wu, J. Innocencio, L. Mulcahy, K. Lewis
Killing by Bactericidal Antibiotics Does Not Depend on Reactive Oxygen Species, Science, 339, 2013, 1213-1216

K. Lewis
Recover the Lost Art of Drug Discovery, Nature, 485, 2012, 439-440

SELECTED RESEARCH PROJECTS

The Mechanism of Persister Cell Drug Tolerance
Principal Investigator, National Institutes of Health

Uncultured Bacteria in Drug Discovery and the Human Microbiome
Principal Investigator, The Bill and Melinda Gates Foundation, The Kohen Foundation, The Global Lyme Alliance, Pazala Foundation

LAURA H. LEWIS

Cabot Professor, Chemical Engineering; jointly appointed, Mechanical and Industrial Engineering

PhD, University of Texas, 1993
che.neu.edu/people/lewis-laura

Scholarship focus: structure-property relationships in magnetofunctional materials including advanced permanent magnetic magnetocaloric materials; strategic materials for technological application

Honors and awards: Northeastern University Excellence in Research and Creative Activity Award; Fulbright Specialist; NATO Technical Team Member of AVT-231 on "Scarcity of Rare Earth Materials for Electrical Power Systems," appointed by U.S. National Coordinator

SELECTED PUBLICATIONS

B.D. Plouffe, S.K. Murthy, L.H. Lewis
Fundamentals and Application of Magnetic Particles in Cell Isolation and Enrichment: A Review, Reports on Progress in Physics, 78(1), 2015, 016601

L.H. Lewis, F.E. Pinkerton, et al.
De Magnete et Meteorite: Cosmically-motivated Materials, IEEE Magnetics Letters, 5, 2014

R. McCallum, L.H. Lewis, R. Skomski, M.J. Kramer, I.E. Anderson
Practical Aspects of Modern and Future Permanent Magnets, Annual Review of Materials Research, 44(1), 2014, 451-477

L.H. Lewis, F. Jiménez-Villacorta
Perspectives on Permanent Magnetic Materials for Energy Conversion and Power Generation, Metallurgical and Materials Transactions A, 44(1), 2013, 2-20

G. Srajer, L.H. Lewis, S.D. Bader, et al.
Advances in Nanomagnetism via X-ray Techniques, Review Article, Journal of Magnetism and Magnetic Materials, 307(1), 2006, 1-31

SELECTED RESEARCH PROJECTS

New Exchange-couple Manganese-based Magnetic Materials
Co-Principal Investigator, Spanish Research Council

Promotion and Control of $L1_0$ FeNi Phase Formation for Permanent Magnet Applications
Principal Investigator, Rogers Corporation

Program in Engineered Mat'ls and Materials Design of Engineered Mat'ls
Co-Principal Investigator, Army Research Office

Sustainable Permanent Magnets For Advanced Applications
Principal Investigator, National Science Foundation

Rapid Assessment oF AlT_2X_2 (T = Fe, Co, Ni, X = B, C) Layered Materials for Sustainable Magnetocaloric Applications
Principal Investigator, Department of Energy

XUE LIN

Assistant Professor, Electrical and Computer Engineering

PhD, University of Southern California, 2016
ece.neu.edu/people/lin-xue

Scholarship focus: near-threshold computer for low-power embedded systems; high-performance and mobile cloud computing systems; machine learning and computing in (embedded) cyber-physical systems

SELECTED PUBLICATIONS

Q. Xie, X. Lin, Y. Wang, S. Chen
Performance Comparisons Between 7nm Finfet and Conventional Bulk CMOS Standard Cell Libraries, IEEE Transaction Circuits and Systems II, 62(8), 2015, 761-765

Y. Wang, X. Lin, M. Pedram
A Near-optimal Model-based Control Algorithm for Households Equipped with Residential Photovoltaic Power Generation and Energy Storage Systems, IEEE Transaction Sustainable Energy, 2015, 1-10

X. Lin, Y. Wang, Q. Xie, M. Pedram
Task Scheduling with Dynamic Voltage and Frequency Scaling for Energy Minimization in the Mobile Cloud Computing Environment, IEEE Transaction Services Computing, 8(2), 2014, 175-186

Y. Wang, X. Lin, M. Pedram
A Stackelberg Game-based Optimization Framework of the Smart Grid with Distributed PV Power Generations and Data Centers, IEEE Transaction Energy Conversion, 29(4), 2014, 978-987

Y. Wang, X. Lin, Y. Kim, Q. Xie, M. Pedram, N. Chang
Single-source, Single Destination Charge Migration in Hybrid Electrical Energy Storage Systems, IEEE Transaction VLSI Systems, 22(12), 2014, 2752-2765

X. Lin, Y. Wang, M. Pedram, J. Kim, N. Chang
Designing Fault-tolerant Photovoltaic Systems, IEEE Design & Test (MDAT), 31(3), 2014, 76-84

Y. Wang, X. Lin, Y. Kim, N. Chang, M. Pedram
Architecture and Control Algorithms for Combatting Partial Shading in Photovoltaic Systems, IEEE Transaction Computer-Aided Design of Integrated Circuits and Systems, 33(6), 2014, 917-930

Y. Wang, X. Lin, M. Pedram
Adaptive Control for Energy Storage Systems in Households with Photovoltaic Modules, IEEE Transaction Smart Grid, 5(2), 2014, 992-1001

YINGZI LIN

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering

PhD, University of Saskatchewan, 2004
mie.neu.edu/people/lin-yingzi

Scholarship focus: human-machine interactions, interface design and user experiences, system integration and evaluation; smart systems and nonintrusive sensors, human friendly mechatronics, human state detection and information fusion; human factors in transportation and healthcare

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

M. Yu, Y. Lin, J. Breugelmans, X. Wang, G. Gao, X. Tang
A Spatial-temporal Trajectory Clustering Algorithm for Eye Fixations Identification, International Journal of Intelligent Data Analysis, 20(2), 2016, 377-393

P. Wan, C. Wu, Y. Lin, X. Ma, Z. Huang
A Recognition Model of Driving Anger Based on Belief Rule Base, Transportation Systems Engineering and Information, 15(5), 2015, 1-8

M. Yu, Y. Lin, X. Wang, D. Schmidt, Y. Wang
Human-robot Interaction Based on Gaze Gesture for the Drone Teleoperation, Journal of Eye Movement Research, 7(4), 2014, 1-14

S. Radhakrishnan, Y. Lin, A. Zeid, S. Kamarthi
Design, Evaluation and Implementation of Gesture Based Functions for CAD Modeling System Using the Multitouch Interface, International Journal of Human-computer Studies, 71(3), 2013, 261-275

H. Cai, Y. Lin
Coordinating Cognitive Assistances with Cognitive Engagement Control Approaches in Human-machine Interactions, IEEE Transactions on Systems, Man and Cybernetics Part A: Humans and Systems, 42(2), 2012, 286-294

Y. Lin
A Natural Contact Sensor Paradigm for Non-intrusive and Real-time Sensing of Bio-signals in Human-machine Interactions, IEEE Sensors Journal, Special Issue on Cognitive Sensor Networks, 11(3), 2011, 522-529

G. Yang, Y. Lin, P. Bhattacharya
A Driver Fatigue Recognition Model Based on Information Fusion and Dynamic Bayesian Network, Information Sciences, 180, 2010, 1942-1954

SELECTED RESEARCH PROJECTS

CAREER: Bridging Cognitive Science and Sensor Technology: Nonintrusive and Multimodality Sensing in Human Machine Interactions
Principal Investigator, National Science Foundation

Integrated Individualized Modeling towards Cognitive Control of Human-machine Systems
Principal Investigator, National Science Foundation

YONGMIN LIU

Assistant Professor, joint faculty appointment in Mechanical and Industrial Engineering and Electrical and Computer Engineering

PhD, University of California, Berkeley, 2009
mie.neu.edu/people/liu-yongmin

Scholarship focus: nano optics; nanoscale materials and engineering; nano devices; plasmonics; metamaterials; applied physics

Honors and awards: Office of Naval Research Young Investigator Award; 3M Non-Tenured Faculty Award; Air Force Summer Faculty Fellow

SELECTED PUBLICATIONS

K. Yao, Y.M. Liu
Controlling Electric and Magnetic Resonances for Ultracompact Nanoantennas with Tunable Directionality, ACS Photonics, 3, 2016, 953-963

W.L. Gao, F.Z. Fang, Y.M. Liu, S. Zhang
Chiral Surface Waves Supported by Biaxial Hyperbolic Metamaterials, Light: Science and Applications, 2015, e238

Z.B. Li, K. Yao, F.N. Xia, S. Shen, J.G. Tian, Y.M. Liu
Graphene Plasmonic Metasurfaces to Steer Infrared Light, Scientific Reports, 5, 2015, 12423

C.L. Zhao, Y.M. Liu, Y.H. Zhao, N. Fang, T.J. Huang
Reconfigurable Plasmofluidic Lens, Nature Communications, 4(2350), 2013, 1-8

Y.M. Liu, S. Palomba, Y. Park, T. Zentgraf, X.B. Yin, X. Zhang
Compact Magnetic Antennas for Directional Excitation of Surface Plasmons, Nano Letters, 12(9), 2012, 4853-4858

Y.M. Liu, X. Zhang
Metamaterials: A New Frontier of Science and Technology, Chemical Society Reviews, 40, 2011, 2494-2507

S.C. Kehr, Y.M. Liu, et al.
Near-field Examination of Perovskite-based Superlenses and Superlens-enhanced Probe-object Coupling, Nature Communications, 2(249), 2011, 1-9

T. Zentgraf, Y.M. Liu, M.H. Mikkelsen, J. Valentine, X. Zhang
Plasmonic Luneburg and Eaton Lenses, Nature Nanotechnology, 6, 2011, 151-155

Y. M. Liu, T. Zentgraf, G. Bartal, X. Zhang
Transformational Plasmon Optics, Nano Letters, 10(6), 2010, 1991-1997

J. Yao, Z. Liu, Y.M. Liu, Y. Wang, C. Sun, G. Bartal, et al.
Optical Negative Refraction in Bulk Metamaterials of Nanowires, Science, 321(5891), 2008, 930

SELECTED RESEARCH PROJECTS

Reconfigurable Metamaterials for Beam Steering, Imaging and Sensing at Infrared Frequencies
Principal Investigator, Office of Naval Research

CAROL LIVERMORE

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering, Electrical and Computer Engineering

PhD, Harvard University, 1998
mie.neu.edu/people/livermore-clifford-carol

Scholarship focus: MEMS-enabled systems for assistive technologies, energy harvesting, and microscale vacuum systems, tissue engineering via MEMS-enabled cell assembly and origami folding, carbon nanotube-based energy storage

Honors and awards: College of Engineering Faculty Fellow; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

S. Liu, C. Martin, D. Lashmore, M. Schauer, C. Livermore
Carbon Nanotube Torsional Springs for Regenerative Braking Systems, Journal of Micromechanics and Microengineering, 25(10), 2015, 104005

N.S. Shaar, G. Barbastathis, C. Livermore
Integrated Folding, Alignment, and Latching for Reconfigurable Origami MEMS, Journal of Microelectromechanical Systems, 24(4), 2015, 1043-1051

T. Liu, R. St. Pierre, C. Livermore
Passively-switched Energy Harvester for Increased Operational Range, Smart Materials and Structures, 23(9), 2014, e095045

X. Xie, Y. Zaitsev, L.F. Velásquez-García, S. Teller, C. Livermore
Scalable, MEMS-enabled, Vibrational Tactile Actuators for High Resolution Tactile Displays, Journal of Micromechanics and Microengineering, 24(12), 2014, 125014

A.S. Dighe, C. Livermore
Single-use MEMS Sealing Valve with Integrated Actuation for Ultra Low-leak Vacuum Applications, Journal of Micromechanics and Microengineering, 24(10), 2014, 105011

G. Agarwal, A. Servi, C. Livermore
Size-selective, Biocompatible, Manufacturable Platform for Structuring Deformable Microsystems, Lab on a Chip, 14(17), 2014, 3385-3393

F.A. Hill, T. Havel, D. Lashmore, M. Schauer, C. Livermore
Storing Energy and Powering Small Systems with Mechanical Springs Made of Carbon Nanotube Yarn, Energy, 76, 2014, 318-325

SELECTED RESEARCH PROJECTS

DMREF: Engineering Strong, Highly Conductive Nanotube Fibers Via Fusion
Co-Principal Investigator, National Science Foundation

EFRI-ODISSEI: Origami and Assembly Techniques for Human-Tissue-Engineering (OATH)
Principal Investigator, National Science Foundation

FABRIZIO LOMBARDI

ITC Endowed Professor, Electrical and Computer Engineering

PhD, University of London, 1982
ece.neu.edu/people/lombardi-fabrizio

Scholarship focus: Fault-tolerant computing; VLSI CAD; testing, configurable computing, distributed systems

Honors and awards: Fellow, Institute of Electrical and Electronics Engineers; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

J. Han, J. Liang, F. Lombardi
Analysis of Error Masking and Restoring Properties of Sequential Circuits, IEEE Transactions on Computers, 62(9), 2013, 1694-1704

K. Namba, W. Wei, F. Lombardi
Extending Non-Volatile Operation to DRAM Cells, IEEE Access, 1, 2013, 758-769

J. Han, J. Liang, F. Lombardi
New Metrics for the Reliability of Approximate and Probabilistic Adders, IEEE Transactions on Computers, 62(9), 2013, 1760-1771

G. Cho, F. Lombardi
On the Delay of a CNTFET with Undeposited CNTs by Gate Width Adjustment, Journal of Electronic Testing Theory and Applications, 29(3), 2013, 261-273

A.F. Almurib, T Nandha Kumar, F. Lombardi
Single-Configuration Fault Detection in Application-Dependent Testing of FPGA Interconnects, Proceedings of IET Computers and Digital Techniques, 7(3), 2013, 132-141

H. Feng, A.F. Almurib, T. Nandha Kumar, F. Lombardi
Testing a Nano Crossbar for Multiple Fault Detection, IEEE Transactions on Nanotechnology, 12(4), 2013, 477-485

STEVE LUSTIG

Associate Professor, Chemical Engineering

PhD, Purdue University, 1989
che.neu.edu/people/lustig-steve

Scholarship focus: design and manipulation of molecular/materials chemistry and structure for new property discovery, new functionality and technology development by combining theoretical and experimental methods; high performance computing, quantum chemistry, statistical mechanics, polymer physics, materials and biomolecular engineering

Honors and awards: American Institute of Chemical Engineers Industrial Research and Development Institute Award; DuPont Central Research & Development Accomplishment Award (9 awards); DuPont TechCon Award; DuPont Materials Science and Engineering Accomplishment Award (3 awards); Phi Lambda Upsilon; Sigma Xi; Plastics Institute of America National Fellowship; Purdue University Fellowship

SELECTED PUBLICATIONS

M.B. Shiflett, B.A. Elliott, S.R. Lustig, S. Sabesan, M.S. Kelkar, A. Yokozeki
Phase Behavior of CO2 in Room-temperature Ionic Liquid 1-Ethyl-3-Ethylimidazolium Acetate, Chem Phys Chem, 13, 2012, 1806-1817

R.H. French, V.A. Parsegian, R. Podgornik, R.F. Rajter, A. Jagota, J. Luo, D. Asthagiri, M.K. Chaudhury, Y.M. Chiang, S. Granick, S. Kalinin, M. Kardar, R. Kjellander, D.C. Langreth, J. Lewis, S. Lustig, et al.
Long Range Interactions in Nanoscale Science, Reviews of Modern Physics, 82(2), 2010

J.S. Meth, S.R. Lustig
Polymer Interphase Structure Near Nanoscale Inclusions: Comparison Between Random Walk Theory and Experiment, Polymer, 51, 2010, 4259-4266

C. Gu, S. Lustig, C. Jackson, B.L. Trout
Design of Surface Active Soluble Peptide Molecules at the Air/Water Interface, Journal of Physical Chemistry B, 112, 2008, 2970-2980

S.R. Lustig, A. Jagota, C. Khripin, M. Zheng
Theory of Structure-based Carbon Nanotube Separations by Ion-exchange Chromatography of DNA/CNT Hybrids, Journal of Physical Chemistry B, 109, 2005, 2559-2566

S.R. Lustig, E.D. Boyes, R.H. French, T.D. Gierke, et al.
Lithographically Cut Single-walled Carbon Nanotubes: Controlling Length Distribution and Introducing End-group Functionality, Nano Letters, 3, 2003, 1007-1012

S. Wang, E.S. Humphreys, S.Y. Chung, D.F. Delduco, S.R. Lustig, H. Wang, K.N. Parker, N.W. Rizzo, S. Subramoney, Y.M. Chiang
Peptides with Selective Affinity for Carbon Nanotubes, Nature Materials, 2, 2003, 196-200

DAVID LUZZI

Vice Provost for Research, Innovation, and Development; Vice President for the Innovation Campus at Burlington, MA; Professor, Mechanical and Industrial Engineering

PhD, Northwestern University, 1986
mie.neu.edu/people/luzzi-david

Scholarship focus: security, intelligence and resilience; corporate partnerships; intellectual property policy; technology readiness and transition; engineered materials; additive manufacturing; expeditionary cyber; cybersecurity; UAS swarms; workforce training and development

Honors and awards: Ellis Island Medal of Honor; Air Force Meritorious Civilian Service Medal; George Heilmeier Award for Research Innovation

SELECTED PUBLICATIONS

E. Abou-Hamad, Y. Kim, M. Bouhrara, Y. Saih, T. Wågberg, D.E. Luzzi, C. Goze-Bac
NMR Strategies to Study the Local Magnetic Properties of Carbon Nanotubes, Physics B: Condensed Matter, 407(4), 2012, 740-742

Y. Kim, E. Abou-Hamad, A. Rubio, T. Wågberg, AV Talyzin, D.E. Boesch, S. Aloni, A. Zettl, D. Luzzi, C. Goze-Bac
Communications: Nanomagnetic shielding: High-resolution NMR in carbon allotropes, The Journal of Chemical Physics, 132(2), 2010, 21102

E. Abou-Hamad, Y. Kim, T. Wågberg, D. Boesch, S. Aloni, A. Zettl, A. Rubio, D.E. Luzzi, C. Goze-Bac
Molecular Dynamics and Phase Transition in One-dimensional Crystal of C60 Encapsulated Inside Single Wall Carbon Nanotubes, ACS nano, 3(12), 2009, 3878-3883

E. Abou-Hamad, Y. Kim, A. Talyzin, C. Goze-Bac, D.E. Luzzi, C. Goze-Bac, A. Rubio, T. Wågberg
Hydrogenation of C60 in Peapods: Physical Chemistry in Nano Vessels, American Chemical Society, 113(2), 2009, 8583-8587

P. Jaroenapibal, Y. Jung, S.Evoy, D.E. Luzzi
Electromechanical Properties of Individual Single-walled Carbon Nanotubes Grown on Focused-ion-beam Patterned Substrates Ultramicroscopy, 109(2), 2009, 167-171

LEE MAKOWSKI

Professor and Chair, Bioengineering; jointly appointed, Chemistry and Chemical Biology; affiliated faculty, Electrical and Computer Engineering

PhD, Massachusetts Institute of Technology, 1976
bioe.neu.edu/people/makowski-lee

Scholarship focus: image and signal processing as applied to biophysical data designed to answer fundamental questions about the molecular basis of living systems

SELECTED PUBLICATIONS

J. Liu, J.I. Kim, J.C. Cusumano, C. Chapple, N. Venugopalan, R.F. Fischetti, L. Makowski
The Impact of Alterations in the Lignin Biosynthetic Pathway on Molecular Architecture of the Plant Cell Wall, 9, Biotechnology for Biofuels, 2016, 126-143

J. Badger, P. Grover, S.B. Panjarian, J.R. Engen, T.E. Smithgall, L. Makowski
The c-Abl Tyrosine Kinase Adopts Multiple Active Conformational States in Solution, 55, Biochemistry, 2016, 3251-3260

J. Viell, H. Inouye, N.K. Szekely, H. Frielinghaus, Y. Wang, N. Anders, A.C. Spiess, L. Makowski
Mechanisms of Wood Disintegration and Pretreatment with 1-ethyl-3-methylimidazolium Acetate/Water Mixtures, Biotechnology for Biofuels, 2016

H. Zhou, S. Li, L. Makowski
Visualizing Global Properties of a Molecular Dynamics Trajectory, Proteins: Structure Function and Bioinformatics, 84, 2016, 82-91

H. Zhou, S. Li, J. Badger, E. Nalivaika, Y. Cai, J. Foulkes-Murzycki, C. Schiffer, L. Makowski
Modulation of HIV Protease Flexibility by the T80N Mutation, Proteins: Structure Function and Bioinformatics, 83, 2015, 1929-1939

A.E. Onuk, M. Akcakaya, J. Bardhan, D. Erdogmus, D.H. Brooks, L. Makowski
Constrained Maximum Likelihood Estimation of Relative Abundances of Protein Conformation in a Heterogeneous Mixture from Small Angle X-Ray Scattering Intensity Measurements, IEEE Transactions on Signal Processing, 63, 2015, 5383-5394

SELECTED RESEARCH PROJECTS

Center for Direct Catalytic Conversion of Biomass to BioFuels (C3Bio)
Co-Investigator, Department of Energy

An Integrated Process for Identifying Lead Compounds for "Non-druggable" Targets using Biophysical Screening, X-ray Solution Scattering and Singlecrystal Diffraction
Principal Investigator, Zenobia Therapeutics, Inc.

Precise Characterization of Conformational Ensembles
Principal Investigator, National Science Foundation

CRAIG MALONEY

Associate Professor, Mechanical and Industrial Engineering

PhD, University of California, Santa Barbara, 2005
mie.neu.edu/people/maloney-craig

Scholarship focus: modeling, simulation, and theory of nanoscale mechanics, soft matter, and glasses and amorphous materials

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

A. Garg, A. Acharya, C.E. Maloney
A Study of Conditions for Dislocation Nucleation in Coarser-than-atomistic Scale Models, Journal of the Mechanics and Physics of Solids, 75, 2015, 76–92

K.M. Salerno, C.E. Maloney, M.O. Robbins
Avalanches in Strained Amorphous Solids: Does Inertia Destroy Critical Behavior?, Physical Review Letters, 109, 2012, e105703

A. Hasan, C.E. Maloney
Inferring Elastic Properties of an fcc Crystal from Displacement Correlations: Sub-space Projection and Statistical Artifacts, Physical Review E 90, 87(5-1), 2012, e062309

A. Hasan, C.E. Malonewy
Saddle-node Scalings in Homogeneous Dislocation Nucleation, International Journal for Multiscale Computational Engineering 10, 2012, 101-108

D. Kaya, N. Green, C.E. Maloney, M.F. Islam
Density Invariant Vibrational Modes in Disordered Colloidal Crystals, Physical Review E, 83(5), 2011, e051404

K. Karimi, C.E. Maloney
Local Anisotropy in Globally Isotropic Granular Packings, Physical Review Letters, 107, 2011, e268001

SELECTED RESEARCH PROJECTS

CAREER: Plasticity and Jamming
Principal Investigator, National Science Foundation

CDSE: A Data-driven Statistical Approach to Aging and Elasticity in Colloidal Glasses
Principal Investigator, National Science Foundation

EDWIN MARENGO

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Northeastern University, 1997
ece.neu.edu/people/marengo-fuentes-edwin

Scholarship focus: theoretical and applied electromagnetics, theoretical and applied optics, scattering theory, wave inverse problems, noniterative inverse scattering, physics-based signal processing and imaging, change detection theory and applications, compressive sensing, electromagnetic information theory, analysis and design of optical and quantum holographic detectors

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

E.A. Marengo
A New Theory of the Generalized Optical Theorem in Anisotropic Media, IEEE Transactions on Antennas and Propagation, 61, 2013, 2164-2179

E.A. Marengo, P. Berestesky
Cramer-rao Bound Study of Multiple Scattering Effects in Target Separation Estimation, International Journal of Antennas and Propagation, 572923, 2013, 1-10

E.A. Marengo
Inverse Diffraction Theory and Computation of Minimum Source Regions of far Fields, Mathematical Problems in Engineering, 513953, 2014, 1-18

E.A. Marengo, J. Tu
Optical Theorem for Transmission Lines, Progress in Electromagnetics Research B, 61, 2014, 253-268

E.A. Marengo
Multipole Theory and Algorithms for Target Support Estimation, International Journal of Antennas and Propagation, 515240, 2013, 1-15

E.A. Marengo, F.K. Gruber
Optical-theorem-based Coherent Scatterer Detection in Complex Environments, International Journal of Antennas and Propagation, 231729, 2013, 1-12

SELECTED RESEARCH PROJECTS

Wave-based Algorithms and Bounds for Target Support Estimation
Principal Investigator, Air Force Office of Scientific Research

JOSE MARTINEZ LORENZO

Assistant Professor, joint faculty appointment in Mechanical and Industrial Engineering and Electrical and Computer Engineering

PhD, University of Vigo, 2005
mie.neu.edu/people/martinez-lorenzo-jose-angel

Scholarship focus: devices, circuits and sensing; antenna analysis, modeling, design, and optimization; subsurface scattering analysis; computational methods of electromagnetics; novel radar system specification and design; explosives detection

SELECTED PUBLICATIONS

I.A. Osaretin, M.W. Shields, J.A. Martinez-Lorenzo, W.J. Blackwell
A Compact 118-GHz Radiometer Antenna for the Micro-sized Microwave Atmospheric Satellite, IEEE Antennas & Wireless Propagation Letters, 13, 2014, 1533-1536

Y. Rodriguez-Vaqueiro, C. Rappaport, J.A. Martinez-Lorenzo, et al.
Fourier-based Imaging for Multistatic Radar Systems, IEEE Transactions on Microwave Theory and Techniques, 62(8), 2014, 1798-1810

Y. Alvarez, J.A. Martinez-Lorenzo, C. Rappaport, et al.
On the Combination of SAR and Model Based Techniques for High-resolution Real-time Two-dimensional Reconstruction, IEEE Transactions on Antennas & Propagation, 62(10), 2014, 5180-5189

Y. Rodriguez-Vaqueiro, J.A. Martinez-Lorenzo
On the use of Passive Reflecting Surfaces and Compressive Sensing Techniques for Detecting Security Threats at Standoff Distances, International Journal on Antennas & Propagation, 248351, 2014, 1-8

J.A. Martinez-Lorenzo, F. Las-Heras, C. Rappaport, et al.
Sparse Array Optimization using Simulated Annealing and Compressed Sensing for Near-field Millimeter Wave Imaging, IEEE Transactions on Antennas & Propagation, 62(4), 2014, 1716-1722

SELECTED RESEARCH PROJECTS

Processing of Physiologic Optical Images and Signals for Development of an Intra-operative Burn Surgery Diagnostic Device
Principal Investigator, Spectral MD/BARDA

Hardware Design for “Stand-off” and “On-the-Move” Detection of Security Threats
Principal Investigator, Department of Homeland Security Center of Excellence-ALERT

Advanced Imaging and Detection of Security Threats using Compressive Sensing
Principal Investigator, Department of Homeland Security Center of Excellence-ALERT

NICOL MCGRUER

Professor, Electrical and Computer Engineering; affiliated faculty: Mechanical and Industrial Engineering, Bioengineering

PhD, Michigan State University, 1983
ece.neu.edu/people/mcgruer-nicol

Scholarship focus: MEMS, NEMS, RF MEMS; nanotechnology; micro/nanofabrication; microsystems; microrelay; nanoswitch; microspectrometer; microfluidics; organic FETs, organic solar cells

Honors and awards: Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

S.D. Berger, N.E. McGruer, G.G. Adams
Simulation of Dielectrophoretic Assembly of Carbon Nanotubes Using 3D Finite Element Analysis, Nanotechnology, 26(15), 2015, e155602

A. Basu, R.P. Hennessy, G.G. Adams, N.E. McGruer
Hot Switching Damage Mechanisms in MEMS Contacts - Evidence and Understanding, Journal of Micromechanics and Microengineering, 24, 2014, e105004

Y.-C. Wu, N. McGruer, G.G. Adams
Adhesive Slip Process Between a Carbon Nanotube and a Substrate, Journal of Physics D: Applied Physics, 46, 2013, e175305

R.P. Hennessy, A. Basu, G.G. Adams, N. McGruer
Hot-switched Lifetime and Damage Characteristics of MEMS Switch Contacts, Journal of Micromechanics and Microengineering, 23(5), 2013, e055003

H. Pan, Y.-C. Wu, G.G. Adams, G.P. Miller, N. McGruer
Interfacial Shear Stress Between Single-walled Carbon Nanotubes and Gold Surfaces With and without an Alkanethiol Monolayer, Journal of Colloid and Interface Science, 407, 2013, 133-139

C. Pramanik, Y. Li, A. Singh, W. Lin, J.L. Hodgson, J.B. Briggs, S. Ellis, P. Müller, N.E. McGruer, G.P. Miller
Water Soluble Pentacene, Journal of Materials Chemistry C, 1, 2013, 2193-2201

P. Ryan, Y.-C. Wu, S. Somu, G. Adams, N. McGruer
Single Walled Carbon Nanotube Electromechanical Switching Behavior with Shoulder Slip, Journal of Micromechanics and Microengineering, 21, 2011, e045028

SELECTED RESEARCH PROJECTS

PLASMID (Plasmonic Microelectromechanical Infrared Digitizer), Zero-Power Sensor
Co-Principal Investigator, Defense Advanced Research Projects Agency

Zero Power Sensors (ZePS), RF Wake-up
Co-Principal Investigator, Defense Advanced Research Projects Agency

EMANUEL MELACHRINOUDIS

Associate Professor, Associate Department Chair and Program Director of Industrial Engineering

PhD, University of Massachusetts, Amherst, 1980
mie.neu.edu/people/melachrinoudis-emanuel

Scholarship focus: deterministic operations research and multi-criteria optimization; facility location; supply chain, transportation and logistics; wireless sensor network lifetime maximization with sink mobility; network design for maximum survivability

Honors and awards: Outstanding Faculty Service Award, College of Engineering

SELECTED PUBLICATIONS

M. Hajian, E. Melachrinoudis, P. Kubat
Modeling Wildfire Propagation Using the Stochastic Shortest Path Problem: A Network Size Reduction Methodology, Environmental Modeling and Software, 82, 2016, 73-88

N. Zaarour, E. Melachrinoudis, M. Solomon
Phase-out of Obsolete Inventory Items in Retail Stores, European Journal of Operational Research, 255, 2016, 133-141

H. Min, E. Melachrinoudis
A Model-based Decision Support System for Solving Vehicle Routing and Driver Scheduling Problems under Hours of Service Regulations, International Journal of Logistics Research and Applications, 19, 2016, 256-277

E. Melachrinoudis, E. Yavuz, R. Heydari
An O(m¬2+mn2) Algorithm for the Bi-objective Location Problem on a Network with Mixed Metrics, International Journal of Operational Research, 23, 2015, 427-450

N. Zaarour, E. Melachrinoudis, M. Solomon, H. Min
The Optimal Determination of the Collection Period for Returned Products in the Sustainable Supply Chain, International Journal of Logistics Research and Applications, 17, 2014, 35-45

R. Heydari, E. Melachrinoudis
Location of an Obnoxious Facility with Elliptic Maximin and Network Minisum Objectives, European Journal of Operational Research, 223(2), 2012, 452-460

M. Mekuria, P. Furth, E. Melachrinoudis
Optimization of Spacing of Transit Stops on a Realistic Street Network, Transportation Research Record, 4, 2012, 29-37

E. Melachrinoudis
The Location of Undesirable Facilities, Chapter 10, Foundations of Location Analysis, International Series in Operations Research and Management Science, Springer, New York, 2010, 207-239

S. Basagni, A. Carosi, E. Melachrinoudis, C. Petrioli, M.Z. Wang
Controlled Sink Mobility for Prolonging Wireless Sensor Networks Lifetime, Wireless Networks, 14, 2008, 831-858

WALEED MELEIS

Associate Professor and Associate Chair, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Michigan, 1996
ece.neu.edu/people/meleis-waleed

Scholarship focus: ombinatorial optimization; algorithm design and analysis; scheduling; machine learning; parallel computing

Honors and awards: COE Fostering Engineering Innovation in Education Award; Black Engineering Student Society Professor Appreciation Award; Invited to represent Northeastern at the National Academy of Engineering's Frontiers of Engineering Education Symposium; College of Engineering Outstanding Teacher Award; Martin W. Essigmann Outstanding Teaching Award, College of Engineering; Eta Kappa Nu Professor of the Year Award; Center for Innovative Course Design Teaching Award, EdTech

SELECTED PUBLICATIONS

L. Hayward, S. Ventura, M. Mahanna, and W. Meleis
Inter-professional Collaboration between Physical Therapy, Speech Language Pathology and Engineering Faculty and Students to Address Global Pediatric Rehabilitation Needs: A Case Report, Journal of Physical Therapy Education, 30(4), 2016

S. Guler, M. Dannhauer, B. Erem, R. Macleod, D. Tucker, S. Turovets P. Luu, W. Meleis, D. Brooks
Optimizing Stimulus Patterns for Dense Array TDCS with Fewer Sources than Electrodes Using a Branch and Bound Algorithm, International Symposium on Biomedical Imaging (ISBI'16), Prague, Czech Republic, 2016

D. Lazer, W. Meleis, B. Foucault Wells, C. Riedl, et al.
Performing Massively Open Online Social Experiments with Volunteer Science, Workshop on Crowdsourcing and Online Behavioral Experiments (COBE) at the ACM Conference on Economics and Computation, 2015

C. Wu, W. Li, W. Meleis
Rough Sets-based Prototype Optimization in Kanerva-based Function Approximation, IEEE/WIC/ACM International Conference on Intelligent Agent Technology, 2015

W. Meleis, et al.
Volunteer Science as a Platform for Studying Team Processes and Performance, Cooperative Team Networks Workshop at the International School and Conference on Network Science (NetSci), 2014

D. Brooks, S, Muftu, W. Meleis, R. Moore, K.-T. Wan, et al.
Detecting Solid Masses in Phantom Breast Using Mechanical Indentation, Experimental Mechanics, 54,(6), 2014, 935-942

C. Karbeyaz, B. Foucault Welles, J. Hoye, W. Meleis, D. Lazer, et al.
Information Navigation and Hidden Profile Experiments on the Volunteer Science Web Laboratory, International Sunbelt Social Network Conference (Sunbelt XXXIV), Florida, US, 2014

TOMMASO MELODIA

Associate Professor, Electrical and Computer Engineering

PhD, Georgia Institute of Technology, 2007
ece.neu.edu/people/melodia-tommaso

Scholarship focus: modeling, optimization, and experimental evaluation of wireless networked systems; networked implantable medical systems; multimedia sensor networks; secure tactical cognitive radio networks; underwater networks; mobile cloud computing

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

Z. Guan, T. Melodia
CU-LTE: Spectrally-Efficient and Fair Coexistence Between LTE and Wi-Fi in Unlicensed Bands, Proceedings of AIEEE Conference on Computer Communications (INFOCOM), San Francisco, CA, 2016

G.E. Santagati, T. Melodia
U-Wear: Software-defined Ultrasonic Networking for Wearable Devices, Proceedings of ACM Conference on Mobile Systems, Services and Applications (MOBISYS), Florence, Italy, May 2015, 1-16

Z. Guan, G.E. Santagati, T. Melodia
Ultrasonic Intra-body Networking: Interference Modeling, Stochastic Channel Access and Rate Control, Proceedings of the IEEE Conference on Computer Communications, Hong Kong, 2015, 1-9

S. Pudlewski, N. Cen, Z. Guan, T. Melodia
Video Transmission Over Lossy Wireless Networks: A Cross-Layer Perspective, IEEE Journal of Selected Topics in Signal Processing, 9(1), 2015, 6-21

E. Demirors, G. Sklivanitis, G.E. Santagati, T. Melodia, et al.
Design of a Software-defined Underwater Acoustic Modem with Real-time Physical Layer Adaptation Capabilities, Proceedings of the International Conference on Underwater Networks and Systems, 2014, 1-8

SELECTED RESEARCH PROJECTS

NeTS: Small: Beyond Separate-Then-Centralize: A Cellular Operating System to Optimize Software-Defined 5G Wireless Networks
Principal Investigator, National Science Foundation

CAREER: Towards Ultrasonic Networking for Implantable Biomedical Devices
Principal Investigator, National Science Foundation

Networking Medical Implants Through Ultrasounds
Principal Investigator, National Science Foundation

Small:Towards Real-Time Video Streaming in the Internet of Underwater Things
Principal Investigator, National Science Foundation

Toward Maximal Spectral-efficiency Networking
Principal Investigator, Air Force Research Laboratory

HAMEED METGHALCHI

Professor, Mechanical and Industrial Engineering

ScD, Massachusetts Institute of Technology, 1980
mie.neu.edu/people/metghalchi-mohamad

Scholarship focus: fundamentals of combustion such as burning speed and onset of autoignition measurement and flame stability analysis; development of chemistry reduction such as rate-controlled constrained-equilibrium method; non-equilibrium thermodynamics

Honors and awards: American Society of Mechanical Engineers James H. Potter Gold Medal; American Society of Mechanical Engineers Edward Obert Award; American Society of Mechanical Engineers Dedicated Service Award; Editor in Chief, American Society of Mechanical Engineers Journal of Energy Resources Technology; Fellow, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

E. Rokni, A. Mossadagh, O. Askari, H. Metghalchi
Measurement of Laminar Burning Speed and Investigation of Flame Stability of Acetylene (C2H2)/air Mixtures, ASME Journal of Energy Resources Technology, 137, 2015, e012204

O. Askari, M. Janbozorgi, R. Greig, A. Moghaddas, H. Metghalchi
Developing Alternative Approaches to Predicting the Laminar Burning Speed of Refrigerants Using the Minimum Ignition Energy, Science and Technology for the Built Environment, 21(2), 2015, 220-227

G. Nicolas, H. Metghalchi
Comparison Between RCCE and Shock Tube Ignition Delay Time at Low Temperatures, ASME Journal of Energy Resources Technology, 137, 2015, e062203

G. Nicolas, M. Janbozorgi, H. Metghalchi
Constrained-equilibrium Modeling of Methane Oxidation in Air, ASME Journal of Energy Resources Technology, 136(3), 2014, 1-7

A. Moghaddas, C. Bennett, E. Rokni, H. Metghalchi
Laminar Burning Speeds and Flame Structures of Mixtures of Difluoromethane (HFC-32) and 1,1-Difluoroethane (HCF-152a) with Air at Elevated Temperatures and Pressures, HVAC&R Research, 20, 2014, 42-50

O. Askari, H. Metghalchi, S.K. Hannani, H. Hemmati, R. Ebrahimi
Lean Partially Premixed Combustion Investigation of Methane Direct-injection under Different Characteristic Parameters, ASME Journal of Energy Resources Technology, 136, 2014, 1-7

SELECTED RESEARCH PROJECTS

Combustion of GTL Fuel
Principal Investigator, Qatar Foundation

LSAMP Research Project
Principal Investigator, National Science Foundation

NINGFANG MI

Associate Professor, Electrical and Computer Engineering

PhD, College of William and Mary, 2009
ece.neu.edu/people/mi-ningfang

Scholarship focus: Capacity planning; mapReduce/Hadoop scheduling; cloud computing; resource management; performance evaluation; workload characterization; simulation; virtualization

Honors and awards: National Science Foundation CAREER Award; IBM Faculty Award; Air Force Office of Scientific Research Young Investigator Award

SELECTED PUBLICATIONS

Y. Yao, H. Gao, J. Wang, N. Mi, B. Sheng
OPERA: Opportunistic and Efficient Resource Allocation in Hadoop YARN by Harnessing Idle Resources, International Conference on Computer Communication and Networks (ICCCN), Waikoloa, Hawaii, 2016

J. Tai, D. Liu, Z. Yang, X. Zhu, J. Lo, N. Mi
Improving Flash Resource Utilization at Minimal Management Cost in Virtualized Flash-based Storage Systems, IEEE Transactions on Cloud Computing (TCC), 1, 2015, 1-14

Y. Yao, J. Wang, B. Sheng, C.C. Tan, N. Mi
Self-adjusting Slot Configurations for Homogeneous and Heterogeneous Hadoop Clusters, IEEE Transactions on Cloud Computing (TCC), 2015, 1-14

J. Tai, B. Sheng, Y. Yao, N. Mi
SLA-Aware Data Migration in A Shared Hybrid Storage Cluster, Journal of Cluster Computing (CC), 2015, 1-13

Y. Yao, J. Tai, B. Sheng, N. Mi
LsPS: A Job Size-based Scheduler for Efficient Assignments in Hadoop, IEEE Transactions on Cloud Computing (TCC), 99, 2014, 1-14

SELECTED RESEARCH PROJECTS

AFOSR YIP: Creating an Integrated Management Layer to Administer Heterogeneous Resources in Dynamic Workflow Clusters
Principal Investigator, Air Force Office of Scientific Research

CAREER: Capacity Planning Methodologies for Large Clusters with Heterogeneous Architectures and Diverse Applications
Principal Investigator, National Science Foundation

MARILYN MINUS

Associate Professor, Mechanical and Industrial Engineering

PhD, Georgia Institute of Technology, 2008
mie.neu.edu/people/minus-marilyn

Scholarship focus: process-structure-properties relationships in polymer-based nano-composites fibers; polymer/nano-carbon interfacial interactions and interphase formations; lightweight composite materials; carbon-carbon composites

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

Y. Zhang, N. Tajaddod, K. Song, M.L. Minus
Low Temperature Graphitization of Interphase Polyacrylonitrile (PAN), Carbon, 91, 2015, 479-493

J. Meng, N. Tajaddod, S.W. Cranford, M.L. Minus
Polyethylene Assisted Exfoliation of Hexagonal Boron Nitride in Composite Fibers: A Combined Experimental & Computational Study, Macromolecular Chemistry and Physics, 216(8), 2015, 847-855

Y. Zhang, M.L. Minus
Characterization and Structural Analysis of Solution-grown Polyacrylonitrile-co-methacrylic Acid (PAN-co-MAA) Single Crystals, Macromolecules, 47(12), 2014, 3987-3996

E.C. Green, Y. Zhang, M.L. Minus
Understanding the Effects of Nano-Carbons on Flexible Polymer Chain Orientation and Crystallization: Polyethylene/Carbon Nano-chip Hybrid Fibrillar Crystal Growth, Journal of Applied Polymer Science, 131(18), 2014, 40763

SELECTED RESEARCH PROJECTS

CAREER: Understanding Directionally Templated Interphase Processing-structure Development and Relationships in Polymer Nano-composite Materials
Principal Investigator, National Science Foundation

EAGER: Dispersion and Selective Positioning of Reinforcement in Polymer Matrix Composites
Co-Principal Investigator, National Science Foundation

Evolution of Interphase-polyacrylonitrile (*i*-PAN) Structure during Carbon Fiber Processing
Principal Investigator, Defense Advanced Research Projects Agency

Multi-Scale Characteristics of Bone Toughness
Co-Principal Investigator, National Science Foundation

Studying the Dependency of Interfacial Formation with Carbon Nanotube Length for Stress Transfer in Polymer Composite Fibers
Principal Investigator, Air Force Office of Scientific Research

HOSSEIN MOSALLAEI

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of California, Los Angeles, 2001
ece.neu.edu/people/mosallaei-hossein

Scholarship focus: electromagnetics and optics, quantum systems, nanoscale materials and metamaterials, nanoantennas, THz-IR Devices, multiscale computation and mathematical-numerical models

SELECTED PUBLICATIONS

S. Valleau, S.K. Saikin, M. Rostami, H. Mosallaei, et al.
Electromagnetic Study of the Chlorosome Antenna Complex of Chlorobium-tepidum, ACS Nano, 8(4), 2014, 3884-3894

J. Cheng, H. Mosallaei
Optical Metasurfaces for Beam Scanning in Space, Optics Letters, 39(9), 2014, 2719-2722

M. Farmahini-Farahani, J. Cheng, H. Mosallaei
Metasurfaces Nanoantennas for Light Processing, Journal of the Optical Society of America B, 30(9), 2013, 2365-2370

B. Memarzadeh, H. Mosallaei
Multimaterial Loops as the Building Block for a Functional Metasurface, Journal of the Optical Society of America B, 30(7), 2013, 1827-1834

E. Chernobrovkina, S.K. Saikin, S. Valleau, H. Mosallaei, et al.
Parametric Hierarchical Matrix Approach for the Wideband Optical Response of Large-scale Molecular Aggregates, Journal of Applied Physics, 114, 2013, e164315

J. Cheng, W.L. Wang, H. Mosallaei, E. Kaxiras
Surface Plasmon Engineering in Graphene Functionalized with Organic Molecules: A multi-scale Theoretical Investigation, Nano Letters, 14(1), 2013, 50-56

SELECTED RESEARCH PROJECTS

Computationally-designed Materials for Wave Synthesis
Principal Investigator, Defense Advanced Research Projects Agency

Designer Solids Nanoantennas and Material
Principal Investigator, Army Research Office

MURI, Multiscale Mathematical Modeling and Design Realization of Novel 2D Functional Materials
Co-Principal Investigator, Army Research Office

Nanoantennas for Engineering Waves on the Surface
Principal Investigator, Air Force Office of Scientific Research

AMY MUELLER

Assistant Professor, Civil and Environmental Engineering; jointly appointed, Marine and Environmental Sciences

PhD, Massachusetts Institute of Technology, 2012
cive.neu.edu/people/mueller-amy

Scholarship focus: applications driven optimization, study, and remediation of the natural and built environments enabled by sensors and instrumentation development; signal processing and machine learning; closed-loop controls; sensor networks and communication

Honors and awards: National Science Foundation, Ocean Sciences Postdoctoral Research Fellowship

SELECTED PUBLICATIONS

A.V. Mueller, H.F. Hemond
Statistical Generation of Training Sets for Measuring NO3-, NH4+, and Major Ions in Natural Waters by an Ion Selective Electrode Array, Environmental Science: Processes and Impacts, 18(5), 2016, 590-599

A.V. Mueller, M.S. Orosz, A. Narasimhan, R. Kamal, H. Hemond, Y. Goswami
Evolution and Feasibility of Decentralized Concentrating Solar Thermal Power Systems for Modern Energy Access in Rural Areas, MRS Energy and Sustainability, 2016

M.S. Orosz, A.V. Mueller
Dynamic Simulation of Performance and Cost of Hybrid PV-CSP-LPG Generator Micro Grids with Applications to Remote Communities in Developing Countries, Proceedings of the ASME 2015 Power and Energy Conference, 2015, San Diego

A.V. Mueller, H.F. Hemond
Extended Artificial Neural Networks: Incorporation of a Priori Chemical Knowledge Enables use of Ion Selective Electrodes for in-situ Measurement of Ions at Environmentally-relevant Levels, Talanta, 117, 2013, 112-118

A.V. Mueller, H.F. Hemond
Towards an Automated, Standardized Protocol for Determination of Equilibrium Potential of Ion-selective Electrodes, Analytica Chimica Acta, 690(1), 2011, 71-78

SELECTED RESEARCH PROJECTS

Examining the Role of Anoxic Events on Coastal Micronutrient (Fe) Supplies from a Novel High-resolution Profiling Sampler
Principal Investigator, National Science Foundation

Remus-ISS: Enabling Adaptive in-flight Sampling for High Resolution Studies of Trace Metals
Co-Principal Investigator, Royalty Research Fund; University of Washington

SİNAN MÜFTÜ

Professor, Mechanical and Industrial Engineering; affiliated faculty, Bioengineering, Civil and Environmental Engineering

PhD, University of Rochester, 1994
mie.neu.edu/people/muftu-sinan

Scholarship focus: mechanics and tribology of axially moving materials, webs; numerical simulation of tissue healing and bone remodeling; high velocity impact of micron scale particles

Honors and awards: Fellow, American Society of Mechanical Engineers; Søren Buus Outstanding Research Award, College of Engineering; Martin W. Essigman Outstanding Teaching Award, College of Engineering

SELECTED PUBLICATIONS

Q. Sheng, A.J. White, S. Müftü
An Experimental Study of Friction and Durability of a Thin PTFE-film on Rough Aluminum Substrates, Tribology Transactions, 2016

Q. Sheng, A.J. White, S. Müftü
Interfacial Delamination of Thin-film PTFE (Polytetrafluoroethylene) Coatings, The Journal of Adhesion, 2016

H. Yang, J.B.C. Engelen, A. Pantazi, W. Häberle, M.A. Lantz, S. Müftü
Mechanics of Lateral Positioning of a Translating Tape due to Tilted Rollers: Theory and Experiments, International Journal of Solids and Structures, 66, 2015, 88-97

H.Y. Chou, D. Satpute, A. Müftü, S. Mukundan, S. Müftü
Influence of Mastication and Edentulism on Mandibular Bone Density, Computer Methods in Biomechanics and Biomedical Engineering, 18(3), 2015, 269-281

Yildirim, H. Fukanuma, T. Ando, A. Gouldstone, S. Müftü
A Numerical Investigation into Cold Spray Bonding Processes, Journal of Tribology, 137(1), 2015, 935-942

H. Yang, J. B. C. Engelen, A. Pantazi, S. Müftü, et al.
Mechanics of Lateral Positioning of a Translating Tape due to Tilted Rollers: Theory and Experiments, International Journal of Solids and Structures, 66, 2015, 88–97

T. Kasikci, S. Müftü
Wrap Pressure between a Flexible Web and a Circumferentially Grooved Cylindrical Guide, Journal of Tribology, Trans ASME, 138(3), 2015

SELECTED RESEARCH PROJECTS

A Novel Biomechanical Model of Bacterial Adhesion and Aggregation
Co-Principal Investigator, National Science Foundation

ARL Cold Spray Modeling Program
Technical Point of Contact, Army Research Laboratory

Collaborative Research: Mechano-lipidomics and Mechano-cytosis of Drug Delivery Liposomes
Co-Principal Investigator, National Science Foundation

Improving Theoretical Models of Advanced Tape Transport Systems
Principal Investigator, Oracle Corporation

SANJEEV MUKERJEE

Distinguished College Professor, College of Science; Professor, Chemistry and Chemical Biology; affiliated faculty, Bioengineering

PhD, Texas A&M University, 1994
bioe.neu.edu/people/mukerjee-sanjeev

Scholarship focus: physical/materials chemistry

SELECTED PUBLICATIONS

Q. Jia, N. Ramaswamy, U. Tylus, K. Strickland, J. Li, A. Serov, K. Artyushkova, P. Atanassov, J. Anibal, C. Gumeci, S. Calabrese Barton, M.-T. Sougrati,.F. Jaouen, B. Halevi, S. Mukerjee
Spectroscopic Insights into the Nature of Active Sites in Iron-Nitrogen-Carbon Electrocatalysts for Oxygen Reduction in Acid and the Redox Mechanisms, Nano Energy, 2016, A290-A301

M.K. Bates, Q. Jia, H. Doan, W. Liang, S. Mukerjee
Charge-Transfer Effects in Ni–Fe and Ni–Fe–Co Mixed-Metal Oxides for the Alkaline Oxygen Evolution Reaction, ACS Catalysis, 6, 2016, 155-161

Q. Jia, J. Li, K. Caldwell, D.E. Ramaker, J.M. Ziegelbauer, R.S. Kukreja, A. Kongkanand, S. Mukerjee
Circumventing Metal Dissolution Induced Degradation of Pt-Alloy Catalysts in Proton Exchange Membrane Fuel Cells: Revealing the Asymmetric Volcano Nature of Redox Catalysis, ACS Catalysis, 6, 2016, 928-938

E. Bayram, G. Yilmaz, S. Mukerjee
A Solution-Based Procedure for Synthesis of Nitrogen Doped Graphene as an Efficient Electrocatalyst for Oxygen Reduction Reactions in Acidic and Alkaline Electrolytes, Applied Catalysis B: Environmental, 192, 2016, 26-34

G. Lin, P.Y. Chong, V. Yarlagadda, T.V. Nguyen, R.J.Wycisk, P.N. Pintauro, M. Bates, S. Mukerjee, M.C. Tucker, A.Z. Weber
Advanced Hydrogen-Bromine Flow Batteries with Improved Efficiency, Durability and Cost, Journal of The Electrochemical Society, 163(1), 2016, A5049

K. Strickland, E. Miner, Q. Jia, U. Tylus, N. Ramaswamy, W. Liang, M.-T. Sougrati, F. Jaouen, S. Mukerjee
Highly Active Oxygen Reduction Non-Platinum Group Metal Electrocatalyst Without Direct Metal–Nitrogen Coordination, Nature Communications, 6, 2015, 7343

SELECTED RESEARCH PROJECTS

Innovative Non-PGM Catalysts for CH P Relevant Proton Conducting Membranes
Principal Investigator, US Department of Energy

Solid Acid Fuel Cell Stack for Distributed Generation Applications
Co-Principal Investigator, Advanced Research Projects Agency-Energy

Precious Metal Free Regenerative Hydrogen Electrode
Co-Principal Investigator, Advanced Research Projects Agency-Energy

SHASHI MURTHY

Professor, Chemical Engineering; Director, Sherman Center; affiliated faculty; Bioengineering, Mechanical and Industrial Engineering

PhD, Massachusetts Institute of Technology, 2003
che.neu.edu/people/murthy-shashi

Scholarship focus: microfluidic isolation of stem and progenitor cells, point-of-care diagnostics, cell surface phenomena during microfluidic flow, nanoscale probes for cell stimulation, and biopassive/bioactive coatings for neurological implants

Honors and awards: Fellow, American Institute for Medical and Biological Engineering; College of Engineering Faculty Fellow; National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

C.H. do Prado, T. Narahari, F.H. Holland, H-N. Lee, S.K. Murthy, H.C. Brenhouse
Effects of Early Adolescent Environmental Enrichment on Cognitive Dysfunction, Prefrontal Cortex Development, and Inflammatory Cytokines After Early Life Stress, Developmental Psychobiology, 2016, 58, 482-491

L. Calvier, E. Legchenko, L. Grimm, H. Sallmon, A. Hatch, B. D. Plouffe, C. Schroeder, J. Bauersachs, S. K. Murthy, G. Hansmann
Galectin-3 and Aldosterone as Potential Tandem Biomarkers in Pulmonary Arterial Hypertension, Heart, 102, 2016, 390-396
Editor's Choice

D. Bavli, E. Ezra, D. Kitsberg, M. Vosk-Artzi, S.K. Murthy, Y. Nahmias
One Step Antibody-mediated Isolation and Patterning of Multiple Cell Types in Microfluidic Devices, Biomicrofluidics,10, 2016, 024112

D.I. Walsh, S.K. Murthy, A. Russom
Ultra-High-Throughput Sample Preparation System for Lymphocyte Immunophenotyping Point-of-Care Diagnostics, Journal of Laboratory Automation 2016

SELECTED RESEARCH PROJECTS

Automated Patient-specific Dendritic Cell Generation for Transciptomics-drive Vaccinology
Principal Investigator, National Institutes of Health

Cleavable Surface Coatings for Microfluidic Devices
Principal Investigator, US-Israel Binational Science Foundation

EAGER: Biomanufacturing: Development of a Quantitative Framework of Directed Stem Cell Differentiation in Scalable Bioreactors
Co-Principal Investigator, National Science Foundation

Testing and Characterization of Endovascular Shunt Prototypes
Principal Investigator, CereVasc, LLC

ANDREW MYERS

Assistant Professor, Civil and Environmental Engineering

PhD, Stanford University, 2009
cive.neu.edu/people/myers-andrew

Scholarship focus: offshore wind structures; multi-scale experimental testing of structures; computational simulation; fracture and damage mechanics of metals; probabilistic modeling

Honors and awards: National Science Foundation CAREER Award; Civil and Environmental Engineering Excellence in Teaching Award

SELECTED PUBLICATIONS

A. Jay, A.T. Myers, F. Mirzaie, A. Mahmoud, S. Torabian, E. Smith, B.W. Schafer
Large-scale Bending Tests of Slender, Tapered Spirally Welded Steel Tubes, Journal of Structural Engineering, ASCE, 2016

A. Jay. A.T. Myers, S. Torabian, A. Mahmoud, E. Smith, N. Agbayani, B.W. Schafer
Spirally Welded Steel Wind Towers: Buckling Experiments, Analyses and Research Needs, Journal of Constructional Steel Research, Elsevier, 125, 2016, 218-226

S. Hallowell, A.T. Myers
Site-specific Variability of Load Extremes of Offshore Wind Turbines exposed to Hurricane Risk and Breaking Waves, Wind Energy, Wiley, 2016

V. Valamanesh, A.T. Myers, S.R. Arwade, J.F. Hajjar, E. Hines, W. Pang
Wind-wave Prediction Equations for Probabilistic Offshore Hurricane Hazard Analysis, Natural Hazards, Springer, 2016

A.T. Myers, S.R. Arwade, V. Valamanesh, S. Hallowell, W. Carswell
Strength, Stiffness, Resonance and the Design of Offshore Wind Turbine Monopiles, Engineering Structures, Elsevier, 2015

V. Valamanesh, A.T. Myers, S.R. Arwade
Multivariate Analysis of Extreme Metocean Conditions for Offshore Wind Turbines, Structural Safety, Elsevier, 2015

SELECTED RESEARCH PROJECTS

CAREER: Advancing Multi-hazard Assessment and Risk-based Design for Offshore Wind Energy Technology
Principal Investigator, National Science Foundation

Enabling Advanced Wind Turbine Tower Manufacturing with Reliability-based Design
Principal Investigator, National Science Foundation

Reliability-based Hurricane Risk Assessment for Offshore Wind Farms
Principal Investigator, National Science Foundation

Risk and Decision-making for the Hurricane Threat to Offshore Wind Farms
Principal Investigator, Massachusetts Clean Energy Center

Optimization of Tapered Spiral Welding for Wind Turbine Towers
Co-Principal Investigator, National Science Foundation

UICHIRO NARUSAWA

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering

PhD, University of Michigan, 1972
mie.neu.edu/people/narusawa-uichiro

Scholarship focus: biomechanics on respiratory systems; turbine blade cooling

SELECTED PUBLICATIONS

F. Forghan, O. Askari, U. Narusawa, H. Metghalchi
Computational Design of Turbine Blade Film Cooling with Expanded Exit Holes, Proceedings of ASME Turbo Expo, 2015

M. Nabian, U. Narusawa
Ventilator Optimization from P-V (Pressure-Volume) Curve Analyses of Animal Models for Lung Injury, International Mechanical Engineering Congress & Exposition (IMECE), 2015, 52472

F. Forghan, O. Askari, U. Narusawa, H. Metghalchi
Film Cooling of Turbine Blade Surface with Extended Exit Holes, Proceedings of the ASME 2014 8th International Conference on Energy Sustainability and 12th Fuel Cell Sci. Eng. Tech. Conf., ES-FuelCell, 2014, 1-7

F. Forghan, U. Narusawa, H. Metghalchi
Discharge Coefficient of an Expanded Exit Hole for Film Cooling of Turbine Blades, American Institute of Aeronautics and Astronautics Journal of Propulsion Power, 26, 2010, 1322-1325

H. Liu, P.R. Patil, U. Narusawa
On Darcy-brinkman Equation: Viscous Flow Between Plates Packed with Regular Square Arrays of Cylinders, Entropy, 9, 2007,118-131

R. Amini, K. Creeden, U. Narusawa
A Mechanistic Model for Quasi-static Pulmonary Pressure-Volume Curves for Inflation, Journal of Biomechanical Engineering, 127, 2005, 619-629

H. Liu, U. Narusawa
Flow-induced Endothelial Surface Reorganization and Minimization of Entropy Generation Rate, ASME Journal of Biomechanical Engineering, 126, 2004, 346-350

HAMID NAYEB-HASHEMI

Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering

PhD, Massachusetts Institute of Technology, 1982
mie.neu.edu/people/nayeb-hashemi-hamid

Scholarship focus: biomechanics and mechanics

Honors and awards: Fellow, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

A. Orsi, S. Chakravarthy, P. Canavan, E, Pena, R. Goebel, A. Vaziri, H. Nayeb-Hashemi
The Effect of Knee Joint Kinematics on the Anterior Cruciate Ligament Injury and Articular Cartilage Damage, Computer Methods in Biomechanics and Biomedical Engineering, 19(5), 2015, 493-506

R. Oftadeh, V. Entezari, G. Sporri J. C. Villa-Camacho, H. Krigbaum, E. Strwich, L. Graham, C. Rey, H. Chiu, R. Muller, H. Nayeb-Hashemi, A.Vaziri, A. Nazarian
Hierarchical Analysis and Multi-scale Modelling of Rat Cortical and Trabecular Bone, Journal of the Royal Society Interface, 2015

M. Ashrafi, C.J. Woodsum, J. Papadopoulos, A.S. Hamouda, H. Nayeb-Hashemi, A. Vaziri
In Situ Strengthening of Thin-wall Structures Using Pressurized Foam, Construction and Building Materials, 100, 2015, 298-304

J. Papadopoulos, H. Nayeb-Hashemi, A. Vaziri, et al.
Buckling of Regular, Chiral and Hierarchical Honeycombs Under a General Macroscopic Stress State, Proceedings of The Royal Society A, 470(2167), 2014, 1-23

S. Banijamali, A. Vaziri, H. Nayeb-Hashemi, et al.
Effects of Different Loading Patterns on the Trabecular Bone Morphology of the Proximal Femur Using Adaptive Bone Remodeling, Journal of Biomechanical Engineering, ASME, 137(1), 2014, 1-10

A. Ajdari, A.Hamouda, H. Nayeb-Hashemi, A. Vaziri, et al.
Impact Resistance and Energy Absorption of Regular and Functionally Graded Hexagonal Honeycombs with Cell Wall Material Strain Hardening, International Journal of Mechanical Sciences, 89, 2014, 413-422

SELECTED RESEARCH PROJECTS

High-performance Biodegradable Composites from Qatari Date Palm Waste
Principal Investigator, National Priorities Research Program

Knee Injury Prevention and Osteoarthritis Risk in Obesity
Co-Principal Investigator, National Priorities Research Program

Novel Multi Functional Composite Sandwich Panel
Principal Investigator, National Priorities Research Program

MARK NIEDRE

Associate Professor, Electrical and Computer Engineering; jointly appointed, Bioengineering

PhD, University of Toronto, 2004
ece.neu.edu/people/niedre-mark

Scholarship focus: biomedical optics and non-invasive imaging, rare cell detection and tracking in the body, ultrafast time-domain diffuse optical imaging, image reconstruction and biomedical signal processing

Honors and awards: College of Engineering Faculty Fellow; Massachusetts Life Sciences Center New Investigator Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

S. Markovic, S. Li, M. Niedre
Performance of Computer Vision In Vivo Flow Cytometry with Low Fluorescence Contrast, Journal of Biomedical Optics, 20(3), 2015, 35005

V. Pera, D.H. Brooks, M. Niedre
On the use of Cramer-Rao Bounds in diffuse optical Tomography, Journal of Biomedical Optics, 19(2), 2014, 025002

S. Markovic, B. Li, V. Pera, M. Sznaier, O. Camps, M. Niedre
A Computer Vision Approach to RareCell In Vivo Flow Cytometry, Cytometry A, 83A, 2013, 1113-1123

N. Pestana, L. Mortensen, J. Runnels, M. Niedre, et al.
An Improved Prototype Diffuse Fluorescence Flow Cytometer for High Sensitivity Detection of Rare Circulating Cells In Vivo, Journal of Biomedical Optics, 18(7), 2013, 77002

Y. Mu, N. Valim, M. Niedre
Evaluation of a Fast Single-photon Avalanche Photodiode for Measurement of Early Transmitted Photons Through Diffusive Media, Optics Letters, 38(12), 2013, 2098-2100

N. Valim, J. Brock, M. Leeser, M. Niedre
The Effect of Temporal Impulse Response on Experimental Reduction of Photon Scatter in Time-resolved Diffuse Optical Tomography, Physics in Medicine and Biology, 58(2), 2013, 335-349

SELECTED RESEARCH PROJECTS

High Resolution Multiplexed Fluorescence Tomography
Principal Investigator, National Institutes of Health

Ultra-rare Cell In Vivo Flow Cytometry
Principal Investigator, National Institutes of Health

JESSICA OAKES

Assistant Professor, Bioengineering

PhD, University of San Diego, 2013
bioe.neu.edu/people/oakes-jessica

Scholarship focus: computational fluid dynamics, biological flows, multi-phase flows, multi-scale modeling, pulmonary physiology, aerosols, parameter estimation, magnetic resonance imaging, flow visualization, particle image velocimetry, numerical methods

SELECTED PUBLICATIONS

J.M. Oakes, A.L. Marsden, C. Grandmont, C. Darquenne, I.E. Vignon-Clementel
Distribution of Aerosolized Particles in Healthy and Emphysematous Rat Lungs: Comparison Between Experimental and Numerical Studies, Journal of Biomechanics, 48(6), 2015, 1147-1157

C. Darquenne, M.G. Borja, J.M. Oakes, E.C. Breen, I.M. Olfert, M. Scadeng, G.K. Prisk
Increase in Relative Deposition of Fine Particles in the Rat Lung Periphery in the Absence of Gravity, Journal of Applied Physiology, 117(8), 2014, 880-886

J.M. Oakes, E. Breen, M. Scadeng, G.S. Tchantchou, C. Darquenne
MRI-Based Measurements of Aerosol Deposition in the Lung of Healthy and Elastase-treated Rats, Journal of Applied Physiology, 116(12), 2014, 1561-1568

J.M. Oakes, A.L. Marsden, C. Grandmont, S.C. Shadden, C. Darquenne, I.E. Vignon-Clementel
Airflow and Particle Deposition Simulations in Health and Emphysema: From in Vivo to in Silico Animal Experiments, Annals of Biomedical Engineering, 42(4), 2014, 899-914

J.M. Oakes, M. Scadeng, E.C. Breen, G. Kim Prisk, C. Darquenne
Regional Distribution of Aerosol Deposition in Rat Lungs Using Magnetic Resonance Imaging, Annals of Biomedical Engineering, 41(5), 2013, 967-978

J.M. Oakes, M. Scadeng, E.C. Breen, A.L. Marsden, C. Darquenne
Rat Airway Morphometry Measured from in Situ MRI-based Geometric Models, Journal of Applied Physiology. 112(11), 2012, 1921-1931

J.M. Oakes, S. Day, S.J. Weinstein, R.J. Robinson
Flow Field Analysis in Expanding Healthy and Emphysematous Alveolar Models Using Particle Image Velocimetry, Journal of Biomechanical Engineering, 132(2), 2010, 021008

DONALD O'MALLEY

Associate Professor, Biology; affiliated faculty, Bioengineering

PhD, Harvard, 1989
bioe.neu.edu/people/omalley-donald

Scholarship focus: cellular and systems neurobiology biological imaging, cognitive neurodynamics, neuroethology

SELECTED PUBLICATIONS

D. O'Malley, M. Orger, F. Engert
Neural Control and Modulation of Swimming Speed in the Larval Zebrafish, Neuron, 83(3), 2014, 692-707

L. Ricci, C.H. Summers, E.T. Larson, D.M. O'Malley, R.H. Melloni
Development of Aggressive Phenotypes: Interactions of Age, Experience, and Social Status, Animal Behaviour, 86(2), 2013, 245-252

R.E. Westphal, D.M. O'Malley
Fusion of Locomotor Maneuvers, and Improving Sensory Capabilities, Give Rise to the Flexible Homing Strikes of Juvenile Zebrafish, Front, Neural Circuits, 7(108), 2013, 1-18

N. Sankrithi, D. O'Malley
Activation of a Multisensory, Multifunctional Nucleus in the Zebrafish Midbrain During Diverse Locomotor Behaviors, Neuroscience, 166(3), 2010, 970-993

M. Kamali, L. Day, D. Brooks, X. Zhou, D. O'Malley
Automated Identification of Neurons in 3D Confocal Datasets from Zebrafish Brainstem, Journal of Microscopy, 233(1), 2009, 114-131

MARVIN ONABAJO

Assistant Professor, Electrical and Computer Engineering

PhD, Texas A&M University, 2011
ece.neu.edu/people/onabajo-marvin

Scholarship focus: design of analog, radio frequency, and mixed-signal integrated circuits; built-in test and calibration techniques for systems-on-a-chip; on-chip temperature sensors for thermal monitoring and built-in testing

Honors and awards: National Science Foundation CAREER Award; Martin Essigman Outstanding Teaching Award, College of Engineering

SELECTED PUBLICATIONS

L. Xu, C.-H. Chang, M. Onabajo
A 0.77mW 2.4GHz RF Front-end with -4.5dBm in-band IIP3 Through Inherent Filtering, IEEE Microwave and Wireless Components Letters, 26(5), 2016, 352-354

H. Chauhan, V. Kvartenko, R. Coxe, T. Weber, M. Onabajo
An Optimization Platform for Digital Predistortion of Power Amplifiers, IEEE Design & Test, 33(2), 2016, 49-58

C.-H. Chang, L. Xu, M. Onabajo
Instrumentation Amplifier and Current Injection Circuit Design for Input Impedance Boosting in Biopotential and Bioimpedance Measurements, Analog Integrated Circuits and Signal Processing, 88(2), 2016, 289-302

H. Chauhan, Y. Choi, M. Onabajo, I. Jung, Y.-B. Kim
Accurate and Efficient On-chip Spectral Analysis for Built-in Testing and Calibration Approaches, IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 22(3), 2014, 497-506

C.-J. Park, M. Onabajo, J. Silva-Martinez
External Capacitor-less Low Drop-out Regulator with 25dB Superior Power Supply Rejection in the 0.4-4MHz Range, IEEE Journal of Solid-State Circuits, 27(2), 2014, 486-501

SELECTED RESEARCH PROJECTS

CAREER: Low-Power Transceiver Design Methods for Wireless Medical Monitoring
Principal Investigator, National Science Foundation

Integrated Self-calibrated Analog Front-end for Biopotential and Bioimpedance Measurements
Principal Investigator, National Science Foundation

MARY JO ONDRECHEN

Professor, Chemistry; affiliated faculty, Bioengineering

PhD, Northwestern University, 1978
bioe.neu.edu/people/ondrechen-mary-jo

Scholarship focus: enzyme catalysis; functional genomics; modeling of enzyme substrate interactions; drug discovery; bioinformatics; protein design

SELECTED PUBLICATIONS

C.L. Mills, P.J. Beuning, M.J. Ondrechen
Biochemical Functional Predictions for Protein Structures of Unknown or Uncertain Function, Computational and Structural Biotechnology Journal, 13, 2015, 182-191

H.R. Brodkin, N.A. DeLateur, S. Somarowthu, C.L. Mills, W.R. Novak, P.J. Beuning, D. Ringe, M.J. Ondrechen
Prediction of Distal Residue Participation in Enzyme Catalysis, Protein Science, 24(5), 2015, 762-778

R.N. Hanson, P. Tongcharoensirikul, K. Barnsley, M.J. Ondrechen, A. Hughes, E.R. DeSombre
Synthesis and Evaluation of 2-halogenated-1,1-bis(4-hydroxyphenyl)-2-(3-hydroxyphenyl)-ethylenes as Potential Estrogen Receptor-targeted Radiodiagnostic and Radiotherapeutic Agents, Steroids, 96, 2015, 50-62

R. Thomas, J. Lee, V. Chevalier, S. Sadler, K. Selesniemi, S. Hatfield, M. Sitkovsky, M.J. Ondrechen, G.B. Jones
Design and Evaluation of Xanthine Based Adenosine Receptor Antagonists: Potential Hypoxia Targeted Immunotherapies, Bioorganic and Medicinal Chemistry, 21, 2013, 7453-7464

Z. Wang, P. Yin, J.S. Lee, R. Parasuram, S. Somarowthu, M.J. Ondrechen
Protein Function Annotation with Structurally Aligned Local Sites of Activity (SALSAs), BMC Bioinformatics, 14(Suppl 3), 2013

SELECTED RESEARCH PROJECTS

Chemical Signatures for the Discovery of Protein Function
Principal Investigator, National Science Foundation

Distal Residues in Enzyme Catalysis and Protein Design
Principal Investigator, National Science Foundation

SARAH OSTADABBAS

Assistant Professor, Electrical and Computer Engineering

PhD, University of Texas at Dallas, 2014
ece.neu.edu/people/ostadabbas-sarah

Scholarship focus: machine learning/pattern recognition; signal and image processing; human decision support systems; augmented cognition system with medical applications

SELECTED PUBLICATIONS

S. Ostadabbas, S.N. Housley, N. Sebkhi, K. Richards, D. Wu, Z. Zhang, M.G. Rodriguez, L. Warthen, C. Yarbrough, S. Balagaje, A.J. Butler, M. Ghovanloo
A Tongue-controlled Robotic Rehabilitation: Preliminary Evidence for Function and Quality of Life Improvement in Stroke Survivors, Journal of Rehabilitation Research and Development (JRRD), 2016

S. Ostadabbas, N. Sebkhi, M. Zhang, S. Rahim, L.J. Anderson, F. Lee, M. Ghovanloo
A Vision-based Respiration Monitoring System for Passive Airway Resistance Estimation, IEEE Transactions on Biomedical Engineering (TBME), 2016

S. Ostadabbas, M. Ghovanloo, A.J. Butler
Developing A Tongue Controlled Exoskeleton for a Wrist Tracking Exercise: A Preliminary Study, Journal of Medical Devices (JMD), 9, 2015

S. Ostadabbas, M. Nourani, R. Yousefi, M. Pompeo
A Knowledge-based Modeling for Plantar Pressure Image Reconstruction, IEEE Transactions on Biomedical Engineering (TBME), 61(10), 2014, 2538-2549

S. Ostadabbas, R. Yousefi, M. Nourani, M. Faezipour, L. Tamil, M. Pompeo
A Resource-efficient Planning for Pressure Ulcer Prevention, IEEE Transactions on Information Technology in BioMedicine (TITB), 16(6), 2012, 1265-1273

TASKIN PADIR

Associate Professor, Electrical and Computer Engineering; affiliated faculty Mechanical and Industrial Engineering

PhD, Purdue University, 2004
ece.neu.edu/people/padir-taskin

Scholarship focus: humanoid robots, dexterous manipulation, model-based robot design, human-supervised robot autonomy, medical cyber-physical systems

Honors and awards: Kalenian Award for Entrepreneurial Spirit, HEART: Humans Empowered with Assistive Robot Technologies; Romeo L. Moruzzi Young Faculty Award for Innovation in Undergraduate Education

SELECTED PUBLICATIONS

C.G. Atkeson, M. DeDonato, X. Long, F. Polido, T. Padir, et. al.
Team WPI-CMU: Achieving Reliable Humanoid Behavior in the DARPA Robotics Challenge, Journal of Field Robotics, Special Issue on the DARPA Robotics Challenge Finals, 2016

N. Banerjee, X. Long, R. Du, F. Polido, S. Feng, C.G. Atkeson, M. Gennert, T. Padir
Human-supervised Control of the ATLAS Humanoid Robot for Traversing Doors in Human Robots, IEEE-RAS 15th International Conference, 2015, 722-729

V. Dimitrov, V. Jagtap, J. Skorinko, S. Chernova, M. Gennert, T. Padir
Human-centered Design of a Cyber-physical System for Advanced Response to Epidemics, EMBC 2015 Annual International Conference of the IEEE, Milan, Italy, 2015

M.P. DeDonato, V. Dimitrov, T. Padir
Towards an Automated Checked-baggage Inspection System Augmented with Robots, SPIE Defense+Security, Sensors, and Command, Control, Communications, and Intelligence (C3I) Technologies for Homeland Security and Homeland Defense XIII, 2014

G. Schirner, D. Erdogmus, K. Chowdhury, T. Padir
The Future of Human-in-the-loop Cyber-physical Systems, IEEE Computer, 46(1), 2013, 36-45

SELECTED RESEARCH PROJECTS

Accessible Testing on Humanoid-robot-R5 and Evaluation of NASA Administered (ATHENA) Administered (ATHENA) Space Robotics Challenge
Principal Investigator, National Aeronautics and Space Administration

Customer Discovery for Field-deployable Indoor Localization Technology
Principal Investigator, National Science Foundation

Enhancing Disabilities Engineering Research and Education Through Robotics Capstone Projects
Principal Investigator, National Science Foundation

Model-based Designs in Smart Environments to Enable Independent Living
Principal Investigator, Intel Corporation

Realization of a Medical Cyber-physical System to Enhance Safety of Ebola Workers
Principal Investigator, National Science Foundation

HARI PARAMESWARAN

Assistant Professor, Bioengineering

PhD, Boston University, 2009
bioe.neu.edu/people/parameswaran-harikrishnan

Scholarship focus: In-situ interactions of organized cellular structures in tissue with their extracellular matrix (ECM); airway smooth muscle-ECM interactions under static and dynamic stretch conditions

SELECTED PUBLICATIONS

S. Sato, E.B. Suki, H. Parameswaran , H. Hamakawa, B. Suki
Scale Dependence of Structure-Function Relationship in the Emphysematous Mouse Lung, Frontiers in Physiology, 6(146), 2015

M.V. Szabari, J. Tolnai, B.A. Maár, H. Parameswaran, E. Bartolák-Suki, B. Suki, Z. Hanto
Lung Structure and Function in Elastase-treated Rats: A Follow-up Study, Respiratory Physiology and Neurobiology, 215, 2015, 13-19

B. Harvey, H. Parameswaran, K.R. Lutchen
Can Breathing-like Pressure Oscillations Reverse or Prevent Narrowing of Small Intact Airways?, Journal of Applied Physiology, 119(1), 2015, 47-54

E.B.Suki, J. Imsirovic, H. Parameswaran, T. Wellman, N Martinez, P.G. Allen, U. Frey, B. Suki
Fluctuation-driven Mechanotransduction Regulates Mitochondrial-network Structure and Function, Nature Materials, 14, 2015, 1049-1057

H. Parameswaran, K.R. Lutchen, B. Suki
A Computational Model of the Response of Adherent Cells to Stretch and Changes in Substrate Stiffness, Journal of Applied Physiology 116(7), 2014, 825-834

S.R. Polio, H. Parameswaran, E.P. Canovic, D. Stamenovic, M.L. Smith
Topographical Control of Multiple Cell Adhesion Molecules for Traction Force Microscopy, Integrative Biology 6(3), 2014, 357-365

A. Takahashi, A. Majumdar, H. Parameswaran, E.B. Suki, B. Suki
Proteoglycans Maintain Lung Stability in an Elastase-treated Mouse Model of Emphysema, American Journal of Respiratory Cell and Molecular Biology, 51(1), 2014, 26-33

SELECTED RESEARCH PROJECTS

Advanced Image-based Approach to Assess How Fibrillar Collagen Modulates Airway Reactivity
Principal Investigator, National Institutes of Health/National Heart, Lung, and Blood Institute (NHI/NHLBI)

Extracellular Determinants of Airway Smooth Muscle Force: A New Paradigm for Sustained Airway Constriction
Principal Investigator, National Institutes of Health

RUPAL PATEL

Professor, Communication Science and Disorders; jointly appointed, College of Computer and Information Science; affiliated faculty: Bioengineering, Electrical and Computer Engineering

PhD, University of Toronto, 2000
ece.neu.edu/people/patel-rupal

Scholarship focus: speech sciences; speech motor control in neuromotor speech disorders; multimodal interfaces for assistive communication; personal health informatics

SELECTED PUBLICATIONS

R.I Patel, D. Erdogmus, et al.
RSVP IconMessenger: Icon-based Brain-interfaced Alternative and Augmentative Communication, Brain-Computer Interfaces, 1(3-4), 2014, 192-203

R. Patel, H. Kember, S. Natale
Feasibility of Augmenting Text With Visual Prosodic Cues to Enhance Oral Reading, Speech Communication, 65, 2014, 109-118

T. Mills, H.T. Bunnell, R. Patel
Towards Personalized Speech Synthesis for Augmentative and Alternative Communication, Augmentative and Alternative Communication, 30(3), 2014, 226-236

R. Patel, K. Connaghan, D. Franco, E. Edsall, D. Forgit, et al.
"The Caterpillar": A Novel Reading Passage for Assessment of Motor Speech Disorders, American Journal of Speech-Language Pathology, 22(1), 2013, 1-9

K. Wiegand, R. Patel
Non-syntactic Word Prediction for AAC, Proceedings of the Third Workshop on Speech and Language Processing for Assistive Technologies, 2012, 28-36

K. Wiegand, R. Patel
SymbolPath: A Continuous Motion Overlay Module for Icon-based Assistive Communication, Proceedings of the 14th International ACM SIGACCESS Conference on Computers and Accessibility, 2012, 209-210

SELECTED RESEARCH PROJECTS

EAGER: Wireless Sensing of Speech Kinematics and Acoustics for Remediation
Principal Investigator, National Science Foundation

Minimally Verbal ASD: From Basic Mechanisms to Innovative Interventions
Co-Principal Investigator, National Institutes of Health

Multimodal Speech Translation for Assistive Communication
Principal Investigator, National Institutes of Health

MARK PATTERSON

Professor, Marine and Environmental Sciences; jointly appointed, Civil and Environmental Engineering

PhD, Harvard University, 1985
civ.neu.edu/people/patterson-mark

Scholarship focus: development of autonomous underwater robots for civil infrastructure and marine sensing; decision support tools for gray/green infrastructure like tide gates; environmental fluid mechanics; biomechanics and mass transfer in living systems

Honors and awards: Member of the Year Award, Association of Unmanned Vehicle Systems International; Lockheed Martin Award for Excellence in Ocean Science and Engineering

SELECTED PUBLICATIONS

J. Elliott, M. Patterson, N. Summers, C. Miternique, E. Montocchio, E. Vitry
How does the Proliferation of the Coral-killing Sponge *Terpios hoshinata* Affect Benthic Community Structure on Coral Reefs?, Coral Reefs, 2016, 1-13

E.C. Edson, M.R. Patterson
MantaRay: A Novel Autonomous Sampling Instrument for In Situ Measurements of Environmental Microplastic Particle Concentrations, Proceedings of the IEEE/Marine Technology Society OCEANS 2015, 2015, 1-6

J. Elliott, M. Patterson, E. Vitry, N. Summers, C. Miternique
Morphological Plasticity allows Coral to Actively Overgrow the Aggressive Sponge *Terpios hoshinota* (Mauritius, Southwestern Indian Ocean), Marine Biodiversity, 2015, 1-5

W.S. Howard, A. Gu, M.M. Garcia, M. Patterson, E. Izzo
State of the World Report 2015: Water Challenges, Fédération Internationale Des Ingénieurs-Conseils (FIDIC) (International Federation of Consulting Engineers), Geneva, 2015, 46

S. Mukhopadhyay, C. Wang, M. Patterson, M. Malisoff, F. Zhang
Collaborative Autonomous Surveys in Marine Environments Affected by Oil Spills, Cooperative Robots and Sensor Networks 2014 (Second Edition), (Editors, A. Koubaa and A. Khelil), Special edition in the "Studies in Computational Intelligence" Springer Book Series, 554, 2014, 87-113

SELECTED RESEARCH PROJECTS

MantaRay Microplastics Sampler
Co-Principal Investigator, Schmidt Marine Technology Partners, Schmidt Family Foundation

The Effects of Black Band Disease and Ocean Acidification on the Physiological Performance of a Scleractinian Coral
Co-Principal Investigator, Protect Our Reefs, State of Florida

AMEET PINTO

Assistant Professor, Civil and Environmental Engineering

PhD, Virginia Tech, 2009
civ.neu.edu/people/pinto-ameet

Scholarship focus: microbial ecology and physiology, drinking water treatment and distribution, wastewater treatment, public health microbiology, molecular microbiology, 'omics analyses

Honors and awards: Bright IDEAS Award, Engineering and Physical Sciences Research Council

SELECTED PUBLICATIONS

Q.M. Bautista, J. Schroeder, M.C. Sevillano-River, R. Sungthong, U. Ijaz, W. Sloan, A.J. Pinto
Microbial Communities in Full-scale Drinking Water Distribution Systems – a Meta-analysis, Environmental Science: Water Research and Technology, 2016

Q.M. Bautista, O. Blakemore, J. Schroeder, J. Moses, M. Haffey, W. Sloan, A.J. Pinto
The Impact of Sampling, PCR, and Sequencing Replication on Discerning Changes in Drinking Water Bacterial Community over Diurnal Time-scales, Water Research, 90, 2016, 216-224

A.J. Pinto, D.N. Marcus, U.Z. Ijaz, Q.M. Bautista, G.J. Dick, L. Raskin
Metagenomic Evidence for the Presence of Comammox Nitrospira-like Bacteria in a Drinking Water System, mSphere Journal, 1, 2015

A.J. Pinto, J. Schroeder, M. Lunn, W.T. Sloan, L. Raskin
Spatial-temporal Survey and Occupancy-abundance Modeling to Predict Bacteria Community Dynamics in the Drinking Water Microbiome, mBio Journal, 5(3), 2014

A.J. Pinto, L. Raskin
PCR Biases Distort Bacterial and Archaeal Community Structure in Pyrosequencing Datasets, PLoS One, 7(8), 2012

A.J. Pinto, C. Xi, L. Raskin
Bacterial Community Structure in the Drinking Water Microbiome is Governed by Filtration Processes, Environmental Science and Technology, 46, 2012, 8851-8859

ELIZABETH PODLAHA-MURPHY

Professor, Chemical Engineering

PhD, Columbia University, 1992
che.neu.edu/people/podlaha-murphy-elizabeth

Scholarship focus: understanding, discovering, and developing novel electrodeposited nanomaterials

Honors and awards: National Science Foundation CAREER Award; Chair of the Division of Electrodeposition, The Electrochemical Society

SELECTED PUBLICATIONS

E. Vernickaite, U. Bubniene, H. Cesiulis, A. Ramanavicius, E. J. Podlaha
A Hybrid Approach to Fabricated Nanowire-Nanoparticle Composites of a Co-W Alloy and Au Nnoparticles, Journal of The Electrochemical Society, 163(7), 2016, D344-D348

A. Kola and E. J. Podlaha
Ag-W Electrodeposits with High W Content from Thiourea-Citrate Electrolytes, Journal of Electroanalytical Chemistry, 761, 2016, 125-130

E.J. Podlaha and S. Lucatero
Electrodeposited Au/FeAu Porous Nanowires for Enhanced Catalytic Ability–and Stability–of Reactions on Titania, United States Patent No. US 9,044,746 B2, 2015

S. Sun, E.J. Podlaha
Examination of Ni-W Induced Codeposition by Intensity Modulated Photocurrent Spectroscopy (IMPS), Journal of The Electrochemical Society, 161(6), 2014, D362-D366

S. Sun, T. Bairchanya, E.J. Podlaha
Induced Codeposition Behavior of Electrodeposited NiMoW Alloys, Journal of The Electrochemical Society, 160(10), 2013, D434-D440

SELECTED RESEARCH PROJECTS

Electrodeposition of NiFeMoW Alloys
Principal Investigator, National Association for Surface Finishing

Gigabyte Biomolecular Processor for Comprehensive Diagnostics and Precision
Co-Principal Investigator, Roche Diagnostics

CAREY RAPPAPORT

COE Distinguished Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Massachusetts Institute of Technology, 1987
ece.neu.edu/people/rappaport-carey

Scholarship focus: bioelectromagnetics, microwave tissue imaging, electromagnetic breast cancer detection and treatment, cardiac ablation therapy, microwave assisted balloon angioplasty, catheter-based sensing. Antennas, electromagnetic computation, subsurface sensing and imaging, explosives detection, security system conceptualization and design

Honors and awards: Fellow, Institute of Electrical and Electronics Engineers; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

C. Rappaport, B. Gonzalez-Valdes,
Multistatic Nearfield Imaging Radar for Portal Security Systems Using a High Gain Toroidal Reflector Antenna, European Conference on Antennas and Propagation (EuCAP), Lisbon, Portugal, 2015, *best paper award

M. Tajdini, B. Gonzalez-Valdes, J.A. Martinez-Lorenzo, A. Morgenthaler, C. Rappaport
Efficient 3D Forward Modeling of GPR Scattering from Rough Ground, IEEE International Symposium on Antennas and Propagation, Vancouver, Canada, 2015, 1686-1687

B. Gonzalez-Valdez, Y. Alvarez Lopez, J.A. Martinez Lorenzo, F. Las-Heras Andres, C. Rappaport
A Hybrid SAR – Model Based Method for High Resolution Imaging, IEEE International Symposium on Antennas and Propagation, Memphis, TN, 2014, 653-654

Y. Álvarez, F. Las-Heras, B. Gonzalez-Valdes, J.A. Martínez-Lorenzo, C. Rappaport
Accurate Profile Reconstruction Using An Improved SAR Based Technique, Proceedings of the IEEE International Antennas and Propagation Symposium (IAPS), 2013, 818-819

B. Gonzalez-Valdes, J.A. Martinez-Lorenzo, C. Rappaport
Dual Band SAR Processing for Low Dielectric Contrast Buried IED Detection, Proceedings of the IEEE IAPS, 2013, 1080-1081

SELECTED RESEARCH PROJECTS

Awareness and Localization of Explosive-Related Threats (ALERT)
Co-Principal Investigator, Department of Homeland Security

Concept Development And Modeling For Communicating With Oil Drilling Heads Using Low Frequency Electromagnetic Waves
Principal Investigator, Draper Laboratory Incorporated

Multi-Modality Electromagnetic Detection and Localization of Implanted Explosives Using Ultra Low Field MRI and Nuclear Quadrupole Resonance
Principal Investigator, Defense Advanced Research Projects Agency

PURNIMA RATILAL-MAKRIS

Associate Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Massachusetts Institute of Technology, 2002
ece.neu.edu/people/ratilal-makris-purnima

Scholarship focus: remote sensing; underwater acoustics; acoustical oceanography; bioacoustics; ultrasound imaging; nonlinear scattering; wave propagation in random media; signal, image and array processing; statistical inference theory

Honors and awards: Presidential Early Career Award for Scientists and Engineers; Office of Naval Research Young Investigator Award

SELECTED PUBLICATIONS

Z. Gong, A.D. Jain, D. Tran, P. Ratilal, et al.
Ecosystem Scale Acoustic Sensing Reveals Humpback Whale Behavior Synchronous with Herring Spawning Processes and Re-evaluation Finds No Effect of Sonar on Humpback Song Occurrence in the Gulf of Maine in Fall 2006, PLoS ONE, 9(10), 2014, e104733

D. Tran, W. Huang, A. Bohn, D. Wang, N. Makris, P. Ratilal, et al.
Using a Coherent Hydrophone Array for Observing Sperm Whale Range, Classification, and Shallow-water Dive Profiles, The Journal of the Acoustical Society of America, 135(6), 2014, 3352-3363

Z. Gong, D. Tran, P. Ratilal
Comparing Passive Source Localization and Tracking Approaches With a Towed Horizontal Receiver Array in an Ocean Waveguide, The Journal of the Acoustical Society of America, 134, 2013, 3705-3720

Z. Gong, T. Chen, P. Ratilal, N. Makris
Temporal Coherence of the Acoustic Field Forward Propagated Through a Continental Shelf with Random Internal Waves, The Journal of the Acoustical Society of America, 134, 2013, 3476-3485

D. Tran, M. Andrews, P. Ratilal
Probability Distribution for Energy of Saturated Broadband Ocean Acoustic Transmission: Results from Gulf of Maine 2006 Experiment, Journal of the Acoustical Society of America, 132, 2012, 3659-2672

M. Andrews, Z. Gong, P. Ratilal
Effects of Multiple Scattering, Attenuation and Dispersion in Waveguide Sensing of Fish, Journal of the Acoustical Society of America, 130, 2011, 1253-1271

MATTEO RINALDI

Assistant Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Pennsylvania, 2010
ece.neu.edu/people/rinaldi-matteo

Scholarship focus: understanding and exploiting the fundamental properties of micro/nanomechanical structures and advanced nanomaterials to engineer new classes of micro and nanoelectromechanical systems (M/NEMS) with unique and enabling features applied to the areas of chemical, physical and biological sensing and low power reconfigurable radio communication systems

Honors and awards: IEEE Sensors Council Early Career Award; National Science Foundation CAREER Award; Defense Advanced Research Projects Agency Young Faculty Award

SELECTED PUBLICATIONS

C. Cassella, Y. Hui, Z. Qian, G. Hummel, M. Rinaldi
Aluminum Nitride Cross-Sectional Lamé Mode Resonators, IEEE/ASME Journal of Microelectromechanical Systems, 25(2), 2016, 275-285

C. Cassella, G. Chen, Z. Qian, G. Hummel, M. Rinaldi
Cross-sectional Lamé Mode Ladder Filters for UHF Wideband Applications, IEEE Electron Device Letters, 37, 2016, 681-683

Z. Qian, Y. Hui, F. Liu, S. Kar, M. Rinaldi
Graphene-aluminum NEMS Resonant Infrared Detector, Microsystems and Nanoengineering, 2, 2016, 16026

Y. Hui, J. S. Gomez-Diaz, Z. Qian, A. Alu', M. Rinaldi
Plasmonic Piezoelectric Nanomechanical Resonator for Spectrally Selective Infrared Sensing, Nature Communications, 7, 2016, 11249

Z. Qian, F. Liu, Y. Hui, S. Kar and M. Rinaldi
Graphene as a Massless Electrode for Ultra-high-frequency Piezoelectric Nano Electro Mechanical Systems, Nano Letters, 15(7), 2015, 4599–4604

SELECTED RESEARCH PROJECTS

Microelectromechanical Resonant Circulator (MIRC)
Principal Investigator, DARPA MTO SPAR program

Plasmonic Microelectromechanical Infrared Digitizer (PLASMID)
Principal Investigator, DARPA MTO N-Zero program

Zero Power Sensors (ZePS)
Principal Investigator, DARPA MTO N-Zero program

CAREER: Nano Electro Mechanical Resonant Sensing Platform for Chip Scale, High Resolution and Ultra-fast Terahertz Spectroscopy and Imaging
Principal Investigator, National Science Foundation

Intrinsically Switchable and Programmable MEMS Filter Array
Principal Investigator, Defense Advanced Research Projects Agency

WILLIAM ROBERTSON

Assistant Professor, Computer & Information Science; jointly appointed, Electrical and Computer Engineering

PhD, University of California, Santa Barbara, 2009
ece.neu.edu/people/robertson-wil

Scholarship focus: trustworthy computing architectures; web security; statistical machine learning for anomaly detection; malware analysis using adversarial program analysis; reverse engineering; intrusion detection

SELECTED PUBLICATIONS

A. Ozcan, C. Mulliner, W. Robertson, E. Kirda, et al.
BabelCrypt: The Universal Encryption Layer for Mobile Messaging Applications, Proceedings of the International Conference on Financial Cryptography and Data Security (FC), Isla Verde, PR, 2015, 1-15

M. Weissbacher, W. Robertson, E. Kirda, C. Kruegel, G. Vigna
ZigZag: Automatically Hardening Web Applications Against Client-side Validation Vulnerabilities, Proceedings of the USENIX Security Symposium, Washington DC, 2015, 737-752

C. Mulliner, W. Robertson, E. Kirda
Hidden GEMs: Automated Discovery of Access Control Vulnerabilities in Graphical User Interfaces, Proceedings of the IEEE Symposium on Security and Privacy (Oakland), San Jose, CA, 2014, 1-14

M. Weissbacher, T. Lauinger, W. Robertson
Why is CSP Failing? Trends and Challenges in CSP Adoption, Proceedings of the International Symposium on Research in Attacks, Intrusions, and Defenses (RAID), Gothenburg, 2014, 1-22

K. Onarlioglu, C. Mulliner, W. Robertson, E. Kirda
PrivExec: Private Execution as an Operating System Service, Proceedings of the IEEE Symposium on Security and Privacy (Oakland), San Francisco, CA, 2013, 1-16

SELECTED RESEARCH PROJECTS

Automated Inference of High-Level Program Structure
Principal Investigator, Office of Naval Research

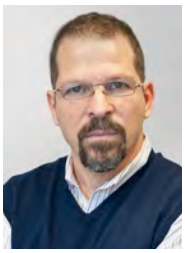
Continuum: Finding Space and Time Vulnerabilities in Java Programs
Principal Investigator, Defense Advanced Research Projects Agency

DarkDroid: Exposing the Dark Side of Android Marketplaces
Co-Principal Investigator, Defense Advanced Research Projects Agency

Firmalice: Modeling and Identifying Malice in Firmware
Co-Principal Investigator, Defense Advanced Research Projects Agency

Multi-disciplinary Preparation of Next Generation Information Assurance Practitioners
Co-Principal Investigator, National Science Foundation

JEFFREY RUBERTI



Professor, Bioengineering

PhD, Tulane University, 1998
bioe.neu.edu/people/ruberti-jeffrey

Scholarship focus: tissue engineering of load-bearing matrix (bone, cornea); bioreactor design; multi-scale mechanobiochemistry; statistical mechanics; energetics microscopy; high-resolution imaging; biopolymer self-assembly

Honors and awards: Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

J.A. Paten, S. Siadat, M.E. Susilo, I.N. Ebraheim, J.L. Stoner, J.P. Rothstein, J.W. Ruberti
Flow-induced Crystallization of Collagen: A Potentially Critical Mechanism in Early Tissue Formation, ACS Nano, 10(5), 2016, 5027-5040

B. Wingender, P. Bradley, N. Saxena, J.W. Ruberti, L. Gower
Biomimetic Organization of Collagen Matrices to Template Bone-like Microstructures, Matrix Biology, 52-54, 2016, 384-396

M. Susilo, J. Paten, E. Sander, T.D. Nguyen, J.W. Ruberti
Collagen Network Strengthening Following Cyclic Tensile Loading, Interface Focus, 6(1), 2016

T.K. Tonge, J.W. Ruberti, T.D. Nguyen
A Micromechanical Modeling Study of the Mechanical Stabilization of Enzymatic Degradation of Collagen Tissues, Biophysical Journal, 109(12), 2015, 2689-2700

E.H. Zhou, C. Watson, R. Pizzo, J. Cohen, Q. Dang, P.M. DeBarros, C.Y. Park, C. Chen, J.D. Brain, J.P. Butler, J.W. Ruberti, J.J. Fredberg, P. Demokritou
Assessing the Impact of Engineered Nanoparticles on Wound Healing Using a Novel in Vitro Bioassay, Nanomedicine, 9(18), 2014, 2803-2815

D. Karamichos C.B. Rich, R. Zareian, A.E.K. Hutcheon, J.W. Ruberti, V. Trinkaus-Randall, J.D. Zieske
TGF-ß3 Stimulates Stromal Matrix Assembly by Human Corneal Keratocyte-like Cells, Investigative Ophthalmology and Visual Science, 54(10), 2013, 6612-6619

SELECTED RESEARCH PROJECTS

Biomimetic Bone: from Nano to Micro
Principal Investigator, National Science Foundation

Mechanobiology of Matrix Production
Principal Investigator, National Institutes of Health

MATTHIAS RUTH

Professor and Director, School of Public Policy and Urban Affairs; jointly appointed, Civil and Environmental Engineering

PhD, University of Illinois, 1992
civ.neu.edu/people/ruth-matthias

Scholarship focus: dynamic modeling of social, economic and environmental systems, and their interactions; urban infrastructure systems analysis and modeling; urban climate impacts and adaptation; energy and resources economics and policy

SELECTED PUBLICATIONS

M. Ruth, O. Özgün, J. Wachsmuth, S. Gößling-Reisemann
Dynamics of Energy Transitions Under Changing Socioeconomic, Technological and Climate Conditions in Northwest Germany, Ecological Economics, 111, 2015, 29-47

S. Qiu, M. Ruth, S. Ghosh
Evacuated Tube Collectors: A Notable Driver Behind the Solar Water Heater Industry in China, Renewable and Sustainable Energy Reviews, 47, 2015, 580-588

M. Ruth, R.S. Franklin
Livability for all? Conceptual Limits and Practical Implications, Applied Geography, 49, 2014, 18-23

J. Zhu, M. Ruth
The Development of Regional Collaboration for Resource Efficiency: a Network Perspective on Industrial Symbiosis, Computers, Environment and Urban Systems, 44, 2014, 37-46

J. Wachsmuth, A. Blohm, S. Gössling-Reisemann, T. Eickemeier, M. Ruth, R. Gasper, S. Stürmann
How Will Renewable Power Generation be Affected by Climate Change? The Case of a Metropolitan Region in Northwest Germany, Energy, 58, 2013, 192-201

J. Zhu, M. Ruth
Exploring the Resilience of Industrial Ecosystems, Journal of Environmental Management, 122, 2013, 65-75

E. Douglas, P. Kirshen, M. Paolisso, C. Watson, J.Wiggin, M. Ruth
Coastal Flooding, Climate Change, and Environmental Justice: Identifying Obstacles and Incentives for Adaptation in Two Metropolitan Boston Massachusetts Communities, Mitigation & Adaptation Strategies for Global Change, 17(5), 2012, 537-562

SELECTED RESEARCH PROJECTS

RSB: A Decision and Design Framework for Multi-hazard Resilient and Sustainable Buildings
Co-Principal Investigator, National Science Foundation

Incentives and Governance, Critical Infrastructures Resilience Center
Principal Investigator, Department of Homeland Security

The Effect of Energy-saving Regulations on the Location of Manufacturing
Principal Investigator, National Science Foundation

VINOD SAHNEY

University Distinguished Professor, Mechanical and Industrial Engineering

PhD, University of Wisconsin, Madison, 1970
mie.neu.edu/people/sahney-vinod

Scholarship focus: health care initiatives; industrial engineering; operations research

Honors and awards: Member, Institute of Medicine, National Academy of Science; Member, National Academy of Engineering; Fellow, Health Care Information and Management Systems Society; Fellow, Institute of Industrial Engineers; Gilbreth Award for Lifetime Contribution to Industrial Engineering; Institute for Industrial and Systems Engineering; Atrius Health Care, Boston, MA Board of Directors; Syntel Inc., Board of Directors; SCL Health System, Denver, Board of Directors; Brigham and Women's Hospital, Boston, MA, Patient Safety Research Center, Advisory Board

SELECTED PUBLICATIONS

A. Zeid , S. Kamarthi, V.K. Sahney
Research Issues in Patient Centric Healthcare, International Journal of Collaborative Enterprise, 4(1/2), 2014, 1-135

V.K. Sahney
Managing Implementation: The Unanswered Question, Frontiers of Health Services Management, 20(3), 2004, 29-36

V.K. Sahney
Generating Management Research on Improving Quality, Health Care Management Review, 2(4), 2003, 335-347

J.R. Griffith, V. Sahney, R.A. Mohr
Re-engineering Health Care: Building on CQI, Health Administration Press, Ann Arbor, MI, 1995

MASOUD SALEHI

Associate Professor, Electrical and Computer Engineering

PhD, Stanford University, 1979
ece.neu.edu/people/salehi-masoud

Scholarship focus: error correcting codes; information theory; digital communications

SELECTED PUBLICATIONS

K.-L. Huang, V.C. Gaudet, M. Salehi
A Hybrid ARQ Scheme Using LDPC Codes with Stochastic Decoding, Proceedings of the 49th Annual Conference on Information Sciences and Systems, 2015, 1-4

N. Yang, M. Salehi
A Family of Orthogonal Full Rate Differential Space Time Block Code Systems, Proceedings of the IEEE Military Communications Conference (MILCOM), Baltimore, MD, October 6-8, 2014, 569-574

John G. Proakis and Masoud Salehi
Fundamentals of Communication Systems, Second Edition Pearson, 2014

K. Firouzbakht, G. Noubir, M. Salehi
On the Performance of Adaptive Packetized Wireless Communication Links Under Jamming, IEEE Transactions on Wireless Communications, 13(7), 2014, 3481-3495

K.-L. Huang, V. Gaudet, M. Salehi
Output Decisions for Stochastic LDPC Decoders, Proceedings of the 48th Annual Conference on Information Sciences and Systems, Princeton, New Jersey, 2014, 1-5

K. Firouzbakht, G. Noubir, M. Salehi
Packetized Wireless Communication Under Jamming, a Constrained Bimatrix Game, Proceedings of the IEEE Global Communications Conference (GLOBECOM), 2014, 740-745

K. Firouzbakht, G. Noubir, M. Salehi
Quadratic Program Solution of Communication Links Under Jamming, Proceedings of the 48th Asilomar Conference on Signals, Systems and Computers, 2014, 1011-1015

O. Vahabzadeh, M. Salehi
A Novel Two-user Cooperation Scheme for Cooperative Communications Based on Protograph-based Low-density Parity-check (LDPC) Codes, Proceedings of the 47th annual conference on Information Sciences and Systems, 2013, 1-4

J.G. Proakis, M. Salehi, G. Bauch
Contemporary Communication Systems Using Matlab, Third Edition Cengage Learning 2013

MEHRDAD SASANI

Associate Professor, Civil and Environmental Engineering

PhD, University of California at Berkeley, 2001
civ.neu.edu/people/sasani-mehrdad

Scholarship focus: progressive collapse of structures; earthquake engineering; structural resilience, integrity and reliability

Honors and awards: Fellow, American Society of Civil Engineers; Fellow, Structural Engineering Institute; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

J.A. Murray, E. Hecht, M. Sasani
Modeling Bar Slip in Nonductile Reinforced Concrete Columns, Journal of Structural Engineering, ASCE, 04016085, 2016, 1-12

J.A. Murray, M. Sasani
Near-collapse Response of Existing RC Building under Severe Pulse Type Ground Motion using Hybrid Simulation, Earthquake Engineering and Structural Dynamics, 45(7), 2016,1109–1127

L. Keyvani, M. Sasani
Analytical and Experimental Evaluation of Progressive Collapse Resistance of a Flat-slab Posttensioned Parking Garage, Journal of Structural Engineering, ASCE, 141(11), 2015

J.A. Murray, M. Sasani, X. Shao
Hybrid Simulation for System-level Structural Response, Engineering Structures, 103, 2015, 228-238

S. Sagiroglu, M. Sasani
Progressive Collapse Resisting Mechanisms of Reinforced Concrete Structures and Effects of Initial Damage Locations, Journal of Structural Engineering, ASCE, 140(3), 2014, 1-12

J.A. Murray, M. Sasani
Seismic Shear-axial Failure of Reinforced Concrete Columns Versus System Level Structural Collapse, Journal of Engineering Failure Analysis, 32, 2013, 382-401

M. Sasani, S. Sagiroglu
Gravity Load Redistribution and Progressive Collapse Resistance of a 20-story RC Structure Following Loss of an Interior Column, Structural Journal, ACI, 107(6), 2010, 636-644

M. Sasani, J. Kropelnicki
Progressive Collapse Analysis of an RC Structure, The Structural Design of Tall and Special Buildings, 17(4), 2008, 757-772

SELECTED RESEARCH PROJECTS

NEESR: Near Collapse Performance of Existing RC Concrete Frame Buildings
Principal Investigator, National Science Foundation

RSB: A Decision and Design Framework for Multi-hazard Resilient and Sustainable Buildings
Principal Investigator, National Science Foundation

CARMEN SCEPPA

Professor and Chair, Health Sciences; affiliated faculty, Bioengineering

PhD, Tufts University, 1994
MD, Francisco Marroquin University, 1987
bioe.neu.edu/people/sceppa-carmen

Scholarship focus: aging and gerontology; physical activity, exercise, and nutrition science

SELECTED PUBLICATIONS

M.P. Shiyko, S. Hallinana, M. Seif El-Nasr, S. Durga, C. Castaneda-Sceppa
Effects of Playing a Serious Computer Game on Body Mass Index & Nutrition Knowledge in Women, Journal of Medical Internet Research, 4(1), 2016

J. Hoffman, C. Wirth, S. Johnson, S. Carter, M. DuBois, C. Cox, C. Castaneda-Sceppa
Engaging Head Start Families in Childhood Obesity Prevention: School-Home Communication about Children's Height and Weight Screenings, National Head Start Association Dialog, 18, 2015, 92-99

H. Saksono, A. Ranade, G. Kamarthi, C. Castaneda-Sceppa, J. Hoffman, C. Wirth, A. Parker
Spaceship Launch: Designing a Collaborative Exergame for Families, Computer-Supported Cooperative Work and Social Computing, 2015, 1776-1787

N. Brooks, S.M. Cadena, G. Cloutier, C. Castaneda-Sceppa, et al.
Influence of Exercise on the Metabolic Profile Caused by 28 days of Bed Rest with Energy Deficit and Amino Acid Supplementation in Healthy Men, International Journal of Medical Sciences, 11(12), 2014, 1248-1257

C. Castaneda-Sceppa, J.A. Hoffman, J. Thomas, M. DuBois, et al.
Family Gym: A Model to Promote Physical Activity for Families with Young Children, Journal of Health Care for the Poor and Underserved, 25(3), 2014, 1101-1107

G. Cloutier, K. Khrapko, C. Castaneda-Sceppa, et al.
Bedrest Increases Burden of Mitochondrial DNA Deletions in Human Muscle, FASEB Journal, 27, 2014, 956.1

C. Castaneda-Sceppa, K.O. O'Brien, S.A. Abrams SA, et al.
Calcium Kinetics During Bed Rest with Artificial Gravity and Exercise Countermeasures, Osteoporosis International, 25, 2014, 2237-2244

SELECTED RESEARCH PROJECTS

Boston Area Roybal Center
Co-Principal Investigator, National Institutes of Health

Modifying the Workplace to Decrease Sedentary Behavior
Co-Investigator, The National Institute for Occupational Safety and Health

Northeastern Center for Technology Supporting Self Management in Older Adults
Co-Principal Investigator, National Institutes of Health

Improving Outcomes in People with Dementia
Co-Principal Investigator, Senior Link

GUNAR SCHIRNER

Associate Professor, Electrical and Computer Engineering

PhD, University of California, Irvine, 2008
ece.neu.edu/people/schirner-gunar

Scholarship focus: embedded computer systems; novel architectures for embedded vision; cyber-physical systems; system-level design and methodologies; hardware/software co-design

SELECTED PUBLICATIONS

N. Teimouri, H. Tabkhi, G. Schirner
Improving Scalability of CMPs with Dense ACCs Coverage, Design Automation and Test in Europe (DATE), Dresden, Germany, 2016

C. Zhang, H. Tabkhi and G. Schirner
Studying Inter-Warp Divergence Aware Execution on GPUs, IEEE Computer Architecture Letters, 2015

H. Tabkhi, G. Schirner
A Joint SW/HW Approach for Reducing Register File Vulnerability, ACM Transactions on Architecture and Code Optimization (ACM TACO), 2015

H. Tabkhi G. Schirner
Application-guided Power Gating Reducing Register File Static Power, IEEE Transactions on Very Large Scale Integration (TVLSI), 22(12), 2014, 2513-2526

J. Zhang, G. Schirner
Automatic Specification Granularity Tuning for Design Space Exploration, Design Automation and Test in Europe (DATE), Dresden, Germany, 2014, 1-6

H. Tabkhi, R. Bushey, G. Schirner
Function-level Processor (FLP): A High Performance, Minimal Bandwidth, Low Power Architecture for Market-oriented MPSoCs, IEEE Embedded Systems Letters, 2014

H. Tabkhi, R. Bushey, G. Schirner
Function-level Processor (FLP): Raising Efficiency by Operating at Function Granularity for Market-oriented MPSoCs, IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP), Zurich, Switzerland, 2014

G. Schirner, D. Erdogmus, K. Chowdhury, T. Padir
The Future of Human-in-the-loop Cyber-physical Systems, IEEE Computer, 46(1), 2013, 36-45

SELECTED RESEARCH PROJECTS

Collaborative Research: Holistic Design Methodology for Automated Implementation of Human-in-the-loop Cyber-physical Systems
Principal Investigator, National Science Foundation

Power Efficient Emerging Heterogeneous Platforms
Principal Investigator, National Science Foundation

BAHRAM SHAFAI

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, George Washington University, 1985
ece.neu.edu/people/shafai-bahram

Scholarship focus: control systems; digital signal processing; robust and optimal control

Honors and awards: Associate Editor, Editorial Board and Program Chair of ISIAC-WAC; Senior Member, Institute of Electrical and Electronics Engineers

SELECTED PUBLICATIONS

B. Shafai, S. Nazari, A. Oghbaee
Positive Unknown Input Observer Design for Positive Linear Systems, Proceedings 19th International Conference on System Theory, Control and Computing (ICSTCC), Cheile Gradistei, Romania, 2015, 360-365

B. Shafai, M. Saif
Proportional-integral Observer in Robust Control, Fault Detection, and Decentralized Control of Dynamic Systems, Control and Systems Engineering, Springer International Publishing, 2015, 13-43

S.M.M. Alavi, M. Saif, B. Shafai
Accurate State Estimation in DC-DC Converters Using a Proportional Integral Observer (PIO), Proceedings of 23rd IEEE International Symposium on Industrial electronics (ISIE), 2014, 1304-1309

R. Ghadami, B. Shafai
Distributed Observer-based LQR Design for Multi-agent Systems, Proceeding of ISIAC, World Automation Congress, Kona, HI, 2014, 520-526

P. Brunet, B. Shafai
Identification of Loudspeakers Using Fractional Derivatives, Journal of the Audio Engineering Society, 62(7/8), 2014, 505-515

B. Shafai, A Oghbaee
Positive Observer Design for Fractional Order Systems, Proceeding of ISIAC, World Automation Congress, Kona, HI, 2014, 531-537

B. Shafai, A Oghbaee
Positive Quadratic Stabilization of Uncertain Linear System, Proceeding of IEEE Multi-conference on Systems and Control, CAA, Antibes, France, 2014, 1412-1417

B. Shafai, A. Oghbaee, T. Tanaka
Positive Stabilization with Maximum Stability Radius for Linear Time-delay Systems, 2014 IEEE 53rd Annual Conference on Decision and Control, 2014, 1948-1953

R. Ghadami, B. Shafai
Decomposition-based Distributed Control for Continuous-time Multi-agent Systems, IEEE Transactions on Automatic Control, 58(1), 2013, 258-264

THOMAS SHEAHAN

Professor, Civil and Environmental Engineering; Sr. Associate Dean for Academic Affairs

ScD, Massachusetts Institute of Technology, 1991
civ.neu.edu/people/sheahan-thomas

Scholarship focus: soft ground engineering, coastal adaptation, education and training for engineers and scientists

Honors and awards: Fellow, American Society of Civil Engineers

SELECTED PUBLICATIONS

S. Barbuto, T.C. Sheahan, J.P. Shine, A. Alshawabkeh, et al.
Benchscale Assessment of the Efficacy of a Reactive Core Mat to Isolate PAH-spiked Aquatic Sediments, Soil and Sediment Contamination: An International Journal, 23(1), 2014

D. Meric, A.N. Alshawabkeh, J.P. Shine, T.C. Sheahan
Bioavailability of Hydrophobic Organic Compounds in Thin-layered Sediments, Chemosphere, 103, 2014, 281-289

M.A. Kenney, E. Hamin, T.C. Sheahan
Reconceptualizing the Role of Infrastructure in Resilience, EOS meeting report, 95(33), 2014

D. Cheney, L. Rajicb, E. Sly, D.Meric, T.C. Sheahan
Uptake of PCBs Contained in Marine Sediments by the Green Macroalga *Ulva* Rigida, Marine Pollution Bulletin, 88(1-2), 2014, 207-214

K. Santora. E.J. Mason, T.C. Sheahan
A Model for Progressive Mentoring in Science and Engineering Education and Research, Innovative Higher Education, 38(5), 2013, 427-440

SELECTED RESEARCH PROJECTS

Sustainable Adaptive Gradients in the Coastal Environment: Reconceptualizing the Role of Infrastructure in Resilience
Co-Principal Investigator, National Science Foundation

Puerto Rico Testsite for Exploring Contamination Threats (PROTECT), a National Institute of Environmental Health Sciences Superfund Research Center. PROTECT investigates the relationship between environmental contamination and preterm birth
Training Core Leader, National Institutes of Health

SANDRA SHEFELBINE

Associate Professor, Mechanical and Industrial Engineering; joint faculty appointment in: Bioengineering

PhD, Stanford University, 2002
mie.neu.edu/people/shefelbine-sandra

Scholarship focus: multi-scale bone biomechanics–how the structure and composition of bone influences its mechanical properties; mechano-adaptation of bone and joint–how tissue responds to mechanical signals

SELECTED PUBLICATIONS

B. Depalle, Z. Qin, S.J. Shefelbine, M.J. Buehler
Large Deformation Mechanisms, Plasticity, and Failure of an Individual Collagen Fibril With Different Mineral Content, Journal of Bone and Mineral Research, 31(2), 2016, 380-390

P. Yadav, S.J. Shefelbine, E.M. Gutierrez-Farewik
Effect of Growth Plate Geometry and Growth Direction on Prediction of Proximal Femoral Morphology, Journal of Biomechanics, 49(9), 2016, 1613-1619

M. Giorgi, A. Carriero, S.J. Shefelbine, N.C. Nowlan
Effects of Normal and Abnormal Loading Conditions on Morphogenesis of the Prenatal Hip Joint: Application to Hip Dysplasia, Journal of Biomechanics, 48(12), 2015, 3390-3397

B. Depalle, Z. Qin, S.J. Shefelbine, M.J. Buehler
Influence of Cross-link Structure, Density and Mechanical Properties in the Mesoscale Deformation Mechanisms of Collagen Fibrils, Journal of the Mechanical Behavior of Biomedical Materials, 52, 2015, 1-13

B. Javaheri, A. Carriero, K.A. Staines, Y.-M. Chang, D.A. Houston, K.J. Oldknow, J.L. Millán, B.N. Kazeruni, P. Salmon, S.J. Shefelbine, C. Farquharson, A.A. Pitsillides
Phospho 1 Deficiency Transiently Modifies Bone Architecture yet Produces Consistent Modification in Osteocyte Differentiation and Vascular Porosity with Ageing, Bone, 81, 2015, 277-291

A.F. Pereira, B. Javaheri, A.A. Pitsillides, S.J. Shefelbine
Predicting Cortical Bone Adaptation to Axial Loading in the Mouse Tibia, Journal of the Royal Society, Interface, 12(110), 2015

O.G. Andriotis, S.W. Chang, M. Vanleene, P.H. Howarth, D.E. Davies, S.J. Shefelbine, M.J. Buehler, P.J. Thurner
Structure-mechanics Relationships of Collagen Fibrils in the Osteogenesis Imperfecta Mouse Model, Journal of the Royal Society, Interface/the Royal Society, 12(111), 2015

P.L. Salmon, C. Ohlsson, S.J. Shefelbine, M. Doube
Structure Model Index Does Not Measure Rods and Plates in Trabecular Bone, Frontiers in Endocrinology, 6, 2015, 162

SELECTED RESEARCH PROJECTS

Hetrogeneity and Anisotropy in Fracture Toughness
Principal Investigator, National Science Foundation

Keeping Hockey Hips Healthy
Principal Investigator, US Hockey Foundation

Multi-scale Characteristics of Bone Toughness
Principal Investigator, National Science Foundation

AATMESH SHRIVASTAVA

Assistant Professor, Electrical and Computer Engineering

PhD, University of Virginia, 2014
ece.neu.edu/people/shrivastava-aatmesh

Scholarship focus: self-powered and ultra-low power circuits and system; energy-harvesting and power-first system/computer architecture; internet-of-things; ultra-low power bio-medical and neural circuits and systems; exascale computing ; high reliability system design

SELECTED RESEARCH PROJECTS

N.E. Roberts, K. Craig, A. Shrivastava, S. Wooters, Y. Shaksheer, D. Wentzloff, B.H. Calhoun
A 236nW-56.5dBm Sensitivity Bluetooth Low-energy Wakeup Receiver with Energy Harvesting in 65nm CMOS, IEEE Solid-State Circuits Conference (ISSCC), 2016

A. Shrivastava, D. Akella, and B. H. Calhoun
A 1.5nW, 32.768kHz XTAL Oscillator Operational from 0.3V Supply, IEEE Journal of Solid- State Circuits, 51(3), 2016, 686-696

A. Roy, A. Klinefelter, F.B. Yahya, X. Chen, P. Gonzalez, D. Akella, J. Boley, K. Craig, M. Faisal, S. Oh, N.E. Roberts, Y. Shakhsheer, A. Shrivastava, D. Vasudevan, D.D. Wentzloff, and B.H. Calhoun
A 6.45µW Self-Powered SoC with Integrated Energy-harvesting Power Management and ULP Asymmetric Radios for Portable Biomedical Systems, IEEE Transactions on Biomedical Circuits and Systems, 9(6), 2015, 862-874 ** Invited paper to the special issue on International Solid State Circuits Conference 2015

A. Shrivastava, N.E. Roberts, O.U. Khan, D.D. Wentzloff, B.H. Calhoun
A 10mV-input Boost Converter with Inductor Peak Current Control and Zero Detection for Thermoelectric and Solar Energy Harvesting with 220mV Cold-start and -14.5dBm, 915MHz RF Kick-start, IEEE Journal of Solid-State Circuits, 2015
** Invited paper to the special issue on Custom Integrated Circuits Conference 2014

A. Shrivastava, K. Craig, N.E. Roberts, D. Wentzloff, B.H. Calhoun
A 32nW Bandgap Reference Voltage Operational from 0.5V Supply for Ultra-low Power Systems, IEEE Solid-State Circuits Conference (ISSCC), 2015

A. Klinefelter, N.E. Roberts, Y. Shakhsheer, P. Gonzalez, A. Shrivastava, A. Roy, K. Craig, M. Faisal, J. Boley, S. Oh, Y. Zhang, D. Akella, D. Wentzloff, B.H. Calhoun
A 6.45 µW Self-Powered IoT SoC with Integrated Energy-harvesting Power Management and ULP Asymmetric Radios, IEEE Solid-State Circuits Conference (ISSCC), 2015

A. Shrivastava, D.D. Wentzloff, B.H. Calhoun
A 10mV-input Boost Converter with Inductor Peak Current Control and Zero Detection for Thermoelectric Energy Harvesting, IEEE Custom Integrated Circuits Conference (CICC), 2014

MICHAEL B. SILEVITCH

Robert D. Black Professor, COE Distinguished Professor, Electrical and Computer Engineering; affiliated faculty, Civil and Environmental Engineering

PhD, Northeastern University, 1971
ece.neu.edu/people/silevitch-michael

Scholarship focus: subsurface sensing and imaging systems, detection of explosives related anomalies, engineered system development and engineering leadership

Honors and awards: Life Fellow, Institute of Electrical and Electronics Engineers; 2015 National Academy of Engineering Gordon Prize, for developing an innovative method to provide graduate engineers with the necessary personal skills to become effective engineering leaders

SELECTED RESEARCH PROJECTS

ALERT: Awareness and Localization of Explosives Related Threats, A Department of Homeland Security Center of Excellence. ALERT seeks to conduct transformational research, technology and educational development for effective characterization, detection, mitigation and response to the explosives-related threats facing the country and the world
Director and Principal Investigator, Department of Homeland Security

CenSSIS: Center for Subsurface Sensing and Imaging Systems, Gordon-CenSSIS, a graduated NSF Engineering Research Center, was created to develop new technologies to detect hidden objects, and to use those technologies to meet real-world subsurface challenges in areas as diverse as noninvasive breast cancer detection and underground pollution assessment
Director and Principal Investigator, National Science Foundation

Research and Development of Reconstruction Advances in CT Based Object Detection Systems
Principal Investigator, Department of Homeland Security

HANUMANT SINGH

Professor, Electrical and Computer Engineering; jointly appointed, Marine and Environmental Sciences

PhD, Massachusetts Institute of Technology, 1995
ece.neu.edu/people/singh-hanumant

Scholarship focus: robotic sensors, systems, platforms, and algorithms including high resolution optical and acoustic sensing; underwater vehicles (AUV, ROV, towed and manned vehicles), unmanned surface vehicles, and unmanned aerial systems; system architectures for navigation, docking and power; and the interactions between these subsystems

SELECTED PUBLICATIONS

C. Murphy, J. Walls, T. Schneider, H. Singh, et al.
CAPTURE: A Communications Architecture for Progressive Transmission via Underwater Relays with Eavesdropping, IEEE Journal of Oceanic Engineering, 39(1), 2014, 1-13

H. Singh, W. Freeman, et al.
Camouflaging an Object from Many Viewpoints, Proceedings of the 2014 Computer Vision and Pattern Recognition Conference, 1-8

K.E. Smith, H. Singh, H., et al.
Discovery of a Recent, Natural Whale Fall on the Continental Slope Off Anvers Island, Western Antarctic Peninsula, Deep Sea Research Part I: Oceanographic Research Papers, 90, 2014, 76-80

G. Williams, J. Wilkinson, T. Maksym, H. Singh, C. Kunz, et al.
Mapping Ice Thickness and Extreme Deformation of Antarctic sea Ice from an Autonomous Underwater Vehicle, Nature Geoscience, 8, 2014, 61-67

M. Yi Cheung, J. Leighton, U. Mitra, H. Singh, F.S. Hover
Performance of Bandit Methods in Acoustic Relay Positioning, Proceedings of the 2014 Automatic Control Conference, 2014, 4708-4714

C. Kunz, H. Singh
Map Building Fusing Acoustic and Visual Information Using Autonomous Underwater Vehicles, Journal of Field Robotics, 30(5), 2013, 1556-4967

H. Singh, K. Nakamura, M. Jakobssen, T. Shank, et al.
Effusive and Explosive Volcanism on the Ultraslow-spreading Gakkel Ridge, 85°E, Geochemistry, Geophysics, Geosystems,13(10), 2012

RIFAT SIPAHI

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering

PhD, University of Connecticut, 2005
mie.neu.edu/people/sipahi-rifat

Scholarship focus: control systems and mechatronics; stability analysis and control synthesis of dynamical systems with delays; interplay between stability, delays, and graphs; control-systems-aided human-machine systems; engineering education research; disability research; systems biology

Honors and awards: Young Investigator Award, American Society of Mechanical Engineers; College of Engineering Faculty Fellow; Defense Advanced Research Projects Agency Young Faculty Award; Fellow, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

W. Qiao, R. Sipahi
Consensus Control under Communication Delay: Experiments on a Three-robot System, IEEE Control Systems Technology, 24(2), 2016, 687-694

A. Ramirez, S. Mondie, R. Garrido, R. Sipahi
Design of Proportional Integral Retarded Controllers, IEEE Transactions on Automatic Control, 61(6), 2016, 1688-1693

M. Ulusoy, R. Sipahi
Experimental Evaluation of a Braille-reading-inspired Finger Motion Adaptive Algorithm, PLoS One, 0148356, 2016, 1-23

N. Zhi, A. Gouldstone, B.K. Jaeger, R. Sipahi, S. Frank
Toward Monitoring Parkinson's through Analysis of Static Handwriting Samples: A Quantitative Analytical Framework, available online, IEEE Journal of Biomedical and Health Informatics, 2016

R. Sipahi
Delay-margin Design for the General Class of Single-delay Retarded-type LTI Systems, International Journal of Dynamics and Control, 2(2), 2014, 198-209

SELECTED RESEARCH PROJECTS

A Three-dimensional Model of Spinal Cord Growth and Repair in a Regeneration-competent Organism
Co-Principal Investigator, National Science Foundation

Graph-based Control Design for Network Dynamics with Time Delays
Principal Investigator, National Science Foundation

NIKOLAI SLAVOV

Assistant Professor, Bioengineering

PhD, Princeton University, 2010
bioe.neu.edu/people/slavov-nikolai

Scholarship focus: Ribosome-mediated translational regulation, cell growth and differentiation, statistical inference, mass-spectrometry; quantitative systems biology; bioinformatics

Honors and awards: Broad Institute SPARC; IRCSET Postgraduate Research Fellowship; Eureka Fellowship for Academic Excellence

SELECTED PUBLICATIONS

N. Slavov, S. Semrau, E. Airoldi, B. Budnik, A. van Oudenaarden
Differential Stoichiometry Among Core Ribosomal Proteins, Cell Reports, 13(5), 2015, 865-873

N. Slavov, B. Budnik, D. Schwab, E. Airoldi, et al.
Constant Growth Rate Can Be Supported by Decreasing Energy Flux and Increasing Aerobic Glycolysis, Cell Reports, 7(3), 2014, 705-714

D. Malioutov, N. Slavov
Convex Total Least Squares, Journal of Machine Learning Research, W&CP, 32(1), 2014, 109-117

N. Slavov, J. Carey, S. Linse
Calmodulin Transduces Ca^{+2} Oscillations into Differential Regulation of its Target Proteins, ACS Chemical Neuroscience, 4(4), 2013, 601-612

N. Slavov, D. Botstein
Decoupling Nutrient Signaling from Growth Rate Causes Aerobic Glycolysis and Deregulation of Cell Size and Gene Expression, Molecular Biology of the Cell, 24(2), 2013, 157-168

N. Slavov, A. van Oudenaarden
How to Regulate a Gene: to Repress or to Activate?, Molecular Cell, 46(5), 2012, 551-552

N. Slavov, D. Botstein
Coupling Among Growth Rate Response, Metabolic Cycle, and Cell Division Cycle in Yeast, Molecular Biology of the Cell, 22(12), 2011, 1997-2009

N. Slavov, J. Macinskas, A. Caudy, D. Botstein
Metabolic Cycling Without Cell Division Cycling in Respiring Yeast, Proceedings of the National Academy of Sciences of the United States of America, 108(47), 2011, 19090-19095

SELECTED RESEARCH PROJECTS

Broad Institute SPARC
Co-Principal Investigator, Broad Institute

Characterization of Ribosome Remodeling During Stem Cell Differentiation by Top-down and Native Mass Spectrometry
Principal Investigator, Northeastern University

SRINIVAS SRIDHAR

University Distinguished Professor, Physics; affiliated faculty, Bioengineering, Chemical Engineering

PhD, California Institute of Technology, 1984
che.neu.edu/people/sridhar-srinivas

Scholarship focus: nanomedicine; neurotechnology; drug delivery, MRI imaging

Honors and awards: University Distinguished Professorship; Biomedical Engineering Diversity Award 2016

SELECTED PUBLICATIONS

J. Schuemann, R. Berbeco, D.B. Chithrani, S. Hyun Cho, R. Kumar, S.J. McMahon, S. Sridhar, S. Krishnan
Roadmap to Clinical Use of Gold Nanoparticles for Radiation Sensitization, International Journal of Radiation Oncology Biology Physics, 94(1), 2016, 189-205

B.M. Geilich, A.L. van de Ven, G.L. Singleton, L.J. Sepulveda, S. Sridhar, T.J. Webster
Silver Nanoparticle-embedded Polymersome Nanocarriers for the Treatment of Antibiotic-resistant Infections, Nanoscale, 7(8), 2015, 3511-3519

S. Kunjachan, A. Detappe, R. Kumar, T. Ireland, L. Cameron, D.E. Biancur, V. Motto-Ros, L. Sancey, S. Sridhar, G.M. Makrigiorgos, R.I. Berbeco
Nanoparticle Mediated Tumor Vascular Disruption: A Novel Strategy in Radiation Therapy, Nano Letters,15(11), 2015, 7488-7496

S. Kumar, J. Belz, S. Markovic, T. Jadhav, S. Sridhar, et al.
Nanoparticle-based Brachytherapy Spacers for Delivery of Localized Combined Chemoradiation Therapy, International Journal of Radiation Oncology, 91(2), 2015, 393-400

R. Tangutoori, P. Baldwin, S. Sridhar
Parp Inhibitors: A New Era of Targeted Therapy, Maturitas, 81(1), 2015, 5-9

SELECTED RESEARCH PROJECTS

CaNCURE: Cancer Nanomedicine Co-ops for Undergraduate Research Experiences
Principal Investigator, National Institutes of Health

Nanomedicine Academy of Minority Serving Institutions
Principal Investigator, National Science Foundation

Nanoscale Magnetism In Next Generation Magnetic Nanoparticles Sub-project II: Organically Modified Magnetic Nanoparticles
Principal Investigator, Asian Office of Aerospace Research and Development

PARP Inhibitor Nanotherapy for Ovarian Cancer
Principal Investigator, Department of Defense, Ovarian Cancer Research Program

DAGMAR STERNAD

Professor, Biology; jointly appointed: Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Connecticut, 1995
ece.neu.edu/people/sternad-dagmar

Scholarship focus: motor control and learning, variability and stability, virtual rehabilitation, dynamic modeling, rhythmic and discrete movements as primitives for action

Honors and awards: Klein Lectureship Award; Distinguished Lecturer on Life and the Sciences of Complexity, Center for the Ecological Study of Perception and Action

SELECTED PUBLICATIONS

W.T.V. Chu, S.W. Park, T.D. Sanger, D. Sternad
Dystonic Children Can Learn a Novel Motor Skill: Strategies That are Tolerant to High Variability, IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2016

C.J. Hasson, Z. Zhang, M.O. Abe, D. Sternad
Neuromotor Noise is Malleable by Amplification of Perceived Error, PLoS Computational Biology, 2016

J. Ahn, Z. Zhang, D. Sternad
Noise Induces Biased Estimation of the Correction Gain, PLoS ONE, 11(7), 2016, e0158466, 2016

M.E. Huber, D. Sternad
Implicit Guidance to Stable Performance in a Rhythmic Perceptual-motor Skill, Experimental Brain Research, 233(6), 2015, 1783-1799

S.-W. Park, D. Sternad
Robust Retention of Individual Sensorimotor Skill After Self-Guided Practice, Journal of Neurophysiology, 2015

M.E. Huber, A.E. Seitchik, A. Brown, D. Sternad, S.G. Harkins
The Effect of Stereotype Threat on Performance of a Rhythmic Motor Skill, Journal of Experimental Psychology: Human Perception and Performace, 41(2), 2015, 525-541

D. Sternad, M.E. Huber, N. Kuznetsov
Acquisition of Novel and Complex Motor Skills: Stable Solutions Where Intrinsic Noise Matters Less, Advances in Experimental Medicine and Biology, 826, 2014, 101-124

SELECTED RESEARCH PROJECTS

Challenging the Cognitive-control Divide
Principal Investigator, National Science Foundation

Multi-center Trial of Augmented Sensory Feedback in Children with Dyskinetic CP
Co-Principal Investigator, National Institutes of Health

Predictability in Complex Object Control
Principal Investigator, National Institutes of Health

Quantification of Predictive Motor Impairments in Individuals with ASD
Principal Investigator, National Institutes of Health

MILICA STOJANOVIC

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Northeastern University, 1993
ece.neu.edu/people/stojanovic-milica

Scholarship focus: wireless communications and networks, underwater acoustic transmission, statistical system characterization, adaptive signal processing

Honors and awards: distinguished Technical Achievement Award, IEEE Ocean Engineering Society; Fellow, Institute of Electrical and Electronics Engineers

SELECTED PUBLICATIONS

Y. Aval, S.K. Wilson, M. Stojanovic
Capacity of Acoustic Channels and Practical Power-allocation Strategies, IEEE Journal of Oceanic Engineering, Special Issue on Underwater Communications, 40(4), 2015, 785-795

Y. Aval, M. Stojanovic
Differentially Coherent Multichannel Detection of Acoustic OFDM Signals, IEEE Journal of Oceanic Engineering, 40(2), 2015, 251-268

E. Zorita, M. Stojanovic
Space-frequency Block Coding for Underwater Acoustic Communications, IEEE Journal of Oceanic Engineering, 40(2), 2015, 303-314

P. Qarabaqi, M. Stojanovic
Statistical Characterization and Computationally Efficient Modeling of a Class of Underwater Acoustic Channels, IEEE Journal of Oceanic Engineering, Special Issue on Underwater Communications, 38(4), 2013, 701-717

S. Yerramalli, M. Stojanovic, U. Mitra
Partial FFT Demodulation: A Detection Method for Doppler Distorted OFDM Systems, IEEE Transactions on Signal Processing, 60(11), 2012, 5906-5918

J. Heidemann, M. Stojanovic, M. Zorzi
Underwater Sensor Networks: Applications, Advances, and Challenges, Philosophical Transactions of the Royal Society A, 2012, 158-175

SELECTED RESEARCH PROJECTS

NeTS: Large: Collaborative Research: Exploration and Exploitation in Actuated Communication Networks
Principal Investigator, National Science Foundation

Intelligent Coordination and Adaptive Classification for Naval Autonomous Systems
Principal Investigator, Office of Naval Research

MRI: Development of the Northeastern University Marine Observatory NETwork (NU MONET)
Co-Principal Investigator, National Science Foundation

MING SU

Associate Professor & Associate Chair of Graduate Studies, Chemical Engineering

PhD, Northwestern University, 2004
che.neu.edu/people/su-ming

Scholarship focus: phase change nanoparticles, nanomedicines, biomarker detections, nanoparticle-enhanced radiation therapy, heat transfer, covert barcodes

Honors and awards: National Science Foundation CAREER Award; National Institute of Health Director's New Innovator Award

SELECTED PUBLICATIONS

B. Duong, H. Liu, L. Ma, M. Su
Covert Thermal Barcodes Based on Phase Change Nanoparticles, Scientific Reports, 4, 5170, 2014

Y. Qiao, P. Zhang, C. Wang, L. Ma, M. Su
Reducing X-ray Induced Oxidative Damages in Fibroblasts with Graphene Oxide, Nanomaterials, 4(2), 2014, 522-534

Y. Luo, M. Hossain, C. Wang, Y. Qiao, J. An, L. Ma, M. Su
Targeted Nanoparticles for Enhanced X-ray Radiation Killing of Multidrug Resistant Bacteria, Nanoscale, 5(2), 2013, 687-694

M. Hossain, M. Su
Nanoparticle Location and Materials Dependent Enhancement of X-ray Radiation Therapy, Journal of Physical Chemistry C, 116(43), 2012, 23047-23052

C. Wang, Z. Sun, L. Ma, M. Su
Simultaneous Detection of Multiple Biomarkers With Several Orders of Concentration Difference Using Phase Change Nanoparticles, Analytical Chemistry, 83(6), 2011, 2215-2219

M. Zhang, Y. Hong, S. Ding, J. Hu, Y. Fan, A. Voevodin, M. Su
Encapsulated Nano-Heat-Sinks for Thermal Management of Heterogeneous Chemical Reactions, Nanoscale, 2(12), 2010, 2790-2797

Y. Hong, S. Ding, W. Wu, M. Su, et al.
Enhancing Heat Capacity of Colloidal Suspension Using Nanoscale Encapsulated Phase Change Materials for Heat Transfers, Applied Materials and Interfaces, 2(6), 2010, 1685-1691

SELECTED RESEARCH PROJECTS

CAREER: Biosensing in Thermal Space
Principal Investigator, National Science Foundation

Enhanced Radiation Therap with Nanoscale Frequency Modulator
Principal Investigator, National Institutes of Health

Phase Change Nanoparticles as Thermally Readable Taggants
Principal Investigator, National Institute of Justice

NIAN SUN

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Stanford University, 2002
ece.neu.edu/people/sun-nian-xiang

Scholarship focus: magnetic, ferroelectric and magnetoelectric materials; RF/microwave magnetic and magnetoelectric devices design, fabrication and testing; materials properties at RF/microwave frequency; range self-assembly of magnetic nanostructures

Honors and awards: Fellow, Institute of Physics; Fellow, Institute of Engineering and Technology; Office of Naval Research Young Investigator Award; National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

Z. Zhou, M. Trassin, Y. Gao, Y. Gao, D. Chen,...N.X. Sun
Probing Electric Field Control of Magnetism Using Ferromagnetic Resonance, Nature Communications, 6, 2015, 6082

T. Nan, Y. Hui, M. Rinaldi, N.X. Sun
Self-biased 215MHz Magnetoelectric NEMS Resonator for Ultra-sensitive DC Magnetic Field Detection, Scientific Reports, 3, 2013, 1985

M. Liu, Z. Zhou, T. Nan, B.M. Howe, G.J. Brown, N.X. Sun
Voltage Tuning of Ferromagnetic Resonance with Bistable Magnetization Switching in Energy-efficient Magnetoelectric Composites, Advanced Materials, 25(10), 2013, 1435-1439

J. Lou, M. Liu, D. Reed, Y. Ren, N.X. Sun
Giant Electric Field Tuning of Magnetism in Novel Multiferroic FeGaB/Lead Zinc Niobate Lead Titanate Heterostructures, Advanced Materials, 21(46), 2009, 4711-4715

S.X. Wang, N.X. Sun, M. Yamaguchi, S. Yabukami
Sandwich Films: Properties of a New Soft Magnetic Material, Nature, 407, 2000, 150-151

SELECTED RESEARCH PROJECTS

Integrated Thermoelectric Materials and Devices
Principal Investigator, Analog Devices, Incorporated

Multiferroic Materials for RF Applications
Principal Investigator, Defense Advanced Research Projects Agency

Nanofabricated Neural Probes with Ultra-sensitive Integrated Compact RF NEMS Magnetoelectric Sensors for Electro-magneto-brain Activity Mapping
Principal Investigator, Keck Foundation

Novel Multiferroic Heterostructures for Translational Compact and Power Efficient Voltage Tunable Devices
Principal Investigator, National Science Foundation

Power Efficient Voltage Tunable Spin Hall Nano Oscillators with Multiferroic Heterostructures
Principal Investigator, Air Force Research Laboratory

Sensitive and Selective Chemical Sensor Using Molecularly-Imprinted Single Layer Graphene
Principal Investigator, Air Force

MARIO SZNAIER

Dennis Picard Trustee Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, University of Washington, 1989
ece.neu.edu/people/sznaier-mario

Scholarship focus: robust control; reduced order models; video-based control; applications to dynamics in imaging and video processing; information extraction from high volume data streams

Honors and awards: IEEE Control Systems Society Distinguished Member Award

SELECTED PUBLICATIONS

B. Yilmaz, C. Lagoa, M. Sznaier
An Efficient Atomic Norm Minimization Approach to Identification of Low Order Models, 2013 IEEE 52nd Annual Conference on Decision and Control, 2013, 5834-5839

M. Ayazoglu, B. Yilmaz, M. Sznaier, O. Camps
Finding Causal Interactions in Video Sequences, IEEE International Conference on Computer Vision, Sydney, 2013

C. Dicle, O. Camps, M. Sznaier
The Way They Move: Tracking Multiple Targets with Similar Appearance, IEEE International Conference on Computer Vision, Sydney, Australia, 2013

K. Bekiroglu, M. Sznaier, C. Lagoa, B. Shafai
Vision Based Control of an Autonomous Blimp with Actuator Saturation Using Pulse Width Modulation, Proceedings of the 2013 IEEE International Conference on Control Applications, 2013, 1036-1041

Y. Cheng, Y. Wang, M. Sznaier
Worst Case Optimal Estimators for Switched Linear Systems, Proceedings of the 52nd IEEE Conference on Decision and Control, 2013, 4036-4041

SELECTED RESEARCH PROJECTS

Robust Identification and Model (in) Validation of Switched Hammerstein/Wiener Systems and Applications
Principal Investigator, National Science Foundation

GILEAD TADMOR

Professor, Electrical and Computer Engineering; affiliated faculty, Bioengineering

PhD, Weizmann Institute of Science, 1984
ece.neu.edu/people/tadmor-gilead

Scholarship focus: control systems; dynamical systems; low order modeling and estimation in complex systems; medical imaging

SELECTED PUBLICATIONS

V. Troshin, A. Seifert, D. Sidilkover, G. Tadmor
Proper Orthogonal Decomposition of Flow-Field in Non-Stationary Geometry, Journal of Computational Physics, 311, 2016, 329-337

B. Erem, R. Martinez Orellana, D.E. Hyde, J.M. Peters, F.H. Duffy, P. Stovicek, S.K. Warfield, R.S. MacLeod, G. Tadmor, D.H. Brooks
Extensions to a Manifold Learning Framework for Time Series Analysis on Dynamic Manifolds in Bioelectric Signals, Physical Review E, 93, 2016, 042218

K. Aleksic-Roeßner, R. King, O. Lehmann, G. Tadmor, et al.
On the Need of Nonlinear Control for Efficient Model-based Wake Stabilization, Theoretical and Computational Fluid Dynamics, 28(1), 2014, 23-49

L. Mirkin, T. Shima, G. Tadmor
Sampled-Data H^2 Optimization of Systems with I/O Delays via Analog Loop Shifting, IEEE Transactions on Automatic Control, 59, 2014, 787-791

M. Schlegel, B.R. Noack, P. Jordan, A. Dillman, G. Tadmor, et al.
On Least-order Flow Representations of Aerodynamics and Aeroacoustics, Journal of Fluid Mechanics, 697, 2012, 367-398

S. Laxminarayan, G. Tadmor, et al.
Modeling Habituation in Rat EEG Evoked Responses via a Neural Mass Model with Feedback, Biological Cybernetics, 105, 2011, 371-397

A. Cavalieri, G. Daviller, P. Comte, P. Jordan, G. Tadmor, et al.
Using Large Eddy Simulation to Explore Sound-source Mechanisms in Jets, Journal of Sound and Vibration, 330, 2011, 4098-4113

MOHAMMAD E. TASLIM

Professor, Mechanical and Industrial Engineering

PhD, University of Arizona, 1981
mie.neu.edu/people/taslim-mohammad

Scholarship focus: experimental and numerical research in gas turbine cooling technology, solar and wind energy, non-newtonian liquid droplet interactions with hydrophobic surfaces, nano-sensors

Honors and awards: Fellow, American Society of Mechanical Engineers; Associate Fellow, American Institute of Aeronautics and Astronautics; Member, IGTI Heat Transfer Committee

SELECTED PUBLICATIONS

M.E. Taslim, J.S. Halabi
Experimental/Numerical Investigation on the Effects of Trailing-edge Cooling Hole Blockage on Heat Transfer in a Trailing-edge Cooling Channel, International Journal of Rotating Machinery, 2014, 710450

M.E. Taslim, X. Huang
Experimental/Numerical Investigation on the Effects of Trailing-edge Cooling Hole Blockage on Heat Transfer in a Trailing-edge Cooling Channel, Journal of Gas Turbine Power, 136(5), 2014, 082603

M.E. Taslim, M.K.H. Fong
Experimental and Numerical Cross-over Jet Impingement in a Rib-roughened Airfoil Trailing-edge Cooling Channel, Journal of Turbomachinery, 135(5), 2013, 2-13

K. Elebiary, M.E. Taslim
Experimental/Numerical Cross-over Jet Impingement in an Airfoil Leading-edge Cooling Channel, Journal of Turbomachinery 135(1), 2013, 1-12

M.E. Taslim, A. Nongsaeng
Experimental and Numerical Cross-over Jet Impingement in an Airfoil Trailing-edge Cooling Channel, Journal of Turbomachinery, 133(4), 2011, 1-10

A.A. Adebiyi, M.E. Taslim, K.D. Crawford
The Use of Computational Fluid Dynamic Models for the Optimization of Cell Seeding Processes, Journal of Biomaterials, 32(34), 2011, 8753–8770

SELECTED RESEARCH PROJECTS

Measurements of Heat Transfer and Pressure Drops Research in a Two-legged Test Section with a 180-turn, Rib-roughened with Three Rib Geometries, Simulating Two Mid-chord Cooling Cavities of a GE Turbine Airfoils
Principal Investigator, General Electric Company

Measurements of Heat Transfer Coefficients and Pressure Drops in Seven Test Sections Simulating the Mid-chord and Trailing-edge Cooling Cavities of a GE Turbine Airfoils
Principal Investigator, General Electric Company

VLADIMIR TORCHILIN

University Distinguished Professor, Pharmaceutical Sciences; affiliated faculty, Bioengineering

PhD, Moscow State University, 1971
DSc, Moscow State University, 1980
bioe.neu.edu/people/torchilin-vladimir

Scholarship focus: chemistry; biochemistry; bioorganic chemistry; physiologically active compounds; experimental pharmacology

Honors and awards: Elected as a Member of European Academy of Sciences; Fellow, AAPS; Fellow, Controlled Release Society; Fellow, American Institute of Medical and Biological Engineering; 2013 Blaise Pascal Medal in Biomedicine from the European Academy of Sciences

SELECTED PUBLICATIONS

S.K. Sriraman, J. Pan, C. Sarisozen, E. Luther, V.P. Torchilin
Enhanced Cytotoxicity of Folic Acid-targeted Liposomes Co-loaded with C6 Ceramide and Doxorubicin: In Vitro Evaluation on HeLa, A2780-ADR, and H69-AR Cells, Molecular Pharmaceutics, 13(2), 2016, 428-437

B.S. Pattni, V.V. Chupin, V.P. Torchilin
New Developments in Liposomal Drug Delivery, Chemical Reviews, 115(9), 2015, 10938-10966

S. Essex, G. Navarro, P. Sabhachandani, A. Chordia, M. Trivedi, S. Movassaghian, V.P. Torchilin
Phospholipid-modified PEI-based Nanocarriers for in vivo siRNA Therapeutics Against Multidrug-resistant Tumors, Gene Therapy, 22, 2015, 41-50

E.Y. Lukianova-Hleb, X. Ren, R.R. Sawant, X. Wu, V.P. Torchilin, D.O. Lapotko
On-demand Intracellular Amplification of Chemoradiation with Cancer-specific Plasmonic Nanobubbles, Nature Medicine, 20, 2014, 778-784

G. Salzano, R. Riehle, G. Navarro, F. Perche, G. De Rosa, V.P. Torchilin
Polymeric Micelles Containing Reversibly Phospholipid-modified Anti-survivin siRNA: A Promising Strategy to Overcome Drug Resistance in Cancer, Cancer Letters, 343(2), 2014, 224-231

SELECTED RESEARCH PROJECTS

Center for Cancer Nanotechnology Excellence
Principal Investigator, National Institutes of Health

Immix-production of PEG-PE-based Polymeric Micelles Co-loaded with Curcumin and Doxorubicin
Principal Investigator, Immix Biopharma, Llc

Microbiotix - Pharmacokinetic and Biodistribution of Liposomal Phenoxyacetamide in Vivo Using Mouse Model
Principal Investigator, Microbiotix, Inc

Multifunctional Matrix Metalloprotease-2-Sensitive Anti-cancer Nanopreparations
Principal Investigator, National Institutes of Health

Pharmacokinetic and Biodistribution of SBC-105
Principal Investigator, Synageva BioPharma

ALI TOURAN

Professor, Civil and Environmental Engineering

PhD, Stanford University, 1980
civ.neu.edu/people/touran-ali

Scholarship focus: risk assessment; construction cost/schedule uncertainty; project delivery systems; simulation; construction productivity

Honors and awards: Fellow, American Society of Civil Engineers; President's Award, Boston Society of Civil Engineers

SELECTED PUBLICATIONS

A.P. Gurgun, A. Touran
Public-private Partnership Experience in the International Arena: Case of Turkey, Journal of Management in Engineering, 30(6), 2014

A.P. Gurgun, Y. Zhang, A. Touran
Schedule Contingency Analysis for Transit Projects Using a Simulation Approach, Journal of Civil Engineering & Management, 19(4), 2013, 465-475

P. Bakhshi, A. Touran
A Method for Calculating Cost Correlation among Construction Projects in a Portfolio, International Journal of Architecture, Engineering and Construction, 1(3), 2012, 134-141

P. Bakhshi, A. Touran
A New Approach for Contingency Determination in a Portfolio of Construction Projects, Journal of Risk Analysis and Crisis Response, 2(4), 2012, 223-232

SELECTED RESEARCH PROJECTS

Integrated Project Delivery in Industrial Projects
Co-Principal Investigator, Construction Industry Institute

Managing a Portfolio of Projects – Metrics for Improvement
Principal Investigator, Construction Industry Institute

GEOFFREY C. TRUSSELL

Professor and Chair, Marine and Environmental Sciences; Director, Marine Science Center; affiliated faculty, Civil and Environmental Engineering

PhD, College of William & Mary, 1998
civ.neu.edu/people/trussell-geoffrey

Scholarship focus: evolutionary and community ecology; coastal sustainability

Honors and awards: Ray Lankester Investigatorship; Sigma Delta Tau Outstanding Professor

SELECTED PUBLICATIONS

C.M. Matassa, G.C. Trussell
Effects of Predation Risk Across a Latitudinal Temperature Gradient, Oecologia, 177, 2015, 775-784

S.M. Donelan, G.C. Trussell
Parental Effects Enhance Risk Tolerance and Performance in Offspring, Ecology, 96(8), 2015, 2049–2055

C.M. Matassa, G.C. Trussell
Prey State Affects the Ecological Consequences of Temporal Variation in Predation Risk, Proceedings of the Royal Society B, 281, 2015, 1796

E.S. Bryson, G.C. Trussell, P.J. Ewanchuk
Broad-scale Geographic Variation in the Organization of Rocky Intertidal Communities in the Gulf of Maine, Ecological Monographs, 84, 2014, 579-597 (cover article)

L.P. Miller, C.M. Matassa, G.C. Trussell
Climate Change Enhances the Negative Effects of Predation Risk on an Intermediate Consumer, Global Change Biology, 20, 2014, 3834-3844

N.D. Chu, S.T. Kaluziak, G.C. Trussell, S.V. Vollmer
Phylogenomic Analyses Reveal Latitudinal Population Structure And Polymorphisms in Heat Stress Genes in the North Atlantic Snail Nucella Lapillus, Molecular Ecology, 23, 2014, 1863-1873

N.D. Chu, S.T. Kaluziak, G.C. Trussell, S.V. Vollmer
Thermal Stress and Predation Risk Trigger Distinct Transcriptomic Response in the Intertidal Snail, Nucella lapillus, Molecular Ecology, 23, 2014, 6104-6113

J.L. Orrock, E.L. Preisser, J.H. Grabowski, G.C. Trussell
The Cost of Safety: Refuges Increase the Impact of Predation Risk in Aquatic Systems, Ecology, 94(3), 2013, 573-579

SELECTED RESEARCH PROJECTS

Collaborative Research: Intertidal Community Assembly and Dynamics: Integrating Broad-scale Regional Variation in Environmental Forcing and Benthic-pelagic Coupling
Principal Investigator, National Science Foundation

Collaborative Research: Using an Energetics Framework to Forecast the Interactive Effects of Abiotic and Biotic Stressors on Intertidal Mussels
Co-Principal Investigator, National Science Foundation

EUGENE TUNIK

Associate Professor, Physical Therapy, Movement and Rehabilitation Science; affiliated faculty, Bioengineering

PhD, Rutgers University, 2003
bioe.neu.edu/people/tunik-eugene

Scholarship focus: human motor control/ learning, neurorehabilitation neuroscience, brain stimulation, brain imaging, virtual reality

SELECTED PUBLICATIONS

L.F. Schettino, S.V. Adamovich, H. Bagce, M. Yarossi, E. Tunik E
Disruption of Activity in the Ventral Premotor but not the Anterior Intraparietal Area Interferes with On-line Correction to a Haptic Perturbation During Grasping, The Journal of Neuroscience, 35(5), 2014, 2112-2117

M. Yarossi, S. Adamovich, E. Tunik
Sensorimotor Cortex Reorganization in Subacute and Chronic Stroke: A Neuronavigated TMS Study, Proceedings of the IEEE Engineering in Medicine and Biology Society Annual Conference, 2014, 5788-5791

S. Saleh, S.V. Adamovich, E. Tunik
Mirrored Feedback in Chronic Stroke: Recruitment and Effective Connectivity of Ipsilesional Sensorimotor Networks, Neurorehabilitation and Neural Repair, 28(4), 2014, 344-354

J.R. Lukos, J. Snider, M.E. Hernandez, E. Tunik, S. Hillyard, H. Poizner
Parkinson's Disease Patients Show Impaired Corrective Grasp Control and Eye-hand Coupling When Reaching to Grasp Virtual Objects, Neuroscience, 2013, 205-221

E. Tunik, S. Saleh, S.V. Adamovich
Visuomotor Discordance During Visually-guided Hand Movement in Virtual Reality Modulates Sensorimotor Cortical Activity in Healthy and Hemiparetic Subjects, IEEE-Transactions on Neural Systems & Rehabilitation Engineering, 21(2), 2013, 198-207

H. Bagce, S.V. Adamovich, S. Saleh, J.W. Krakauer, E. Tunik
Corticospinal Excitability is Enhanced After Visuomotor Adaptation and Depends on Learning Rather Than Performance Or Error, Journal of Neurophysiology, 109(4), 2012, 1097-1106

H.F. Bagce, S. Saleh, S.V. Adamovich, E. Tunik
Visuomotor Gain Distortion Alters Onlinemotor Performance and Enhances Primary Motor Cortex Excitability in Patients with Stroke, Neuromodulation, 15(4), 2012, 361-366

SELECTED RESEARCH PROJECTS

Planning and Updating in Frontoparietal Networks for Grasping
Principal Investigator, National Institutes of Health

MONEESH UPMANYU

Professor, Mechanical and Industrial Engineering

PhD, University of Michigan, 2001
mie.neu.edu/people/upmanyu-moneesh

Scholarship focus: computational techniques that span multiple scales, atomic-to continuum, to quantify the structure property relations in established and emerging material systems, both in technology and nature

SELECTED PUBLICATIONS

P. Waduge, J. Larkin, M. Upmanyu, S. Kar, M. Wanunu
Programmed Synthesis of Freestanding Graphene Nanomembrane Arrays, Small, 11(5), 2015, 597-603

L. X. Lu, M. S. Bharathi, M. Upmanyu, Y. W. Zhang
Growing Ordered and Stable Nanostructures on Polyhedral Nanocrystals, Applies Physics Letters, 105, 2014, 1-6

A. Shahabi, H. Wang, M. Upmanyu
Shaping van der Waals Nanoribbons via Torsional Constraints: Scrolls, Folds and Supercoils, Scientific Reports 4, 2014, 7004

C. Wang, M. Upmanyu
Shear Accommodation in Dirty Grain Boundaries, Europhysics Letters, 106(2), 2014, 1-6

E. T. Nilsen, R, Arora, M. Upmanyu
Thermonastic Leaf Movements in Rhododendron During Freezethaw Events: Patterns, Functional Significances, and Causes, Environmental and Experimental Botany, 106, 2014, 34-43

Z. Ma, D. McDowell, E. Panaitescu, A.V. Davidov, M. Upmanyu, L. Menon
Vapor-Liquid-Solid Growth of Serrated GaN Nanowires: Shape Selection Driven by Kinetic Frustration, Journal of Materials Chemistry C, 1, 2013, 7294-7302

SELECTED RESEARCH PROJECTS

Computational Studies of Nanocrystal Growth
Principal Investigator, National Science Foundation

DMREF: Engineering Strong, Highly Conductive Nanotube Fibers Via Fusion
Co-Principal Investigator, National Science Foundation

Enhanced Stability and Mechanics of Ultra-fine Grained Metals via Engineered Solute Segregation
Principal Investigator, US Army Research Office

Microstructure-sensitive Modeling and Experimentation of Single Particle Impact During Cold Spray of Metallic Particles
Co-Principal Investigator, ARO

ASHKAN VAZIRI

Associate Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering

PhD, Northeastern University, 2004
mie.neu.edu/people/vaziri-ashkan

Scholarship focus: solid mechanics, materials, computational methods, biomechanics, nanotechnology

Honors and awards: Air Force Office of Scientific Research Young Investigator Award; National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering; College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

J Xiong, R. Ghosh, L. Ma., H. Ebrahimi, A. Vaziri, L. Wu, et al.
Bending Behavior of Lightweight Sandwich-walled Shells with Pyramidal Truss Cores, Composite Structures, 116, 2014, 793-804

B. Haghpanah, H. Nayeb-Hashemi, A. Vaziri, et al.
Buckling of Regular, Chiral, and Hierarchical Honeycombs Under a General Macroscopic Stress State, Proceedings of the Royal Society A, 470(2167), 2014, 20130856

R. Ghosh, H. Ebrahimi, A. Vaziri
Contact Kinematics of Biomimetic Scales, Applied Physics Letters, 2014, 105.23, 233701

R. Ghosh, A. Ajdari, H. Nayeb-Hashemi, A. Vaziri, et al.
Impact Resistance and Energy Absorption of Regular and Functionally Graded Hexagonal Honeycombs with Cell Wall Material Strain Hardening, International Journal of Mechanical Sciences, 89, 2014, 413-422

R. Oftadeh, B. Haghpanah, D. Vella, A. Boudaoud, A. Vaziri
Optimal Fractal-like Hierarchical Honeycombs, Physical Review Letters, 113, 2014, 104301

H. Abdi, H. Nayeb-Hashemi, A. M. S. Hamouda, A. Vaziri
Torsional Dynamic Response of a Shaft with Longitudinal and Circumferential Cracks, Journal of Vibration and Acoustics, 136, 2014, 61011-61018

R. Ghosh, A. Kumar, A. Vaziri
Type-IV Pilus Deformation Can Explain Retraction Behavior, PLOS ONE, 2014, 9, 114613

SELECTED RESEARCH PROJECTS

Functional Biomimetic Materials with Extreme Topology
Principal Investigator, National Science Foundation

Mechanics of Carbon Nanotube Surface Decontamination
Principal Investigator, FM Global

Multifunctional Cellular Structures for Energy Harvesting and Energy Management Applications
Principal Investigator, Qatar Foundation

SARA WADIA-FASCETTI

Professor, Civil and Environmental Engineering; Associate Dean, Graduate Studies

PhD, Stanford University, 1994
civ.neu.edu/people/wadia-fascetti-sara

Scholarship focus: condition assessment methodologies for infrastructure systems; life cycle and life span analysis; nondestructive testing and evaluation; structural and earthquake engineering uncertainty

Honors and awards: American Society of Engineering Education Sharon Keillor Award for Women in Engineering Education; Minorities in Engineering Award, American Society of Engineering Education; National Science Foundation CAREER Award; Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, selected by President Bush and awarded at the White House

SELECTED PUBLICATIONS

A. Ganguli, C.M. Rappaport, D. Abramo, S. Wadia-Fascetti
Synthetic Aperture Imaging for Flaw Detection in a Concrete Medium, NDT & E International, 45(1), 2012, 79-90

K. Belli, S. Wadia-Fascetti, C. Rappaport
Integrated Sensor and Media Modeling Environment Developed and Applied to Ground-penetrating Radar Investigation of Bridge Decks, Journal of Computing in Civil Engineering, 25(1), 2011, 10-20

K. Belli, C. Rappaport, S. Wadia-Fascetti
A Time Domain Equivalent Source Model of an Impulse GPR Antenna Based on Measured Radiation Field, Research in Nondestructive Evaluation, 22(4), 2011, 197-207

SELECTED RESEARCH PROJECTS

Northeastern ADVANCE
Principal Investigator, National Science Foundation

IGERT: Intelligent Diagnostics for Aging Civil Infrastructure
Principal Investigator, National Science Foundation

VOTERS: Versatile Onboard Traffic Embedded Roaming Sensors
Co-Principal Investigator/Deputy Director, National Institute of Standards and Technology

KAI-TAK WAN

Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering, Civil and Environmental Engineering

PhD, University of Maryland at College Park, 1993
mie.neu.edu/people/wan-kai-tak

Scholarship focus: cellular biomechanics; water filtration; thin film adhesion and characterization; subsurface mechano-sensing; shell adhesion; fundamental intersurface forces

Honors and awards: National Science Foundation CAREER Award; College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

M. Robitaille, N. Belisle, S. Dang, E. Faigle, C. Morck, P. Uth, K.-T. Wan
An Optical Topographic Technique to Map the 3-D Deformed Profile of a Convex Lens under External Loading, Experimental Mechanics, 55, 2015, 641-646

L. Sallaway, S. Magee, J. Shi, F. Quivira, K. Tgavalekos, D.H. Brooks, S. Muftu, W. Meleis, R.H. Moore, D. Kopans, K.-T. Wan
Detecting Solid Masses in Phantom Breast Using Mechanical Indentation, Experimental Mechanics, 54, 2014, 935-942

Y. Li, X. Wang, A. Onnis-Hayden, K.-T. Wan, A.Z. Gu
Universal Quantifier Derived from AFM Analysis Links Cellular Mechanic Properties and Cell–surface Integration Forces with Microbial Deposition and Transport Behavior, Environmental Science and Technology, 48, 2014, 1769-1778

G. Li, K.-T. Wan
Adhesion Map for Thin Membranes, Journal of Applied Mechanics 81(12), 2013, 021018

G. Li, C. Yilmaz, X. An, S. Somu, S. Kar, Y. Jung, A. Busnaina, K.-T. Wan
Adhesion of Graphene Sheet on Nano-patterned Substrates with Nano-pillar Array, Journal of Applied Physics, 113, 2013, 244303

M. Robitaille, J. Shi, S. McBride, K.-T. Wan
Mechanical Performance of Hydrogel Contact Lenses with a Range of Power Under Parallel Plate Compression and Central Load, Journal of the Mechanical Behavior of Biomedical Materials, 22, 2013, 59-64

SELECTED RESEARCH PROJECTS

A Novel Biomechanical Model of Bacterial Adhesion and Aggregation
Principal Investigator, National Science Foundation

Mechano-lipidomics and Mechano-cytosis of Drug Delivery Liposomes
Principal Investigator, National Science Foundation

Mechanical Integrity and Long Term Reliability of Photovoltaic Panels
Principal Investigator, National Institute of Standards and Technology

MING WANG

COE Distinguished Professor, Civil and Environmental Engineering

PhD, University of New Mexico, 1983
civ.neu.edu/people/wang-ming

Scholarship focus: network-wide pavement and bridge deck inspections: sensor technology for infrastructure; saliva-based sensor technology for disease diagnosis and monitoring; structural health monitoring for bridges; subsurface fault detection using air-coupled GPR systems

Honors and awards: Fellow, SPIE; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

Y. Du, W. Zhang, M.L. Wang
An On-chip Disposable Salivary Glucose Sensor for Diabetes Control, Journal of Diabetes Science and Technology, 2016

Y. Du, W. Zhang, M.L. Wang
Sensing of Salivary Glucose Using Nano-structured Biosensors, Biosensors, 6(1), 2016, 10

W. Zhang, M.L. Wang, S. Khalili, S. Cranford
Materiomics for Oral Disease Diagnostics and Personal Health Monitoring: Designer Biomaterials for the Next Generation Biomarkers, OMICS: A Journal of Integrative Biology, 20, 2016, 12-29

W. Zhang, M.L. Wang, S. Cranford
Ranking of Molecular Biomarker Interaction with Targeted DNA Nucleobases via Full Atomistic Molecular Dynamics, Scientific Report, Nature Publishing Group, 6, 2016, 18659

N. Martino., K. Maser, R. Birken, and M.L. Wang
Quantifying Bridge Deck Corrosion Using Ground Penetration Radar, Research in Nondestructive Evaluation, 27(2), 2016, 112-124

W. Zhang, Y. Du, M.L. Wang
Noninvasive Glucose Monitoring using Saliva Nano-biosensor, Sensing and Biosensing Research, 4, 2015, 23-29

M. Lee, R. Vilbig, D. Busuioc, R. Birken, N. Sun, and M.L. Wang
Novel Miniaturized Designs for In-traffic Air-coupled Ground Penetration Radar Systems, Journal of Environmental and Engineering Geophysics, 20(1), 2015, 71-79

Y. Zhang, G. McDaniel, M.L. Wang
Pavement Microtexture Measurement using Tire/Road Noise, Journal of Civil Structural Health Monitoring, 5(3), 2015, 253-261

SELECTED RESEARCH PROJECTS

VOTERS: Versatile Onboard Traffic Embedded Roaming Sensors
Principal Investigator, National Institute of Standards and Technology

Breath and Saliva Based Nano-bio Sensing System for Disease Diagnosis and Monitoring
Principal Investigator, Northeastern University

QI RYAN WANG

Assistant Professor, Civil and Environmental Engineering

PhD, Virginia Tech, 2015
civ.neu.edu/people/wang-ryan

Scholarship focus: urban and social resilience; geo-social networking; coupled, human-natural systems, natural disaster response and evacuation; urban computing

SELECTED PUBLICATIONS

Q. Wang, J.E. Taylor
Patterns and limitations of urban human mobility resilience under the influence of multiple types of natural disaster, PLoS one, 11(1), 2016

Q. Wang, J.E. Taylor
Process Map for Urban-human Mobility and Civil Infrastructure Data Collection Using Geosocial Networking Platforms, Journal of Computing in Civil Engineering, 30(2), 2015

Q. Wang, J.E. Taylor
Energy Saving Practice Diffusion in Online Networks, Energy and Buildings, 76, 2014, 622-630

Q. Wang, J. E. Taylor
Quantifying Human Mobility Perturbation and Resilience in Hurricane Sandy, PLoS ONE, 9(11), 2014

MENI WANUNU

Assistant Professor, Physics; affiliated faculty, Bioengineering

PhD, Weizmann Institute, 2005
bioe.neu.edu/people/wanunu-meni

Scholarship focus: experimental biological physics

SELECTED PUBLICATIONS

G-M. Mustata,Y.H. Kim, J. Zhang, W.F. DeGrado, G. Grigoryan, M. Wanunu
Graphene Symmetry Amplified by Designed Peptide Self-assembly, Biophysical Journal, 110(11), 2016, 2507-2516

R.Y. Henley, B.A. Ashcroft, I. Farrell, B.S. Cooperman, S. Lindsay, M. Wanunu
Electrophoretic Deformation of Individual Transfer RNA Molecules Reveals Their Identity, Nano Letters, 16(1), 2016, 138-144

K.M. Goodfellow, C. Chakraborty, K. Sowers, P. Waduge, M. Wanunu, T. Krauss, K. Driscoll, A.N. Vamivakas
Distance-dependent Energy Transfer Between CdSe/CdS Quantum Dots and a Two-dimensional Semiconductor, Applied Physics Letters, 108, 2016, 021101

R.Y. Henley, A.G. Vazques-Pagan, M. Johnson, A. Kanavarioti, M. Wanunu
Osmium-based Pyrimidine Contrast Tags for Enhanced Nanopore-based DNA Base Discrimination, PLoS One, 108, 2015, 0142155

S. Carson, S.T. Wick, P.A. Carr, M. Wanunu, C.A. Aguilar
Osmium-based Pyrimidine Contrast Tags for Enhanced Nanopore-based DNA Base Discrimination, ACS Nano, 9(12), 2015, 12417-12424

S. Carson, J. Wilson, A. Aksimentiev, P. Weigele, M. Wanunu
Hydroxymethyluracil Modifications Enhance the Flexibility and Hydrophilicity of Double-stranded DNA, Nucleic Acids Research, 2015

E. Angeli, A. Volpe, P. Fanzio, L. Repetto, G. Firpo, P. Guida, R. Lo Savio, M. Wanunu, U. Valbusa
Simultaneous Electro-optical Tracking for Nanoparticle Recognition and Counting, Nano Letters, 15, 2015, 5696-5701

P. Waduge, I. Bilgin, J. Larkin, R.Y. Henley, K. Goodfellow, A.C. Graham, D.C. Bell, N. Vamivakas, S. Kar, M. Wanunu
Direct and Scalable Deposition of Atomically Thin Low-noise MoS2 Membranes on Apertures, ACS Nano, 9, 2015, 7352-7359

THOMAS WEBSTER

Professor and Department Chair, Chemical Engineering; Art Zafiropoulo Chair in Engineering; affiliated faculty, Bioengineering

PhD, Rensselaer Polytechnic Institute, 2000
che.neu.edu/people/webster-thomas

Scholarship focus: design, synthesis, and evaluation of nanomaterials for various medical applications, including self-assembled chemistries, nanoparticles, nanotubes, and nanostructured surfaces

Honors and awards: Fellow, Biomaterials Science and Engineering; Fellow, American Institute for Medical and Biological Engineers; Fellow, American Society for Nanomedicine; Fellow, Biomedical Engineering Society; Fellow, Ernst Strungmann Foundation; Wenzhou 580 Elite Scientist Award, China; Zhejiang Province Talent Program; Acta Biomaterialia Silver (under 45) Award

SELECTED PUBLICATIONS

P. Tran, L. Sarin, R. Hurt, T.J. Webster
Titanium Surfaces with Adherent Selenium Nanoclusters as a Novel Anti-cancer Orthopedic Material, Journal of Biomedical Materials Research, 93(4), 2014, 1417-1428

P. Tran, L. Sarin, R. Hurt, T.J. Webster
Opportunities for Nanotechnology-enabled Bioactive Bone Implants, Journal of Materials Chemistry, 19, 2009, 2653-2659

E.M. Christenson, K. Anseth, T.J. Webster, A.G. Mikos, et al.
Nanobiomaterial applications in orthopaedics, Journal of Orthopaedic Research 25, 2007, 11-22

G. Balasundaram, T.J. Webster
A Perspective on Nanophase Materials for Orthopedic Implant Applications, Journal of Materials Chemistry, 16, 2006, 3737-3745

A. Chun, J. G. Moralez, H. Fenniri, T.J. Webster
Helical Rosette Nanotubes: A More Effective Orthopaedic Implant Material, Nanotechnology, 15, 2004, 234-239

T.J. Webster, J.U. Ejiofor
Increased Osteoblast Adhesion on Nanophase Metals, Biomaterials, 25, 2004, 4731-4739

SELECTED RESEARCH PROJECTS

Development and Commercialization of Nanostructured Resorbable Urogenital Grafts
Principal Investigator, National Institutes of Health

Developing Injectable Materials for Cartilage Applications: Part 1
Principal Investigator, Audax, Inc.

Long-term Prevention of Peri-implantitis via Nano-textured, TiO/Ag Surfaces
Co-Principal Investigator, National Institutes of Health

Nanomedicine Academy of Minority Serving Institutions
Co-Principal Investigator, National Science Foundation

Testing Orthopedic Materials for Ionic Fusion, Inc.
Principal Investigator, Ionic Fusion, Inc.

Testing RTI Materials for Orthopedic Applications
Principal Investigator, RTI, Inc.

RICHARD WEST

Assistant Professor, Chemical Engineering

PhD, University of Cambridge, 2009
che.neu.edu/people/west-richard

Scholarship focus: development of detailed microkinetic models for complex reacting systems; automating the discovery and calculation of reaction pathways

Honors and awards: American Chemical Society Doctoral New Investigator

SELECTED PUBLICATIONS

F. Seyedzadeh Khanshan, R.H. West
Developing detailed kinetic models of syngas production from bio-oil gasification using Reaction Mechanism Generator (RMG), Fuel, 163, 2016, 25-33

C.W. Gao, J.W. Allen, W.H. Green, R.H. West
Reaction Mechanism Generator: Automatic Construction of Chemical Kinetic Mechanisms, Computer Physics Communications, 203, 2016, 212-225

R. Van de Vijver, N.M. Vandewiele, G.B. Marin, R.H. West, et al.
Automatic Mechanism and Kinetic Model Generation for Gas- and Solution-phase Processes: A Perspective on Best Practices, Recent Advances, and Future Challenges, International Journal of Chemical Kinetics, 47(4), 2015, 199-231

P.L. Bhoorasingh, R.H. West
Transition State Geometry Prediction Using Molecular Group Contributions, Physical Chemistry Chemical Physics, 17(48), 2015, 32173–32182

A. Jalan, R.H. West, W.H. Green
An Extensible Framework for Capturing Solvent Effects in Computer Generated Kinetic Models, Journal of Physical Chemistry B, 117(10), 2013, 2955–2970

A. Jalan, R.W. Ashcraft, R.H. West, W.H. Green
Predicting Solvation Energies for Kinetic Modeling, Annual Reports Section "C", 106, 2010, 211-258

R.H. West, R.A. Shirley, M. Kraft, C.F. Goldsmith, W.H. Green
A Detailed Kinetic Model for Combustion Synthesis of Titania from $TiCl_4$, Combustion and Flame, 156(9), 2009, 1764-1770

SELECTED RESEARCH PROJECTS

Identifying and Resolving Discrepancies in Kinetic Models of Hydrocarbon Combustion
Principal Investigator, National Science Foundation

Resolving Discrepancies in Detailed Kinetic Models of Combustion via Automated Transition State Theory Calculations
Principal Investigator, National Science Foundation

Transition-state Prediction for High-throughput Calculation of Accurate Chemical Reaction Rates
Principal Investigator, American Chemical Society

JOHN (PETER) WHITNEY

Assistant Professor, Mechanical and Industrial Engineering

PhD, Harvard University, 2012
mie.neu.edu/people/whitney-peter

Scholarship focus: human-safe robots, medical robotics, soft robotics and soft-material manufacturing, MEMS, microrobotics, bio-inspired design, flapping aerodynamics and insect flight

Honors and awards: Best paper award finalist, International Conference on Robotics and Automation

SELECTED PUBLICATIONS

J.P. Whitney, T. Chen, J. Mars, J.K. Hodgins
A Hybrid Hydrostatic Transmission and Human-safe Haptic Telepresence Robot, Disney Research, 2016

N.O. Perez-Arancibia, J.P. Whitney, R.J. Wood,
Lift Force Control of Flapping-wing Microrobots Using Adaptive Feedforward Cancellation Schemes, IEEE Transactions of Mechatronics, 18, 2013, 1-14

P.S. Sreetharan, H. Tanaka, J.P. Whitney, et al.
Progress on "Pico" Air Vehicles, International Journal of Robotics Research, 31(11), 2012, 1292-1302

J.P. Whitney, R.J. Wood
Conceptual Design of Flapping-wing Micro Air Vehicles, Bioinspiration and Biomimetics, 7, 2012, 1-10

P.S. Sreetharan, J.P. Whitney, M.D. Strauss, R.J. Wood
Monolithic Fabrication of Millimeter-scale Machines, Journal of Micromechics and Microengineering, 22(5), 2012, 055027 *cover article

H. Tanaka, J.P. Whitney, R.J. Wood
Effect of Flexural and Torsional Wing Flexibility on Lift Generation in Hoverfly Flight, Integrative and Comparative Biology51(1), 2011, 142-150

J.P. Whitney, P.S. Sreetharan, K. Ma, R.J. Wood
Pop-up Book MEMS, Journal of Micromechics and Microengineering, 21(11), 2011, 1-7 *cover article

J.P. Whitney, R.J. Wood
Aeromechanics of Passive Rotation in Flapping Flight, Journal of Fluid Mechanics, 660, 2010, 197-220

RONALD WILLEY

Professor and Associate Chair, Chemical Engineering

PhD, University of Massachusetts, Amherst, 1984
che.neu.edu/people/willey-ronald

Scholarship focus: process safety and catalysis (industrial)

Honors and awards: Fellow, American Institute of Chemical Engineers; Norton H. Walton/Russell L. Miller Award in Safety/Loss Prevention, American Institute of Chemical Engineers

SELECTED PUBLICATIONS

J. Murphy, D. Hendershot, S. Berger, A.E. Summers, R.J. Willey
Bhopal Revisited, Process Safety Progress, 33(4), 2014, 310-313

R.J. Willey
Consider the Role of Safety Layers in the Bhopal Disaster, Chemical Engineering Progress, 110(12), 2014, 22-27

R. J. Willey
Layer of Protection Analysis, Procedia Engineering, 84, 2014, 12–22

R. J. Willey
Novel ways to Present Process Safety Concepts, Process Safety Progress, 33(3), 2014, 207-207

R. Willey, J. H.-C. Hsiao, R. E. Sanders, A. Kossoy, C.-M. Shu
A Focus on Fire Fundamentals Including Emergency Response Training at the National Fire Agency in Taiwan, Process Safety Progress, 32(1), 2013, 2-7

R. Willey, J. Murphy
Process Safety Progress, American Institute of Chemical Engineers, 32(3), 2013, 229-229

T.O. Spicer, R. J. Willey, D. A. Crowl, W. Smades
The Safety and Chemical Engineering Education Committee—Broadening the Reach of Chemical Engineering Process Safety Education, Process Safety Progress, 32(2), 2013, 113-118

MARK C. WILLIAMS

Professor, Physics; affiliated faculty, Bioengineering

PhD, University of Minnesota, 1998
bioe.neu.edu/people/williams-mark

Scholarship focus: biophysics of DNA-protein interactions

Honors and awards: Fellow, American Physical Society

SELECTED PUBLICATIONS

A.A. Almaqwashi, T. Paramanathan, I. Rouzina, M.C. Williams
Mechanisms of Small Molecule–DNA Interactions Probed by Single-molecule Force Spectroscopy, Nucleic Acids Research, 44(9), 2016, 3971-3988

A.A. Almaqwashi, J. Andersson, P. Lincoln, I. Rouzina, F. Westerlund, M.C. Williams
Dissecting the Dynamic Pathways of Stereoselective DNA Threading Intercalation, Biophysical Journal, 110(6), 2016, 1255-1263

M.J. McCauley, I. Rouzina, K.A. Manthei, R.J. Gorelick, K. Musier-Forsyth, M.C. Williams
Targeted Binding of Nucleocapsid Protein Transforms the Folding Landscape of HIV-1 TAR RNA, Proceedings of the National Academy of Sciences, 112(44), 2015, 13555-13560

K.R. Chaurasiya, M.J. McCauley, M.C. Williams, et al.
Oligomerization Transforms Human APOBEC3G from an Efficient Enzyme to a Slowly Dissociating Nucleic Acid-binding Protein, Nature Chemistry, 6, 2014, 28-33

H. Wu, M. Mitra, K. Musier-Forsyth, M.C. Williams, et al.
Aromatic Residue Mutations Reveal Direct Correlation Between HIV-1 Nucleocapsid Protein's Nucleic Acid Chaperone Activity and Retroviral Replication, Virus Research, 171, 2013, 263-277

K.R. Chaurasiya, C. Ruslie, M.C. Williams, et al.
Polymerase Manager Protein UmuD Directly Regulates E. coli DNA Polymerase III alpha Binding to ssDNA, Nucleic Acids Research, 41, 2013, 8959-8968

M.J. McCauley, E. Rueter, I. Rouzina, L.J. Maher III, M.C. Williams
Single Molecule Kinetics Reveal Microscopic Mechanism by which HMGB Proteins Alter DNA Flexibility, Nucleic Acids Research, 41, 2013, 167-181

SELECTED RESEARCH PROJECTS

Single Molecule HIV-1 Replication Interactions
Principal Investigator, National Institutes of Health

Quantifying Single Molecule DNA-ligand Interactions
Principal Investigator, National Science Foundation

MISHAC YEGIAN

COE Distinguished Professor, Civil and Environmental Engineering

PhD, Massachusetts Institute of Technology, 1976
civ.neu.edu/people/yegian-mishac

Scholarship focus: geotechnical earthquake engineering; soil dynamics; geosynthetics; seismic response of landfills; base isolation; liquefaction; bridge engineering; use of shaking table in earthquake engineering

Honors and awards: Fellow, American Society of Civil Engineers

SELECTED PUBLICATIONS

E. Eseller-Bayat, S. Gokyer, M.K. Yegian
Earthquake Engineering Experimental Facility for Research and Public Outreach, Seismic Evaluation and Rehabilitation of Structures, 26, 2014, 379-387

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, O. Deniz, A. Alshawabkeh
Bender Elements and Bending Disks for Measurement of Shear and Compression Wave Velocities in Large Fully and Partially Saturated Sand Specimens, ASTM Geotechnical Testing Journal, 36(2), 2013, 1-8

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, E. Ortakci, A. Alshawabkeh
Design and Application of Simple Shear Liquefaction Box, ASTM Geotechnical Testing Journal, 36(3), 2013, 1-9

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, A. Alshawabkeh
Liquefaction Response of Partially Saturated Sands: An Empirical Model, ASCE Journal of Geotechnical and Geoenvironmental Engineering, 139(6), 2013, 872-879

SELECTED RESEARCH PROJECTS

NEESR: Induced Partial Saturation (IPS) Through Transport and Reactivity for Liquefaction Mitigation
Principal Investigator, National Science Foundation

EDMUND YEH

Professor, Electrical and Computer Engineering

PhD, Massachusetts Institute of Technology, 2001
ece.neu.edu/people/yeh-edmund

Scholarship focus: future internet architecture, cross-layer design and optimization of wireless networks, wireless network science, network economics, wireless sensor networks, network information theory and coding, smart power grids

Honors and awards: Alexander von Humboldt Fellowship; Best Paper Award, IEEE International Conference on Communications; Army Research Office Young Investigator Program Award; Senior Member of the Institute of Electrical and Electronics Engineers; Secretary, IEEE Information Theory Society

SELECTED PUBLICATIONS

E. Yeh, R.A. Berry
Throughput Optimal Control of Cooperative Relay Networks, IEEE Transactions on Information Theory, 53(10), 2007, 3827-3833

R.A. Berry, E. Yeh
Cross-layer Wireless Resource Allocation, IEEE Signal Processing Magazine, 21(5), 2004, 59-68

E. Yeh, A.S. Cohen
Throughput and Delay Optimal Resource Allocation in Multiaccess Fading Channels, Proceedings of the International Symposium on Information Theory (ISIT), Yokohama, Japan, 2003, 245

L. Zhang, D. Estrin, J. Burke, V. Jacobson, E. Yeh, et al.
Named Data Networking (NDN) Project, Technical Report ndn-0001, PARC, 2010

A. Bedekar, S. Borst, K. Ramanan, P. Whiting, E.Yeh
Downlink Scheduling in CDMA Data Networks, Global Telecommunications Conference, Rio De Janeiro, Brazil, 1999, 2653-2657

SELECTED RESEARCH PROJECTS

Modeling, Analysis and Control for Robust Interdependent Networks
Co-Principal Investigator, Defense Threat Reduction Agency

NeTS: Small: Collaborative Research: Large Scale Networks and Information Flow: From Emergent Behavior to Algorithm Design
Principal Investigator, National Science Foundation

Scalable Distributed and Dynamic Forwarding and Caching Algorithms for named Data Networks
Principal Investigator, Cisco Systems, Incorporated

IBRAHIM ZEID

Professor, Mechanical and Industrial Engineering

PhD, University of Akron, 1981
mie.neu.edu/people/zeid-ibrahim

Scholarship focus: mechanics; personalized medicine; simulation techniques and complex networks analysis

Honors and awards: Fellow, American Society of Mechanical Engineers

SELECTED PUBLICATIONS

S. Onel, A. Zeid, S. Kamarthi
Agent-based simulation and Analysis of a Complex Adaptive Supply Network, International Journal of Collaborative Enterprise, 4(3), 2014, 188

I. Zeid, J. Chin, C. Duggan, S. Kamarthi
Engineering Based Learning: A Paradigm Shift for High School STEM Teaching, International Journal of Engineering Education, 30(4), 2014, 1-12

A. Zeid, S. Kamarthi, V. Sahney
Forward: Research Issues in Patient Centric Healthcare Delivery, International Journal of Collaborative Enterprise, 4(1-2), 2014, 1-2

G.M. Uddin, K.S. Ziemer, I. Zeid, S. Kamarthi
Monte Carlo Study of the Molecular Beam Epitaxy Process for Manufacturing Magnesium Oxide Nano Scale Films, IIE Transactions, 47, 2014, 1-16

S. Vadde, A. Zeid, S. Kamarthi
Optimal Pricing and Disposal Decisions for Product Recovery Facilities Under a Single Portfolio, International Journal of Collaborative Enterprise, 4(3), 2014, 160 -187

E. Tuncel, I. Zeid, S. Kamarthi
Solving Large Scale Disassembly Line Balancing Problems with Uncertainty Using Reinforcement Learning, International Journal of Intelligent Manufacturing, 25, 2014, 647-659

SELECTED RESEARCH PROJECTS

ITEL: Investing in Tomorrow's Engineering Leaders
Principal Investigator, National Science Foundation

TRANSFORMing Liberal Arts Careers to Meet Demand for Advanced mfg Workforce
Principal Investigator, National Science Foundation

SUNNY ZHOU

Professor, Chemistry and Chemical Biology; affiliated faculty, Bioengineering

PhD, The Scripps Research Institute, 1997
bioe.neu.edu/people/zhou-sunny

Scholarship focus: protein chemistry and analysis, enzymology, biotherapeutics and biomaterials

SELECTED PUBLICATIONS

W. Qu, K.C. Catcott, K. Zhang, S. Liu, J.J. Guo, J. Ma, M. Pablo, J. Glick, Y. Xiu, N. Kenton, X. Ma, R.I. Duclos, Z.S. Zhou
Capturing Unknown Substrates via in Situ Formation of Tightly Bound Bisubstrate Adducts: S-Adenosyl-Vinthionine as a Functional Probe for AdoMet-dependent Methyltransferases, Journal of the American Chemical Society, 138(9), 2016, 2877-2880

S. Liu, K.R. Moulton, J.R. Auclair, Z.S. Zhou
Mildly Acidic Conditions Eliminate Deamidation Artifact During Proteolysis: Digestion with Endoprotease Glu-C at pH 4.5, Amino Acids, 48(4), 2016, 1059-67

C. Chumsae, P. Hossler, H. Raharimampionona, Y. Zhou, S. McDermott, C. Racicot, C. Radziejewski, Z.S. Zhou
When Good Intentions Go Awry: Modification of a Recombinant Monoclonal Antibody in Chemically Defined Cell Culture by Xylosone, an Oxidative Product of Ascorbic Acid, Analytical Chemistry, 87(15), 2015, 7529-7534

R.I. Duclos Jr, D.C. Cleary, K.C. Catcott, Z.S. Zhou
Synthesis and Characterization of Se-adenosyl-L-selenohomocysteine Selenoxide, Journal of Sulfur Chemistry, 36(2), 2015, 135-144

C. Chumsae , L.L. Zhou, Y. Shen, J. Wohlgemuth, E. Fung, R.Burton, C.H. Radziejewski, Z.S. Zhou
Discovery of a Chemical Modification by Citric Acid in a Recombinant Monoclonal Antibody, Analytical Chemistry 86(18), 2014, 8932-8936

J.J. Klaene, W. Ni, J.F. Alfaro, Z.S. Zhou
Detection and Quantitation of Succinimide in Intact Protein via Hydrazine Trapping and Chemical Derivatization, Journal of Pharmaceutical Sciences, 103(10), 2014, 3033-3042

M. Liu, Z. Zhang, J. Cheetham, D. Ren, Z.S. Zhou
Discovery and Characterization of a Novel Photo-oxidative Histidine-histidine Crosslink in IgG1 Antibody Utilizing 18O-labeling and Mass Spectrometry, Analytical Chemistry, 86(10), 2014, 4940-4948

N.W. Hodgson, M.I. Waly, Y.M. Al-Farsi, M.M. Al-Sharbati, O. Al-Farsi, A. Ali, A. Ouhtit, T. Zang, Z.S. Zhou, R.C. Deth
Decreased Glutathione and Elevated Hair Mercury Levels are Associated with Nutritional Deficiency-based Autism in Oman, Experimental Biology and Medicine, 239(6), 2014, 697-706

HONGLI (JULIE) ZHU

Assistant Professor, Mechanical and Industrial Engineering

PhD, South China University of Technology, 2009
mie.neu.edu/people/zhu-hongli

Scholarship focus: advanced manufacturing, multifunctional bio-inspired material from nature; sustainable energy storage; nano/micro fabrication of devices and materials; bendable, implantable and biocompatible electronics; application of sustainable biomateria in life science

Honors and awards: Innovator of the year 2013, University of Maryland; Jakob Wallenberg Scholarship, Sweden

SELECTED PUBLICATIONS

H. Zhu, P. Ciesielski, M. Himmel, J. Zhu, G. Henriksson, L. Hu
Wood-derived Materials for Green Electronics, Sustainable Energy, and Biological Applications, Chemical Reviews, 2016

X. Geng, W. Sun, W. Wu, B. Chen, A. Al-Hilo, M. Benamara, H. Zhu, F. Watanabe, J. Cui, T. Chen
Pure and Stable Metallic Phase Molybdenum Disulfide Nanosheets for Hydrogen Evolution Reaction, Nature Communications, 7, 2016

H. Zhu, S. Zhu, Z. Jia, S. Parvinian, Y. Li, T. Li, L. Hu
Anomalous Scaling Law of Strength and Toughness of Cellulose Nanopaper, Proceeding of the National Academy of Sciences (PNAS), 112(29), 2015, 8971-8976

C. Sun, H. Zhu, M. Okada, K. Gaskell, Y. Inoue, L. Hu, Y. Wang
Interfacial Oxygen Stabilizes Composite Silicon Anodes, Nano Letters, 15(1), 2015, 703-708

Y. Li, H. Zhu, F. Shen, J. Wan, Z. Liu, S. Lacey, Z. Fang, H. Dai, L. Hu
Nanocellulose Fibers as Green Dispersant for Two Dimensional Materials, Nano Energy, 2015, 346-354

J. Zhong, H. Zhu, Q. Zhong, J. Dai, W. Li, L. Hu, J. Zhou
Self-powered Human Interactive Transparent Nanopaper Systems, ACS Nano, 9(7), 2015, 7399-7406

W. Bao, Z. Fang, J. Wan, J. Dai, H. Zhu, X. Yang, C. Preston, L. Hu
Aqueous Gating of Van der Waals Materials on Bilayer Nanopaper, ACS Nano, 2014, 10606-10612

Z. Fang, H. Zhu, W. Bao, C. Preston, Z. Liu, J. Dai, Y. Li, L. Hu
Highly Transparent Paper with Tunable Haze for Green Electronics, Energy and Environmental Science, 7, 2014, 3313-3319

Y. Li, H. Zhu, F. Shen, J. Wan, X. Han, J. Dai, H. Dai, L. Hu
High Conductive Microfiber of Graphene Oxide Templated Carbonized Cellulose, Advanced Functional Materials, 35(7), 2014, 1471-1479

Y. Li, H. Zhu, S. Zhu, J. Wan, Z. Liu, O. Vaaland, S. Lacey, Z. Fang, H. Dai, T. Li, L. Hu
Hybridizing Wood Cellulose and Graphene Oxide Toward High-performance Fibers, Nature-NPG Asia Materials, 7, 2014, e150

KATHERINE ZIEMER

Professor, Chemical Engineering; Vice Provost for Curriculum

PhD, West Virginia University, 2001
che.neu.edu/people/ziemer-katherine

Scholarship focus: engineering surfaces in order to integrate wide bandgap semiconductors with functional and multi-functional oxides, organic molecules, and/or biomaterials

Honors and awards: Fellow, American Institute of Chemical Engineers; Fellow, College of Engineering Faculty

SELECTED PUBLICATIONS

G.M. Uddin, G. Moeen, K.S. Ziemer, A. Zeid, S. Kamarthi
Process Model-based Analysis of Highly Crystalline and Chemically Pure Molecular Beam Epitaxy of MgO (111) Nano-thin Films on 6H-SiC (0001) Substrates, International Journal of Nanomanufacturing, 11(1-2), 2015, 25-45

E. Alpaslan, H. Yazici, N. Golshan, K.S. Ziemer, T.J. Webster
Dextran Coated Cerium Oxide Nanoparticles for Inhibiting Bone Cancer Cell Functions, Biomaterials Science: Processing, Properties and Applications V, Ceramic Transactions, 254, 2015, 187

S. Ni, L. Sun, B. Ercan, L. Lui, K.S. Ziemer, T.J. Webster
A Mechanism for the Enhanced Attachment and Proliferation of Fibroblasts on Anodized 316L Stainless Steel with Nano-pit Arrays, Journal of Biomedical Materials Research Part B: Applied Biomaterials, 102(6), 2014, 1297-1303

B. Hu, Y. Chen, Z. Su, S. Bennett, L. Burns, G. Uddin, K.S. Ziemer, V.G. Harris
Magnetocrystalline Anisotropy and FMR Linewidth of Zr and Zn-doped Ba-hexaferrite Films Grown on MgO (111), IEEE Transactions on Magnetics, 49(7), 2013, 4234-4237

G.M. Uddin, K.S. Ziemer, B. Sun, A. Zeid, S. Kamarthi
Monte Carlo Study of the High Temperature Hydrogen Cleaning Process of 6H-silicon Carbide for Subsequent Growth of Nano Scale Metal Oxide Films, International Journal of Nanomanufacturing, 9(5-6), 2013, 407-430

V.K. Lazarov, Z. Cai, K. Yoshida, K.H. Zhang, M. Weinert, K.S. Ziemer, P.J. Hasnip
Dynamically Stabilized Growth of Polar Oxides: The Case of MgO (111), Physical Review Letters , 107(5), 2011, 056101

Omid Askari

PhD 2016, Mechanical Engineering; Advisor, Hameed Metghalchi

ON THE EXPERIMENTAL AND THEORETICAL INVESTIGATIONS OF LEAN PARTIALLY PREMIXED COMBUSTION, BURNING SPEED, FLAME INSTABILITY AND PLASMA FORMATION OF ALTERNATIVE FUELS AT HIGH TEMPERATURES AND PRESSURES

This dissertation investigates the combustion and injection fundamental characteristics of different alternative fuels both experimentally and theoretically. The subjects such as lean partially premixed combustion of methane/hydrogen/air/diluent, methane high pressure direct-injection, thermal plasma formation, thermodynamic properties of hydrocarbon/air mixtures at high temperatures, laminar flames and flame morphology of synthetic gas (syngas) and Gas-to-Liquid (GTL) fuels were extensively studied in this work. The effect of different characteristics parameters such as spark delay time, stratification ratio, turbulence intensity, fuel injection pressure, chamber pressure, chamber temperature, Exhaust Gas recirculation (EGR) addition, hydrogen addition and equivalence ratio on flame propagation and emission concentrations were analyzed.

See full dissertation at **coe.neu.edu/OmidAskari**

Yashar Motedayen Aval

PhD 2015, Electrical and Computer Engineering; Advisor, Milica Stojanovic

MULTI-CARRIER COMMUNICATION OVER TIME-VARYING ACOUSTIC CHANNELS

In this dissertation we address the fundamental question of acoustic channel capacity (achievable rate) for single-input-multi-output (SIMO) acoustic channels using a per-path Rician fading model, and focusing on two scenarios: narrowband channels where the channel statistics can be approximated as frequency- independent, and wideband channels where the nominal path loss is frequency-dependent. In each scenario, we compare several candidate power allocation techniques, and show that assigning uniform power across all frequencies for the first scenario, and assigning uniform power across a selected frequency-band for the second scenario, are the best practical choices in most cases, because the long propagation delay renders the feedback information outdated for power allocation based on the estimated channel response. We quantify our results using the channel information extracted form the 2010 Mobile Acoustic Communications Experiment (MACE'10).

See full dissertation at **coe.neu.edu/YasharAval**

Hari Chauhan

PhD 2016, Electrical Engineering; Advisor, Marvin Onabajo

DIGITALLY-ASSISTED DESIGN, SIMULATION AND TESTING TECHNIQUES FOR OPTIMIZATION OF ANALOG AND RF INTEGRATED CIRCUITS

This dissertation focuses on the design and integration of digital circuits with ana-log/RF circuits for performance optimizations. Spectral analysis for the evaluation of analog/RF circuits is a standard procedure for which the fast Fourier transform (FFT) algorithm is widely used. However, the majority of existing FFT implementations on chips consume excessive area and power for built-in testing applications. In this research, an FFT-based performance monitoring technique with multi-tone test signals has been created for efficient on-chip spectral analysis of analog/RF circuits. This method enables to estimate third-order intermodulation components of up to 50 dB below the fundamen-tal tones with an accuracy of ±1.5 dB based on the output spectrum of analog circuits. The capability of this technique to accurately determine the power of two test tones as well as their distortion components and intermodulation products was demonstrated by designing an on-chip linearity calibration scheme for a tunable low-noise amplifier.

See full dissertation at **coe.neu.edu/HariChauhan**

Ali Ciblak

PhD 2016, Civil Engineering; Advisor, Akram N. Alshawabkeh

PERFORMANCE OF IRON ELECTROLYSIS FOR TRANSFORMATION OF TRICHLOROETHYLENE IN GROUNDWATER

In this study, iron electrolysis is assessed as a potential technology for the remediation of TCE contaminated groundwater. Groundwater contamination with chlorinated solvents, such as trichloroethylene or TCE, is a major environmental challenge. The development of innovative, efficient, and sustainable remediation technologies is needed. A three-stage experimental program is conducted in this study: (i) the evaluation of chemical changes in the electrolyte due to iron electrolysis in batch reactors, as well as the investigation of TCE degradation rates; (ii) the optimization of electrochemical operating variables using a multivariable statistical approach; and (iii) the assessment of a proposed electrochemical system under flow conditions for the remediation of groundwater contaminated with TCE.

See full dissertation at **coe.neu.edu/AliCiblak**

Hamid Ebrahimi

PhD 2016, Mechanical Engineering; Advisor, Ashkan Vaziri

GEOMETRICALLY INDUCED NONLINEARITY IN MATERIALS AND STRUCTURAL SYSTEMS

In our work we focused on nonlinear behavior of structural systems that arises from geometry and specifically tackled three problems: nonlinearity in shell structures, nonlinearity in scale-substrate systems and nonlinearity is cellular solids. Firstly, we present a new instability that is observed in the indentation of a highly ellipsoidal shell by a horizontal plate. For the second problem, we investigate the nonlinear mechanical effects of biomimetic scale like attachments on the behavior of an elastic substrate brought about by the contact interaction of scales in pure bending using qualitative experiments, analytical models and detailed finite element analysis. And lastly, we develop a new class of two dimensional (2D) metamaterials with negative Poisson's ratio.

See full dissertation at **coe.neu.edu/HamidEbrahimi**

Mimmo Elia

PhD 2016, Mechanical Engineering; Advisor, Hameed Metghalchi

MEASUREMENT APPARATUS AND MODELLING OF LAMINAR BURNING SPEED AND MASS BURNING RATE OF SYNGAS AND ONSET AUTO-IGNITION OF N-HEPTANE AND GAS TO LIQUID FUEL

This thesis will describe in detail the experimental apparatus and report the laminar burning speed and mass burning rate for Syngas-Air and Syngas-O2-He at high temperature and pressure as well as auto-ignition characteristics of n-Heptane and GTL (S8), which is a synthetic surrogate for aviation fuel. The first core component of the facility includes a spherical combustion vessel that enables the measurement of the pressure rise from a combustion process, at high initial temperature and pressure. The second core component of the facility, which includes a lower pressure cylindrical combustion vessel, with optically clear sides, enables the direct measurement of laminar flame speed as well as the visualization of expanding spherical flames for the study of flame structures.

See full dissertation at **coe.neu.edu/MimmoElia**

Ce Gao

PhD 2016, Bioengineering; Advisor, April Z. Gu

UNSUPERVISED DATA MINING APPLICATIONS ON HIGH DIMENSIONAL GENE EXPRESSION TIME SERIES IN TOXICOGENOMICS

This thesis aims to develop and demonstrate new or improved methodology that better address the challenges and limitations in high dimensional time series toxicogenomics data analysis for critical bioinformatics application such as toxicity mechanism identification, toxicants classification, and for predictive toxicology knowledge discovery. In this study, we develop new or improve bioinformatics data analysis algorithms so that they are capable of processing high dimensional time series toxicogenomics data, therefore better capture and reflect the dynamics of cellular response to toxicants. We also prove the potential and validity of the incorporation of various molecular disturbance/effect quantifiers into various functional toxicogenomics bioinformatics to provide quantitative insights into the toxicant-induced cellular molecular responses at individual gene, specific pathway and system levels.

See full dissertation at **coe.neu.edu/CeGao**

Yuan Gao

PhD 2015, Electrical Engineering; Advisor, Nianxiang Sun

E-FIELD TUNABLE RG INTEGRATED MULTIFERROIC INDUCTORS AND TRANSFORMERS FOR RFIC APPLICATIONS

The goals of this dissertation are designing and fabricating magnetic inductors with characteristic high quality factor and high tunability potential by E-field on Si substrate. The research work includes three parts. Firstly, integrated RF inductors with high quality factor have been designed, fabricated, measured and analyzed. Secondly, based on the fabricated high Q inductors, a new type of tunable RF multiferroic inductors have been made on 0.5mm thick ferroelectric (011) cut lead magnetsium niobate - lead titanate (PMN-PT) slab. Lastly, with the same magnetic material and fabrication process, we present a micromachined implementation of embedded magnetic solenoid transformers with high quality factor (Q) and low insertion loss.

See full dissertation at **coe.neu.edu/YuanGao**

Emily Catherine Green

PhD 2015, Mechanical Engineering; Advisor, Marilyn L. Minus

COLLAGEN FIBRIL ASSEMBLY IN THE PRESENCE OF CARBON NANO-FILLERS

The work outlined for this dissertation will utilize a flow-based gel-spinning protocol to assemble collagen fibrils with and without the presence of nano-carbons. This novel synthetic method is aimed at achieving continuous collagen fibers, which exhibit highly aligned fibrillar and organized molecular structures as toward mimicking the native material. This type of collagen fiber fabrication remains a challenge to date. Collagen and collagen/nano-carbon composites were fabricated and characterized in order to determine the effects of the nano-carbon, in terms of geometry, size-scale, and distribution in the matrix, on collagen self-assembly and molecular packing. Nano-carbon dispersions, collagen sonication, fiber incubation, fiber strain and cross-linking were also studied to determine their effects on the overall assembly process. Fundamental studies to determine the structure-property relationship were also conducted using electron microscopy, X-ray scattering/diffraction techniques, and mechanical testing.

See full dissertation at **coe.neu.edu/EmilyGreen**

Yu Han

PhD 2016, Computer Engineering; Advisor, Yunsi Fei

STOCHASTIC MEDIUM ACCESS CONTROL FOR UNDERWATER ACOUSTIC SENSOR NETWORKS

In this dissertation, we address the inefficiency issues in random-access MAC for UWSNs, using a stochastic sending probability-based approach. We propose three handshaking-free underwater MAC solutions targeting the same goal: high network throughput, low packet end-to-end delay, and robustness under dynamics and controlled implementation complexity. The three solutions are based on a common utility-based probability optimization framework, but with different design considerations and objective functions. We first leverage the feature of long propagation delay, often taken as negative, to improve the parallelism between multiple senders. Our proposed protocol, the Delay-Aware Probability-based underwater MAC protocol (DAP-MAC), characterizes the group compatibility relation, a proposed indicator for successful concurrent transmissions, and utilizes this relation in the stochastic optimization framework for the best transmission strategy.

See full dissertation at **coe.neu.edu/YuHan**

Ruhollah Heydari

PhD 2016, Industrial Engineering; Advisor, Emanuel Melachrinoudis

OPTIMIZATION MODELS FOR EMPTY RAILCAR DISTRIBUTION PLANNING IN CAPACITATED NETWORKS

In this dissertation we develop two formulations for the Empty Railcar Distribution problem, both aiming to minimize the total setup costs, total transportation costs, and total shortage penalties under supply limitation, demand satisfaction, customer preferences and priorities, and network capacity constraints. We first formulate the problem as a path-based capacitated network flow model. Contrary to the traditional path-based formulations, the path connecting each supply-demand pair is given by an external application called Trip Planner which is defined on top of a time-space network. Then we formulate the problem as an arc-based capacitated multi-commodity network flow model where contrary to the path-based model, the car routing and car distribution decisions are integrated in a single model

See full dissertation at **coe.neu.edu/RuhollahHeydari**

Kuo-Lun Huang

PhD 2016, Electrical and Computer Engineering; Advisor, Masoud Salehi

EFFICIENT ALGORITHMS FOR STOCHASTIC DECODING OF LDPC CODES

In this study, we propose a reduced-latency stochastic decoding algorithm for LDPC codes. The proposed algorithm, called Conditional Stochastic Decoding (CSD), improves error rate performance and reduces the decoding latency by more than 30% compared with the existing stochastic decoders. We also characterize the performance of CSD in various communication schemes. For example, we show the advantages of using the proposed CSD algorithm in the Automatic Repeat reQuest (ARQ) scheme when compared with other iterative decoding algorithms. We extend our study of stochastic decoding to non-AWGN channel models including the Binary Symmetric Channel (BSC), the Z-channel, and the Rayleigh fading channel. We introduce scaling methods to improve the performance of stochastic decoding on these channel models. On the Rayleigh fading channel, the proposed method not only reduces the computational complexity of the stochastic decoding, but also provides 3-dB improvement in performance and lowers the error floor. Simplicity of hardware implementation, low latency, and good error rate performance of the proposed schemes make them suitable for emerging communication standards.

See full dissertation at **coe.neu.edu/Kuo-LunHuang**

Chengcheng Jia

PhD 2016, Electrical and Computer Engineering; Advisor, Yun Raymond Fu

LOW-RANK TENSOR LEARNING FOR HUMAN ACTION RECOGNITION

In this thesis, we focus on the social security problem, in particular human action recognition, and give the analystics in two lines, (1) machine learning algorithms for action recognition, (2) applying algorithms for novel problems in action recognition, e.g., missing-modality problem, dimensionality reduction. These two lines are detailed in following. For machine learning algorithm, extracting features from high-dimensional action data is crucial in human action recognition. The usual approach is finding a subspace, i.e., projecting high-dimensional data into a low-dimensional subspace containing main pattern of original data and fewer variables, for classification. First of all, data representation is crucial for action video which contains spatiotemporal information. To this end, we propose high-order tensor to represent the action videos, and employ tensor decomposition methods for dimensionality reduction. Second, different problems in action recognition tasks are solved by machine learning algorithms, such as transfer learning, low-rank learning, manifold learning.

See full dissertation at **coe.neu.edu/ChengchengJia**

Bingnan Jiang

PhD 2016, Computer Engineering; Advisor, Yunsi Fei

OPTIMIZATION AND MANAGEMENT OF CYBER-PHYSICAL SYSTEMS

My dissertation has been focused on the optimization and prediction model design for cost-effective and energy-efficient CPS--smart grid and PHEVs. First, a novel cost-effective energy ecosystem is proposed for a residential microgrid with renewable energy resources. It effectively coordinates demand response (DR), distributed generations (DGs), and energy storage management through a three-level hierarchical optimization, in which particle swarm optimization (PSO) algorithm and environment-adaptive Q-learning algorithm are applied. Second, I explore the application of modern vehicle-to-grid (V2G) technologies on smart grid reactive power compensation. On-board chargers of plug-in electric vehicles (PEVs) are proposed to be utilized as mobile volt-ampere reactive (VAR) resources. Third, an on-road PHEV power management system is proposed which utilizes the information of stochastic vehicle driving states and real-time traffic conditions. With these stochastic elements incorporated, a two-level hierarchical optimization model is developed based on multi-stage stochastic quadratic programming (MSQP) and Markov decision process (MDP).

See full dissertation at **coe.neu.edu/BingnanJiang**

Hadi Kazemiroodsari

PhD 2016, Civil Engineering; Advisor, Mishac K. Yegian

ELECTRIC CONDUCTIVITY FOR LABORATORY AND FIELD MONITORING OF INDUCED PARTIAL SATURATION (IPS) IN SANDS

This dissertation focuses on this aspect of the IPS research. The monitoring system developed was based on using electric conductivity fundamentals and probes to detect the transport of chemical solution, calculate degree of saturation of sand, and determine the final zone of partial saturation created by IPS. To understand the fundamentals of electric conductivity, laboratory bench-top tests were conducted using electric conductivity probes and small specimens of Ottawa sand. Bench-top tests were used to study rate of generation of gas bubbles due to reaction of sodium percarbonate solution in sand, and to confirm a theory based on which degree of saturation were calculated.

See full dissertation at **coe.neu.edu/HadiKazemiroodsari**

Erfan Kherikhahi

PhD 2015, Electrical Engineering; Advisor, Nicol McGruer

CONTACT EFFECTS IN PENTACENE FIELD EFFECT TRANSISTORS

This dissertation focuses on the effect of the energy barrier at the semiconductor-metal junction in pentacene transistors.

To quantitatively extract and analyze the effect of the contact, a novel method of Kelvin probing is introduced and investigated. This method, while involving simple fabrication and measurement procedures, offers the extraction of voltage drops at the drain and source interfaces.To demonstrate the validity of the method as well as the existence of an energy barrier at the metal-pentacene interface, systematic measurements are done by modulating the metal-pentacene barrier height in pentacene transistors. For this work IrO2, Au, RuO2 and Ti metals with respective reported work functions of 5.6 eV, 5.1 eV, 4.6 eV and 4.3 eV are used.

See full dissertation at **coe.neu.edu/ErfanKherikhahi**

Sharon Loeffler Kotz

PhD 2016, Mechanical Engineering; Advisor, Ahmed Busnaina

ELECTRODE ARCHITECTURES FOR ENHANCED LITHIUM ION BATTERY PERFORMANCE

This research in this dissertation focuses on the development of an electrode architecture using nanomaterials which will decrease lithium ion transport distance while enhancing electrical conductivity within the cell. The proposed architecture consists of a stacked, 2D structure composed of layers of carbon nanotubes and active material particles, and can be applied to both the anode and the cathode. The process also has the advantage of low cost because it can be performed under normal laboratory conditions (e.g. temperature and pressure) and easily adapted to a commercial scale.

See full dissertation at **coe.neu.edu/SharonKotz**

Kenny Kwan Yang

PhD 2016, Civil Engineering; Advisor, Steven W. Cranforda

MOLECULAR COOPERATIVITY AND COMPATIBILITY VIA FULL ATOMISTIC SIMULATION

This research attempts to develop bottom-up molecular scale understanding of material behavior, with the global objective being the application of this understanding into material design/characterization at an ultimate functional scale. In particular, it addresses the subject of cooperativity at the nano-scale. This research aims to define the conditions which dictate when discrete molecules may behave as a single, functional unit, thereby facilitating homogenization and up-scaling approaches, setting bounds for assembly, and providing a transferable assessment tool across molecular systems.

See full dissertation at **coe.neu.edu/KennyKwanYang**

Devashish Kumar

PhD 2016, Interdisciplinary; Advisor, Auroop R. Ganguly

CLIMATE EXTREMES: PREDICTABILITY, IMPACTS, AND CONSEQUENCES AT REGIONAL SCALES

Our study starts with the evaluation of the performance of latest generation of global climate models, Coupled Model Intercomparison Project Phase 5 (CMIP5) in simulating current climatology and multi-model agreement in projected climate change. Subsequently I studied the performance of CMIP5 models in simulating and projecting wind extremes at regional scales. Both of these studies were focused on long-term climatology, the end of the century time horizon. Multi-sector stakeholders are looking for reliable projections of climate change at near-term planning horizons as most of the decisions are made at time scales of one-to-two decades. Consideration of climate uncertainty especially climate internal variability and model response variability becomes more important as they dominate signal of climate change.

See full dissertation at **coe.neu.edu/DevashishKumar**

Ho Joon Lee

PhD 2016, Computer Engineering; Advisor, Yong-Bin Kim

A PROCESS AND TEMPERATURE TOLERANT LOW POWER SEMI-SELF CALIBRATION OF HIGH SPEED TRANSCEIVER FOR DRAM INTERFACE

This thesis presents a novel process and temperature variation compensation technique for semi-self impedance calibration of the transmission line driver. Based on the impedance mismatch analysis, a new semi-self impedance calibration circuit for high speed transceiver design is proposed to compensate the driver impedance mismatch caused by the process and temperature variation using process and temperature monitoring circuit. In this thesis, the Low Voltage Swing Terminated Logic (LVSTL) using a VSSQ termination and an adaptive calibration scheme are proposed. The LVSTL generates high frequency low voltage-swing signals with the VSSQ termination to reduce power consumption along with slew-rate control circuits. 2 stacked PU/PD network circuit are designed and each PU(Pull-UP)/PD(Pull-Down) network has two data inputs with the delay of the input data to control the slew rate of the inputs. VOHdrift control scheme is also presented to address the VOH drift issue of VDDQ raised by NMOS rather than PMOS. To prevent the VOH drift phenomenon, a weak NMOS transistor is connected in parallel with NMOS PD transistor to provide a leakage path, resulting in a reduced but fixed V_{OH} level.

See full dissertation at **coe.neu.edu/HoJoonLee**

Jiliang Liu

PhD 2015, Electrical and Computer Engineering; Advisor, Lee Makowski

SCANNING X-RAY MICRODIFFRACTION STUDIES OF THE MOLECULAR ARCHITECTURE OF BIOLOGICAL TISSUES

In this disseration I apply scanning x-ray micro-diffraction, a new advanced synchrotron technology, to study the molecular structure of three tissues: 1. Myelin within the peripheral nervous system (PNS); 2. Plant cell walls in Arabidopsis stems; 3. Protein aggregation in human brain sections from Alzheimer's patients. A suite of custom software was developed to overcome the challenge of processing a large amount of data collected by scanning micro diffraction and to extract complex features from the scattering patterns of these different tissues. These improvements in software have greatly expanded the utility scanning microdiffraction technology for analysis of detailed information about the molecular architecture of myelin in the nodal, paranodal, and juxtaparanodal regions; the structural heterogeneities within the Arabidopsis stem; and pathological molecular structures that arise in Alzheimer's disease. We anticipate significant expansion of the use of this method for studies of the molecular architecture of intact tissues and the alteration of these structures due to wounds, specific mutations or pathological conditions.

See full dissertation at **coe.neu.edu/JiliangLiu**

Reza Masoumi

PhD 2016, Construction Managment; Advisor, Touran Ali

A FRAMEWORK FOR PROJECT PORTFOLIO FORMATION USING A HYBRID OF MULTICRITERIA DECISION-MAKING METHODS

The main contribution of this dissertation is the development of a comprehensive framework for the formation of construction project portfolios. The most important phase of project portfolio management is portfolio formation. The survival of organizations depends on selecting the highest value projects considering a restricted budget, and above all organizational goals. A large and far-reaching online survey on portfolio management found that many organizations don't have a systematic approach in portfolio formation under budget restriction. This finding served as the main impetus for developing a framework for portfolio formation in the field of construction capital projects.

See full dissertation at **coe.neu.edu/RezaMasoumi**

Thomas McCormick

PhD 2016, Computer Engineering; Advisor, David Kaeli

AN EXPERIMENTAL INVESTIGATION OF HOT SWITCHING CONTACT DAMAGE IN RF MEMS SWITCHES

In this dissertation, we present FSAware, a novel algorithmic approach that enhances existing flash translation layer (FTL) designs. Specifically, FSAware reduces overall WAF by separately supporting the write requests associated with the file data and file system overhead produced by host file system write activities. FSAware distinguishes file data write requests from file system overhead write requests by characterizing the file system installed on the flash memory system by the host system. We consider the File Allocation Table (FAT) format, which is specifically selected for its ubiquity in embedded computer applications. FSAware is applicable to both block-mode and page-mode style FTLs.

See full dissertation at **coe.neu.edu/ThomasMcCormick**

Jiangsha Meng

PhD 2015, Mechanical Engineering; Advisor, Marilyn L. Minus

A STUDY OF THE POLYMER-CNT INTERACTIONS IN POLYMER/CNT COMPOSITES USING EXPERIMENTAL AND COMPUTATIONAL METHODS

This dissertation work focuses on research related to understanding and controlling the polymer-carbon nanotube (CNT) interactions during composite fiber processing using both experimental and computational means, in order to achieve consistent formation of the interphase regions for various polymers in the vicinity of CNT. The development of the polymer crystalline interphase is important, since it has been shown to have a significant and positive impact on the mechanical performance of polymer/CNT composites. This is achieved by the improvement of stress transfer mechanisms between the polymer matrix and CNT. The preliminary results (i.e., both experimental and computational) provide insight toward understanding the fundamental mechanisms of polymer-CNT interactions under various processing conditions, as well as the resultant polymer or CNT behaviors and composite fibers performance governed by them.

See full dissertation at **coe.neu.edu/JiangshaMeng**

Daniel Francis Milano

PhD 2016, Chemical Engineering; Advisor, Anand R. Asthagiri

THE INFLUENCE OF THE FIBRILLAR TUMOR MICROENVIRONMENT ON THE CELL-CELL CONTACT RESPONSE OF MIGRATING CANCER CELLS

The results presented within this thesis advance our understanding of how the fibrillar TMEN contributes to local invasion during metastasis. Our work shows the extent of fiber maturation within the TMEN conspires with metastasis-promoting molecular perturbations to enhance the invasive phenotype of cancer cells. We show that the accrual of multiple molecular perturbations enhances this invasive phenotype in non-transformed cells and propose the characteristic fiber-like dimension (CFD) as a novel metric to quantify and compare metastatic potential. The controlled molecular perturbations confirmed a direct correlation between the ability of cells to slide in vitro and the ability of cells to metastasize in vivo, thus validating this platform as a potential preclinical drug-screening tool to guide future therapeutic strategies to treat metastatic breast cancer.

See full dissertation at **coe.neu.edu/DanielMilano**

Ali Moghaddas

PhD 2016, Mechanical Engineering; Advisor, Hameed Metghalchi

LAMINAR BURNING SPEED MEASUREMENT, AUTOIGNITION AND FLAME STRUCTURE STUDY OF SPHERICALLY EXPANDING FLAMES

In this thesis flame structure, laminar burning speed and onset of autoignition are studied for different premixed combustible mixtures including n-decane, jet-fuels, and Hydrofluorocarbon (HFC) refrigerants in air at high temperatures and pressures over a wide range of fuel-air equivalence ratios. The experimental facilities consist of two spherical and cylindrical vessels. The spherical vessel is used to collect pressure data to measure the burning speed and cylindrical vessel is used to take pictures of flame propagation with a high speed CMOS camera located in a shadowgraph system. A thermodynamic model is employed that assumes unburned gases compress isentropically and that burned gases are in local thermodynamic equilibrium. Burning speed is derived from the time rate change of mass fraction of burned gases. The major advantages of this method are that it circumvents the need for any extrapolation due to having low stretch rates and that many data points can be collected along an isentrope in a single experiment.

See full dissertation at **coe.neu.edu/AliMoghaddas**

Davood Mousanezhad Viyand

PhD 2016, Mechanical Engineering; Advisor, Ashkan Vaziri

MECHANICS OF CHIRAL, ANTI-CHIRAL, AND HIERARCHICAL HONEYCOMBS

This dissertation studies the effects of two geometric refinement strategies widespread in natural structures, chirality and self-similar hierarchy, on mechanical response of two-dimensional honeycombs. First, by employing the concepts of mechanics of materials, simple closed-form expressions were derived for the elastic moduli of several chiral, anti-chiral, and hierarchical honeycombs with hexagon and square based networks. A new class of hierarchical fractal-like honeycombs inspired by the topology of the “spiderweb” was introduced and investigated for its small and large deformation response through analytical modeling, detailed numerical simulations, and mechanical testing.

See full dissertation at **coe.neu.edu/DavoodMousanezhadViyand**

Fritz Rudolph PangihutanNababan

PhD 2016, Civil Engineering; Advisor, Mishac K. Yegian

DEVELOPMENT AND EVALUATION OF INDUCED PARTIAL SATURATION (IPS), DELIVERY METHOD AND ITS IMPLEMENTATION IN LARGE LABORATORY SPECIMENS AND IN THE FIELD

The research presented in this dissertation was focused on: 1) development of an automated chemical solution preparation and delivery system, which will induce partial degree of saturation in liquefaction susceptible sands, 2) implementation of the system in large scale laboratory and field tests, and 3) verification that partial saturation reduces liquefaction potential.

Liquefaction of saturated loose sands during an earthquake is associated with the build-up of excess pore water pressure, leading to loss of shearing strength of the sand. Current liquefaction mitigation techniques used in practice are expensive, and cannot be implemented on sites with existing structures.

See full dissertation at **coe.neu.edu/FritzNababan**

Pegah Naghshriz Abadian

PhD 2016, Chemical Engineering; Advisor, Edgar D. Goluch

PATHWAYS FOR TAILORING THE MAGNETOSTRUCTURAL RESPONSE OF FeRh-BASED SYSTEMS

This study used a SPRi system to study the physiological behavior of bacterial cells and biofilm dynamics was monitored in real-time. This information were used to help predict and control bacteria activity in fluidic systems. Studies were conducted to determine the effectiveness of different chemicals and antibiotics in removing biofilm from a sensor surface. The efficacy of antibiotics and surface coatings for preventing biofilm formation on the surface were also studied. Finally, the effects of fluid dynamics on bacterial surface adhesion and removal was investigated.

Staphyloccocus aureus, a gram positive bacteria and one of the major causes of hospital acquired infections, Pseudomonas aeruginosa, a gram negative species and model organism for biofilm studies, Eschericia coli, a gram negative and a model prokaryotic organism, and Bacillus cereus a gram positive and facultative anerobic bacteria, were used in this study.

See full dissertation at **coe.neu.edu/PegahNaghshrizAbadian**

Tianxiang Nan

PhD 2016, Electrical and Computer Engineering; Advisor, Nian Sun

MAGNETOELECTRIC HETEROSTRUCTURES FOR SPINTRONICS AND MAGNETIC SENSING

This study first shows that by utilizing a unique ferroelastic polarization switching path-way, one can achieve non-volatile electric-field-switching of magnetism in multiferroic heterostructures with different ferroelectric single crystals through a strain-mediated magnetoelectric coupling. In the same system, with atomically-thin ferromagnets, the interfacial charge-mediated should also be taken into account. The charge- and strain- mediated coupling mechanisms are demonstrated and precisely quantified by the electric-field-tuning of ferromagnetic resonance. With the same technique, magnetic relaxation including intrinsic and extrinsic damping has also been shown to be strongly correlated to the strain, which is attributed to the electric-field-modification of spin-orbit coupling. Moreover, I will also show the tuning of spin-orbit torques from the spin- Hall effect with applied voltage probed with spin-torque ferromagnetic resonance and show the possible application on voltage tunable spin-Hall nano-oscillators.

See full dissertation at **coe.neu.edu/TianxiangNan**

Hooman Nezamfar

PhD 2016, Electrical and Computer Engineering; Advisor, Deniz Erdogmus

FLASHLIFE™, A CONTEXT-AWARE CODE-VEP BASED BRAIN COMPUTER INTERFACE FOR DAILY LIFE USING EEG SIGNALS

In this dissertation, we introduce FlashLife™, a context aware language independent brain interface, suitable for everyday needs of an individual with disabilities. FlashLife™ provides control and communication abilities all through the same stimulation method using a single EEG electrode or eye tracking. In addition, use of the context information along with a probabilistic classification and decision making mechanism adds more robustness and flexibility at the same time. The stimulation paradigm provides highly accurate and fast classifications making use of short Calibration sessions. FlashLife™ provides performance estimates for each individual for different tasks taking advantage of the Calibration data. The stimulation paradigm has been put into use by different applications to do different tasks. A short list of applications is, FlashType(TM) for typing, FlashNav(TM) for navigation, FlashGrab(TM) for object manipulation and FlashPlay(TM) for entertainment in a virtual environment.

See full dissertation at **coe.neu.edu/HoomanNezamfar**

Kham Nguyen

PhD 2016, Electrical Engineering; Advisor, Gilead Tadmor

ADAPTIVE BOOSTING FOR AUTOMATIC SPEECH RECOGNITION

In this work, the Gaussian mixture models (GMM)-based classifier is used to convert each acoustic feature vector to a posterior probability vector given all classes. Furthermore, an adaptive boosting (AdaBoost) algorithm is applied to combine the classifiers to enhance the performance. The training of GMM-based AdaBoost classifiers requires very expensive computation. To make it feasible for very large vocabulary speech recognition systems with thousands of hours of training data, we have implemented a hierarchical AdaBoost to split the whole training to multiple parallel processes. The speed up reduced the training data time from about more 100 days to within a week. The AdaBoost features were then used successfully to combine with spectral feature for ASR. Compared to the baseline of the standard features, the AdaBoost system reduced the word-error-rate (WER) by 2%. Moreover, the AdaBoost system also contributed consistent gains on the system combination even compared with a very strong baseline.

See full dissertation at **coe.neu.edu/KhamNguyen**

SELECTED PhD THESES

Alexander Dickerson Orsi

PhD 2016, Bioengineering; Advisor, Hamid Nayeb-Hashemi

DEVELOPING SUBJECT SPECIFIC METHODS FOR KNEE JOIN INJURY DETECTION USING FINITE ELEMENT ANALYSIS

The goal of this work is to better understand injury mechanisms to improve medical procedures, and reduce rehabilitation costs. Anterior cruciate ligament (ACL) tear occurs upwards of 400,000 times annually in the U.S. Reconstructive surgery and rehabilitation combine to create an annual $1 Billion expense. Associated cartilage damage leads to degenerative osteoarthritis. Injury mechanism theories include risk factors such as specific motion combinations, unbalanced musculature, intercondylar notch impingement, and gender. Despite ongoing research into injury prevention, injury rates have not improved.

See full dissertation at **coe.neu.edu/AlexanderOrsi**

Fatemeh PourMohamadHadiFarshami

PhD 2016, Mechanical Engineering; Advisor, Hameed Metghalchi

RATE-CONTROLLED CONSTRAINED-EQUILIBRIUM MODELING OF CHEMICAL KINETICS AND MIXING

The objective of this study is to assess the computational efficiency and accuracy of the Rate-Controlled Constrained-Equilibrium (RCCE) method to represent systems involving chemical reaction and mixing. The RCCE is a dimension reduction technique for chemical kinetics based on thermodynamics laws. It describes the time evolution of reacting systems using a series of constrained-equilibrium states determined by RCCE constraints. The full chemical composition at each state is obtained by maximizing the entropy subject to instantaneous values of the constraints. The RCCE rate equations can be formulated in terms of constraints or constraint potentials. Although these two forms are mathematically equivalent, they involve different numerical procedures and thus show different computational performances.

See full dissertation at **coe.neu.edu/FatemehPourMohamadHadiFarshami**

Vivian Esperanza Pera

PhD 2016, Electrical Engineering; Advisor, Mark Niedre

NOVEL BIPHOTONIC IMAGING CONCEPTS

In this work, we consider the development of novel biophotonic imaging concepts from both a signal processing and hardware perspective. With respect to the former, we employ classic and recent signal processing approaches to (1) explore the optimization of system design for a novel time-domain hyperspectral tomographic imager; and (2) develop novel, intrinsically-regularized algorithms for the processing of fluorescence molecular tomography (FMT) data from two instrument prototypes. With respect to the latter, we consider the construction of a custom microscope to be used for label-free enumeration and characterization of circulating cells in vivo.

See full dissertation at **coe.neu.edu/VivianPera**

Keivan Sadeghzadeh

PhD 2016, Industrial Engineering; Advisor, Nasser Fard

ANALYTIC FOR DATA-DRIVEN DECISION-MAKING IN COMPLEX HIGH-DIMENSIONAL TIME-TO-EVENT DATA

This research in this dissertation is motivated by the importance of the applied variable reduction in complex high-dimensional time-to-event data to avoid aforementioned difficulties in decision-making and facilitate time-to-event data analysis. Quantitative statistical and computational methodologies using combinatorial heuristic algorithms for variable selection and classification are proposed. The purpose of these methodologies is to reduce the volume of the explanatory variables and identify a set of most influential variables in such datasets.

See full dissertation at **coe.neu.edu/KeivanSadeghazadeh**

Fariba Seyedzadeh Khanshan

PhD 2016, Chemical Engineering; Advisor, Richard Henry West

AUTOMATIC GENERATION OF DETAILED KINETIC MODELS FOR COMPLEX CHEMICAL SYSTEMS

The first section of this thesis describes significant contributions in detailed kinetic modeling of bio-oil gasification for syngas production using RMG. The second section of this thesis presents a theoretical study of the gas-phase unimolecular thermal decomposition of heterocyclic compounds via single step exo and endo ring opening reaction classes. The third section of this thesis provides significant contributions toward facilitating the automatic generation of predictive detailed kinetic models for 1,1,2,3-tetrachloropropene (1230xa) production and other hydrocarbon chlorination processes. The ability to automatically generate these models for such complex chemical systems demonstrates the predictive capability of detailed chemical modeling. The impact of such models significantly improves the scientific understanding of two industrial chemical processes, bio-oil gasification and chlorination.

See full dissertation at
coe.neu.edu/FaribaSeyedzadehKhanshan

Ming Shao

PhD 2016, Computer Engineering; Advisor, Yun Fu

EFFICIENT TRANSFER FEATURE LEARNING AND ITS APPLICATIONS ON SOCIAL MEDIA

In this thesis, we focus on the popular social media data such as, face, object, digital number images, and study the problems of social media analytics in two lines: (1) developing efficient and effective machine learning tools given limited or poor training data by considering the structure of the data from different domains, (2) applying existing or developed machine learning tools to novel social media problems, e.g., kinship verification, family photo understanding.

A critical observation is that faces of parents captured while they were young are more like their children's compared with images captured when they are old. Therefore, we can readily apply the proposed transfer learning methods to kinship verification defined above, where kin relation between young parent and child is the source problem, while that between old parent and child is the target. Promising research outcome can be extended to real-world applications: family album management, image retrieval and annotation, missing children search, etc.

See full dissertation at **coe.neu.edu/MingShao**

Zhijuan Su

PhD 2016, Electrical Engineering; Advisor, Vincent G. Harris

DEVELOPMENT OF LOW LOSS HEXAFERRITE MATERIALS FOR MICROWAVE APPLICATIONS

This study focuses on hexaferrites, which have been widely used in microwave and millimeter wave devices as permanent magnets and as gyromagnetic materials, e.g., in circulators, filters, isolators, inductors, and phase shifters. Many efforts have been made to design light and miniature circulators with self-biased ferrite materials. We report the magnetic and structural properties of a series of W-type barium hexaferrites of composition BaZnn2-xCoxFe16O27 where x=0.15, 0.20, and 0.25. The anisotropy field of these BaW ferrites decreased with the substitution of divalent Co ions, while, they maintained crystallographic c-axis texture. The measured anisotropy field was ~10 kOe, and a hysteresis loop squareness Mr/Ms=79% was obtained due to well-controlled grain size within the range of single domain scale. U-type barium hexaferrite thin films were deposited on (0001) sapphire substrates by pulsed laser deposition. The results indicate a measured anisotropy field of ~8 kOe, and the saturation magnetization (4ϖMs) of 3.6 kG.

See full dissertation at **coe.neu.edu/ZhijuanSu**

Enqiang Sun

PhD 2016, Computer Engineering; Advisor, David Kaeli

CROSS-PLATFORM HETEROGENEOUS RUNTIME ENVIRONMENT

In this dissertation, we have designed a cross-platform heterogeneous runtime environment which provides a high-level, unified execution model that is coupled with an intelligent resource management facility. The main motivation for developing this runtime environment is to provide OpenCL programmers with a convenient programming paradigm to fully utilize all possible devices in a system and incorporate flexible workload balancing schemes without compromising the user's ability to assign tasks according to the data affinity. Our work removes much of the cumbersome initialization of the platform, and now devices and related OpenCL objects are hidden under the hood.

Equipped with this new runtime environment and associated programming interface, the programmer can focus on designing the application and worry less about customization to the target platform. Further, the programmer can now take advantage of multiple devices using a dynamic workload balancing algorithm to reap the benefits of task-level parallelism.

See full dissertation at **coe.neu.edu/EnqiangSun**

SELECTED PhD THESES

Nil Tandogan

PhD 2016, Chemical Engineering; Advisor, Edgar D. Goluch

ISOLATION AND STUDY OF BACTERIA USING PHYSICAL CONSTRICTIONS

This dissertation describes the development of new devices and techniques for the isolation and study of bacterial cells. In aim one, a conceptually simple and effective polymer microfluidic device with sub-micrometer constrictions was used to isolate individual bacterial species from complex mixtures. In the second aim, polycarbonate and aluminum oxide membranes were integrated onto polymer microfluidic devices to optimize the system for in-situ isolation and cultivation of species from the environment and human fecal samples. The third aim focuses on bacterial behavior in confinements under applied pressure, which is critical in water filtration processes. In the fourth aim, initial studies were conducted to investigate the antibiotic susceptibility of bacteria in real-time by coupling a microfluidic device to a Surface Plasmon Resonance imaging (SPRi) system. This protocol will provide a new direction to monitor biofilm removal in microfluidic devices in real-time using SPRi technology.

See full dissertation at **coe.neu.edu/NilTandogan**

Jing Tu

PhD 2016, Electrical Engineering; Advisor, Edwin A. Marengo

GENERALIZED OPTICAL THEOREM DETECTION IN RANDOM AND COMPLEX MEDIA

This PhD dissertation presents a new wave physics-based approach for the detection of targets or changes in rather arbitrary backgrounds. The problem of detecting changes of a medium or environment based on active, transmitplus-receive wave sensor data is at the heart of many important applications including radar, surveillance, remote sensing, nondestructive testing, and cancer detection. This is a challenging problem because both the change or target and the surrounding background medium are in general unknown and can be quite complex. The proposed methodology is rooted on a fundamental result of wave theory called the optical theorem, which gives real physical energy meaning to the statistics used for detection.

See full dissertation at **coe.neu.edu/JingTu**

Eric Truslow

PhD 2016, Electrical Engineering; Advisor, Vinay K. Ingle

PERFORMANCE EVALUATION OF HYPERSPECTRAL CHEMICAL DETECTION SYSTEMS

In this dissertation we demonstrate that using a detector bank followed by an identifier can achieve superior performance relative to either algorithm individually. Remote sensing of chemical vapor plumes is a difficult but important task with many military and civilian applications. Hyperspectral sensors operating in the long wave infrared (LWIR) regime have well demonstrated detection capabilities. However, the identification of a plume's chemical constituents, based on a chemical library, is a multiple hypothesis-testing problem that standard detection metrics do not fully describe. Our approach partitions and weights a confusion matrix to develop both the standard detection metrics and an identification metric based on the Dice index.

See full dissertation at **coe.neu.edu/EricTruslow**

Yash Ukidave

PhD 2016, Computer Engineering; Advisor, David Kaeli

ARCHITECTURAL AND RUNTIME ENHANCEMENTS FOR DYNAMICALLY CONTROLLED MULTI-LEVEL CONCURRENCY ON GPUS

In this thesis, we propose a dynamic and adaptive mechanism to manage multi-level concurrency on a GPU. We present a new scheduling mechanism for dynamic spatial partitioning on the GPU. Our mechanism monitors and guides current execution of compute workloads on a device. To enable this functionality, we extend the OpenCL runtime environment to map multiple command queues to a single GPU, and effectively partition the device. The result is that kernels that can benefit from concurrent execution on a partitioned device can more effectively utilize more of the available compute resources of a GPU. We also introduce new scheduling mechanisms and partitioning policies to match the computational requirements of different applications. Our partitioning/scheduling mechanism uses machine learning to analyze the current execution state of the GPU. We improve the effectiveness of adaptive partitioning and TMM by tracking execution time behavior of real world applications.

See full dissertation at **coe.neu.edu/YashUkidave**

Melda Ulusoy

PhD 2015, Mechanical Engineering; Advisor, Rifat Sipahi

A TOUCH BASED FINGER-MOTION-ADAPTIVE CONTROL DESIGN FOR BRAILLE READING

In this dissertation, we focus on developing engineering design rules by which Braille reading devices can be created at low costs and with enhanced user experience. With this aim, a touch based finger-motion-adaptive control design algorithm is proposed for use on a rotating-wheel type Braille reading machine. By taking into account the inherent complexity of Braille reading process, the proposed algorithm estimates user's hand gestures in real-time without any sensors attached to the hand, and based on this estimation, it can adjust the speed of the wheel bi-directionally in real-time. The finger-motion-adaptive algorithm is tested and its efficacy is evaluated through human subject experiments with sighted and blind people. Results indicate that subjects' performance metrics improved in the presence of the finger-motion-adaptive algorithm, demonstrating the potentials of utilizing the algorithm in next-generation Braille reading devices.

See full dissertation at **coe.neu.edu/MeldaUlusoy**

Vahid Valamanesh

PhD 2016, Structural Engineering; Advisor, Andrew T. Myers

PROBABILISTIC HAZARD ANALYSIS OF EXTREME ENVIRONMENTAL CONDITIONS FOR OFFSHORE WIND TURBINES

The dissertation herein addresses two overarching themes. The first theme is structural modeling of offshore wind turbines (OWTs). While performance-based structural modeling of infrastructure subjected to natural hazards is a well-established field, modeling of OWTs presents some interesting challenges since an OWT can be considered as both a machine and a structure. In particular, the structural characteristics of an OWT vary significantly depending on the operational condition of the turbine. One of these characteristics, aerodynamic damping, is examined in detail in this work, and a closed-form equation for estimating the magnitude of aerodynamic damping for use in structural analysis software is proposed. The second theme is probabilistic characterization of hurricane-induced offshore hazard relevant to design and risk evaluations of OWTs.

See full dissertation at **coe.neu.edu/VahidValamanesh**

David Ignatius Walsh

PhD 2016, Bioengineering; Advisor, Shashi K. Murthy

SCALABLE MANUFACTURING METHODS FOR BIOMEDICAL MICROFLUIDICS

This dissertation contributes to the development of scalable rapid prototyping techniques to better translate microfluidic systems from the lab bench to the clinic. Chronic and idiopathic eye diseases are one facet of healthcare that could greatly benefit from microfluidic point-of-care diagnostic platforms to better preserve vision, reduce surgeries needed for large volume biopsies and personalize disease treatment. Three different scalable platforms have been developed to address this clinical need utilizing innovative microfluidic techniques such as centrifugal and paper-based flow control. These systems contribute to the field by: 1) providing a framework for scalable rapid prototyping of microfluidic devices using commercialization-friendly manufacturing methods and materials, 2) enabling the study of molecular diagnostic analysis and complicated cell functions such as chemotaxis at very small time frames (<20 minutes), and 3) integrating diagnostic capabilities with necessary sample preparation techniques such as preconcentration using an innovative open-platform system.

See full dissertation at **coe.neu.edu/DavidWalsh**

Bei Yan

PhD 2015, Computer and Electrical Engineering; Advisor, Hanoch Lev-Ari

NETWORKED DYNAMIC STATE ESTIMATION WITH TIME-STAMPED MULTI-SENSOR OBSERVATIONS

In this dissertation the performance of a continuous-discrete Kalman filter using multi-sensor observations is analyzed in the presence of irregular sampling, observation/control delay, bad data and system parameter inaccuracy. We show that the average error covariance depends only on system parameters and on the moment generating function of the irregular sampling interval of the multi-sensor sampling pattern. We obtain lower and upper bounds on the average error covariance, as well as a necessary condition for its stability, expressed in terms of the region of convergence of the sampling interval moment generating function.We provide an explicit expression for the added effect of delayed time-stamped observations on the steady-state error covariance of our networked Kalman filter.

See full dissertation at **coe.neu.edu/BeiYan**

Hankang Yang

PhD 2016, Mechanics and Design; Advisor, Sinan Muftu

LATERAL DYNAMICS OF AN AXIALLY TRANSLATING MEDIUM : A THEORETICAL AND EXPERIMENTAL STUDY ON THE EFFECTS OF GUIDING COMPONENTS

The research presented in this thesis is motived by the need to understand the causes of LTM, in order to help increase the volumetric storage density of magnetic tape storage systems. To this end tape is modeled as tensioned, axially moving beam with viscoelasticity. Two major studies were undertaken to investigate the effects of imperfections in roller geometry, and dynamic friction between the tape and a grooved roller. In addition, the effects of periodic impulses, such as those that could develop due to flange contacts, on tape dynamics were investigated. A new model for the coupling between lateral and longitudinal tape vibrations was also presented. In this work we also introduce a way to carryout eigenvalue analysis of gyroscopic systems by using the finite element discretization. It was shown that the results match the classical work. This method was used to find the natural frequencies of the system with internal damping.

See full dissertation at **coe.neu.edu/HankangYang**

Yi Yao

PhD 2016, Computer and Electrical Engineering; Advisor, Mi Ningfang

RESOURCE MANAGEMENT IN CLUSTER COMPUTING PLATFORMS FOR LARGE SCALE DATA PROCESSING

In this dissertation, we mainly focus on improving system efficiency and performance for cluster computing platforms, i.e., Hadoop MapReduce and Hadoop YARN, by designing the following new scheduling algorithms and resource management schemes. First, we developed a Hadoop scheduler (LsPS), which aims to improve average job response times by leveraging job size patterns of different users to tune resource sharing between users as well as choose a good scheduling policy for each user. We further presented a self-adjusting slot configuration scheme, named TuMM, for Hadoop MapReduce to improve the makespan of batch jobs.The major goal of our new scheme is to improve system resource utilization without incurring severe resource contentions due to resource over provisioning.

See full dissertation at **coe.neu.edu/YiYao**

Ye Zhao

PhD 2016, Electrical Engineering; Advisor, Brad Lehman

FAULT DETECTION, CLASSIFICATION AND PROTECTION IN SOLAR PHOTOVOLTAIC ARRAYS

This dissertation reviews the challenges and limitations of existing fault detection and protection solutions in solar PV arrays. For the first time, a 35kW commercial-scale PV laboratory is designed to study faults under real-working conditions and to discover the “blind spots” in conventional fault protection schemes. It is shown that the line-line fault may not be detectable by traditional overcurrent protection devices (OCPD) under certain conditions. Therefore, the fault may remain in the PV system as a safety concern.

To eliminate the detection “blind spot,” outlier rules, such as statistical outlier detection rules (ODRs) and local outlier factors (LOFs) are proposed in PV-string monitoring systems. To further identify the fault types (or so-called fault classification), machine learning algorithms are studied in solar PV arrays. To overcome the drawbacks of supervised learning algorithms, a semi-supervised learning algorithm is proposed. The dissertation demonstrates the effectiveness in fault detection and classification in both simulation and experimental results.

See full dissertation at **coe.neu.edu/YeZhao**

Naiqian Zhi

PhD 2016, Bioengineering; Advisor, Rifat Sipahi

QUANTITATIVE ASSESSMENT OF MICROGRAPHIA AND TREMOR IN STATIC HANDWRITING SAMPLES: ANALYSIS, DIAGNOSTIC TOOLS AND ACCOMMODATION

In this work innovative computerized metrics are presented, by which static handwriting samples can be analyzed to decide whether studied conditions affect the samples. Specifically, these metrics are tested and validated in their ability to measure (a) micrographia effects by comparing normal writing samples with symptomatic ones collected from PD patients, and (b) tremors by comparing unaffected writing samples with those affected by artificially induced tremor on healthy subjects. Results suggest that both sets of metrics are sensitive enough to detect and discern changes with specificity. A two-week self-administrated handwriting therapeutic exercise has been performed by PD subjects with micrographia, to investigate influence of this exercise on handwriting samples by means of developed quantitative metrics.

See full dissertation at **coe.neu.edu/NaiqianZhi**

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