Faculty and Their Research Interests

Aerospace Engineering

Lawrence A. Bergman
Structural dynamics and control, stochastic dynamics, system identification, smart structures

Daniel J. Bodony
Aeroacoustics, computational fluid dynamics, combustion

Michael B. Bragg
Aerodynamics, flight mechanics, aircraft icing, unsteady aerodynamics

Timothy W. Bretl
Aerospace information technology, systems and control, with a focus on robotics and autonomous vehicles

Rodney L. Burton
Electric and advanced chemical rocket propulsion, space exploration, hypersonic flows, hypervelocity accelerators

Ioannis Chasiotis
Experimental mechanics at the nanoscale

Bruce A. Conway
Celestial mechanics, optimal control, numerical optimization

Victoria Coverstone
Space mission design, optimal spacecraft trajectories

J. C. Dutton
Compressible fluid flow, propulsion, heat transfer, laser-diagnostic measurements of high-speed separated and mixing flows, shock wave/boundary layer interactions

Gregory S. Elliott
Thermal and fluid sciences, laser diagnostic techniques, experimental supersonic and subsonic fluid mechanics, propulsion, combustion, plasmas

Philippe Geubelle
Theoretical and computational solid mechanics, fracture mechanics, computational aeroelasticity, computational design of novel (autonomic) materials

Harry H. Hilton, Professor Emeritus
Solid mechanics, viscoelasticity, composites, structures, dynamics, numerical analysis, computer-aided engineering, aeroelasticity, structural control

John Lambros
Static and dynamic fracture mechanics

Cedric Langbort
Dynamical systems, control and systems theory, with emphasis on distributed decision making in large-scale and networked infrastructure

Ki D. Lee
Computational fluid dynamics, aerodynamics, transonic flows, design optimization

Eric Loth
Two-phase flow and compressible flow, fluid mechanics, micro-vehicles

N. Sri Namachchivaya
Nonlinear dynamical systems, including bifurcation theory, stability analysis, stochastic processes, structural dynamics

Natasha Neogi
Aerospace software, hazard elimination using backwards reachability techniques in discrete and hybrid models

John E. Prussing, Professor Emeritus
Orbital mechanics, spacecraft trajectories, optimal control systems

Michael S. Selig
Applied computational and experimental aerodynamics; airfoil design and analysis; aircraft design, performance, stability, and control; flight simulation; wind energy

Wayne C. Solomon, Emeritus
Gas-phase kinetics, space systems, high-energy lasers

Petros G. Voulgaris
Robust control, time-varying and nonlinear systems, general systems theory, estimation and identification, distributed control of complex systems and networks, emphases on aerospace applications
Scott R. White
Manufacturing of composites, solid mechanics, composite materials, smart structures and materials

Agricultural and Biological Engineering

Robert A. Aherin
Agricultural safety and health, safety behavior analysis, confined space safety, using sensors in safety systems, older farm safety issues, disabled farmers

Kaustubh D. Bhalerao
Biological nanotechnology, probabilistic methods, synthetic biology

Loren E. Bode
Spray atomization, transport, and deposition; spray nozzle design, spray drift reduction

Philip Buria, Emeritus
Technical systems management, learning theory, implications to college teaching

Leslie L. Christianson, Emeritus
New product development; engineering design; agricultural buildings; heating, ventilation, and air-conditioning; air quality; swine facilities

Richard A. Cooke
Subsurface drainage, vadose zone water and contaminant transport, modeling of watershed-scale drainage systems

Mary-Grace Danao
Biosensor technology, biocatalysis and optics

Steven R. Eckhoff
Corn fractionation, wet milling, dry milling, ethanol production, hybrid specific processing, process economics, biomass storage and processing

Bruce Elliott-Litchfield
Food engineering

Ted L. Funk
Livestock confinement structures, indoor climate control systems for livestock, manure management systems, residential housing structures, indoor air quality

Tony E. Grift
Sensors and controls in biosystems automation, machine vision systems, agricultural data acquisition systems, mathematical modeling and control, granular mass flow measurement

Alan C. Hansen
Biofuels for diesel engines, simulation modeling of material handling systems, off-road machinery systems, precision agriculture

Joe G. Harper
Technical systems management

Michael C. Hirschi
Erosion and sediment control, water quality

Prasanta K. Kalita
Hydrology, watershed-water quality modeling, pathogen transport, erosion and sediment control

Marvin R. Paulsen
Food and bioprocess applications, grain quality measurements, near-infrared and FT-NIR spectroscopy

Kent D. Rausch
Recovery of nutrients from bioprocesses, corn quality effect on co-product value, variability of co-product quality, co-product quality for human and animal consumption

Luis F. Rodriguez
Modeling and analysis of biological systems, reliability and sustainability, decision support, life support systems, integrated controls

Lance C. Schideman
Water and wastewater treatment, adsorption and membrane bioreactor processes, integrated water reuse systems, algae-based bio-energy, intelligent water infrastructure, pharmaceuticals and other emerging water contaminants

Vijay Singh
Engineering economic analysis and modeling of bioprocesses, design of processes for corn fractionation and ethanol production, recovery and concentration of nutraceuticals and biobased products

Lei Tian
Sensors and information systems for precision agriculture, applied machine vision, remote sensing, variable-rate technology
K. C. Ting
Automation; systems informatics and analysis; biomass production engineering; bioenergy; computerized simulation, optimization, and decision support

Xinlei Wang
Air quality, diesel engine emission control, renewable energy, building environment control and energy efficiency, system modeling

Yuanhui Zhang
Indoor air quality; effect of indoor air quality on occupants; sensor technology for bioenvironmental systems; heating, ventilation, and air-conditioning control; waste treatment

Qin Zhang
Off-road vehicle mechatronics, machinery systems for bioproduction, electrohydraulic systems control, computer-integrated agricultural systems, sensors and instrumentation

Bioengineering

Narayan R. Aluru
Bioengineering, computational science and engineering, engineering mechanics, fluid dynamics, nano-, micro-, and meso-technology

Thomas J. Anastasio
Computational neuroscience

Rashid Bashir
BioMEMS and biosensors, bionanotechnology, nanomedicine, applications of MEMS and nanotechnology in medical and biological problems, multiscale tissue engineering.

Philip M. Best
Ion channels

Rohit Bhargava
Infrared spectroscopic imaging, automated and quantitative histopathology, cancer pathology, macromolecular dynamics in composites, molecular and tissue engineering, nanotechnology, biophotonics instrumentation and algorithms

Stephen Boppart
Optical biomedical imaging, molecular imaging, lasers in medicine and biology, optical coherence tomography, image-guided surgery, medical engineering, optical diagnostics of cancer

Richard D. Braatz
Multiscale systems and control

Yoram Bresler
Biomedical imaging systems; statistical signal and image processing; inverse problems; statistical pattern recognition; sensor-array processing

Bertram C. Bruce
K-12 and university science education, technologies for learning, community informatics

Sahraoui Chaieb
Bioengineering, computational science and engineering, engineering mechanics, fluid dynamics, materials behavior, nano-, micro-, and meso-technology

John C. Chato, Emeritus
Bioengineering, energy systems and thermodynamics, heat transfer

Jianjun Cheng
Biomaterials, polymers, gene delivery, nanomedicine, self-assembly

Robert Clegg
Experimental biophysics with an emphasis on kinetics and optical spectroscopy

Brian Cunningham
Nanotechnology, photonic crystals, biosensors, micro/nanofabrication methods and materials detection instrumentation

Howard S. Ducoff, Emeritus
Radiation biophysics

Albert S. Feng
Sound communication, pattern recognition, and localization; computational neuroscience; neuroengineering

Leon A. Frizzell, Emeritus
Ultrasonic biophysics, ultrasonic bioengineering

John G. Georgiades
Bioengineering, computational science and engineering, energy systems and thermodynamics, heat transfer, nano-, micro-, and meso-technology

Steve Granick
Polymers and biopolymers, nanorheology/tribology, surface spectroscopies
<table>
<thead>
<tr>
<th>Name</th>
<th>Research Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>William T. Greenough</td>
<td>Neuronal pattern analysis</td>
</tr>
<tr>
<td>Dominique J. Griffon</td>
<td>Applications of biomaterials in orthopedic surgery</td>
</tr>
<tr>
<td>Bruce M. Hannon</td>
<td>Biological modeling</td>
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<tr>
<td>Elizabeth Hsiao-Wecksler</td>
<td>Bioengineering, control systems, dynamic systems, engineering mechanics</td>
</tr>
<tr>
<td>Michael Insana</td>
<td>Development of novel ultrasonic instrumentation and methods for imaging soft tissue microstructure, elasticity, and blood flow</td>
</tr>
<tr>
<td>Eric G. Jakobsson</td>
<td>Computational biology and nanoscience</td>
</tr>
<tr>
<td>Iwona Jasiuk</td>
<td>Solid mechanics; biomechanics; mechanics of materials; micromechanics; composite, biological and nanomaterials; bone mechanics; composite interfaces; elasticity</td>
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<tr>
<td>Amy Wagoner Johnson</td>
<td>Synthetic biomaterials, failure mechanics of metals and biomaterials</td>
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<tr>
<td>Neil L. Kelleher</td>
<td>Mass spectrometry, enzymology, &quot;Top Down&quot; proteomics, natural products</td>
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<tr>
<td>Kyekyoon (Kevin) Kim</td>
<td>Growth of GaN-based compound semiconductors and fabrication of optoelectronic and electronic devices using plasma-assisted MBE; plasma-arc-driven electromagnetic railgun for fueling of plasma devices; charged liquid cluster beam generation and application to thin film deposition, micropattern generation, and nanoparticle fabrication; generation of solid and hollow, charged and neutral, monodisperse, micro- and nanospheres for biomedical and other applications; plasma display panels; development of novel thin film deposition techniques using plasmas, charged particles, electrostatic spraying, and their combinations with other techniques; MEMS and sensors; ionized source (cluster) beam deposition for low-temperature growth of high-quality films; inertial confinement fusion targets</td>
</tr>
<tr>
<td>Waltraud M. Kriven</td>
<td>Phase transformations in oxide ceramics (TEM, high-temp XRD, and synchrotron), geopolymers, processing-microstructure-property relations in structural ceramics and composites, synthesis of oxide fibers, bioceramics, electron microscopy</td>
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<tr>
<td>Deborah E. Leckband</td>
<td>Bioengineering and biophysics</td>
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<tr>
<td>Zhi-Pei Liang</td>
<td>Magnetic resonance imaging, pattern recognition, statistical learning, bioinformatics</td>
</tr>
<tr>
<td>Manssour H. Moeinzadeh</td>
<td>Biomechanics, dynamic modeling, experimental mechanics</td>
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<tr>
<td>Mark E. Nelson</td>
<td>Computational neuroscience</td>
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<tr>
<td>William D. O'Brien, Jr.</td>
<td>Ultrasonic biophysics and bioeffects, acoustic microscopy, ultrasonic bioengineering, ultrasonic dosimetry, ultrasonic tissue characterization, acoustic imaging techniques</td>
</tr>
<tr>
<td>Michael L. Oelze</td>
<td>Ultrasound, including backscatter microscopy, quantitative imaging, computed tomography; use of ultrasound for cancer diagnosis and therapy; bioeffects of ultrasound; sonoporation; coded excitation and ultrasound</td>
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<tr>
<td>Daniel W. Pack</td>
<td>Drug and gene delivery systems</td>
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<tr>
<td>Adrienne L. Perlman</td>
<td>Normal and disordered deglutition</td>
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<tr>
<td>Gerald J. Pijanowski</td>
<td>Orthopedic biomechanics</td>
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<tr>
<td>Nathan D. Price</td>
<td>Systems biology, cancer, model-guided cellular engineering, microbial biofuel production</td>
</tr>
<tr>
<td>Klaus Schulten</td>
<td>Theoretical biological and computational physics, statistical physics</td>
</tr>
</tbody>
</table>
Mark A. Shannon
Bioengineering, combustion and propulsion, computational science and engineering, energy systems and thermodynamics, heat transfer, materials processing, nano-, micro-, and meso-technology

Bradley Sutton
Functional magnetic resonance imaging, MR pulse sequence design, dynamic imaging for speech, diffusion weighted imaging, functional spectroscopic imaging

Jonathan V. Sweedler
Neurotransmitter distribution and release

Kimani C. Toussaint
Optical microscopy, optical polarization control, nanophotonics, biophotonics

Ning Wang
Cytoskeletal biomechanics, machanotransduction, bioimaging of cytoskeletal structures and stress distribution in living cells

Yingxiao Wang
Molecular imaging of live cell dynamics, molecular and cellular engineering, nanotechnology, biophotonics

Yongmei Michelle Wang
Biomedical imaging and biomedical image/signal analysis, structural and functional neuroimage analysis, multi-model integration of neuroimaging data

Matthew B. Wheeler
Tissue engineering, microfluidics, nanometer-scale integrated systems, biology of single mammalian embryos, embryonic and adult stem cells, drug delivery, remote sensing of embryo metabolism and embryonic health, NMR imaging, microcalorimetry and MEMS actuators

Bruce C. Wheeler
Analysis of multichannel neural signals, microminiature sensors for neural recording, algorithms for enhanced hearing aids, patterned growth of neurons

Gerard C. L. Wong
Biopolymers, biomolecular materials, biological and biomimetic self-assembly, gene therapy, synchrotron x-ray probes

James F. Zachary
Ultrasound-induced bioeffects, contrast-agent induced bioeffects, and acoustic imaging of tumors

Yuanhui Zhang
Indoor air quality; effect of indoor air quality on occupants; sensor technology for bioenvironmental systems; heating, ventilation, and air-conditioning control; waste treatment

Huimin Zhao
Biomolecular Engineering and Biotechnology

Sheng Zhong
Systems biology and bioinformatics

Chemical and Biomolecular Engineering

Richard C. Alkire
Electrochemical engineering

Richard D. Braatz
Multiscale systems and control

Thomas J. Hanratty, Emeritus
Fluid dynamics

Jonathan J. L. Higdon
Fluid mechanics, computational algorithms

Paul J. A. Kenis
Microfuel cells, microreactors, engineered platforms for biology, microfluidic crystallization platforms

Hyun Joon Kong
Biomaterials, cell adhesion, tissue engineering, cell

Mary L. Kraft
Phospholipid bilayers, phase-separation, secondary ion mass spectrometry, cell membrane microdomains, glycosylation

Deborah E. Leckband
Bioengineering and biophysics

Richard I. Masel
Kinetics, catalysis, microfuel cells, and microchemical systems

Daniel W. Pack
Drug and gene delivery systems

Nathan D. Price
Systems biology, cancer, model-guided cellular engineering, microbial biofuel production
Christopher V. Rao
Cellular and systems biology

Nikolaos V. Sahinidis
Optimization and process systems engineering

Edmund G. Seebauer
Engineering of semiconductor defects for nanoscale devices

Michael S. Strano
Chemical reactivity of nanowires and nanotubes, processing of nanoparticle systems, molecular electronics

Huimin Zhao
Biomolecular Engineering and Biotechnology

Charles F. Zukoski
Colloid and interfacial science

Civil and Environmental Engineering

Daniel P. Abrams
Reinforced concrete, masonry, earthquake engineering

Imad L. Al-Qadi
Pavement material characterization, modeling, and performance prediction, nondestructive testing and evaluation, instrumentation, full-scale accelerated testing, geosynthetics in pavements, pavement fracture and reinforcement, modeling of pavement interlayer system, tire-pavement interaction

Christopher P. L. Barkan
Transportation safety and risk analysis, with particular emphasis on topics related to railroad train accidents, tank cars, and hazardous materials; railroad transportation energy efficiency and environmental impact; railway signaling, traffic control systems, and capacity

Rahim Benekohal
Traffic flow modeling and simulation, car following models, traffic signal systems, highway capacity modeling and analysis, transportation system analysis, traffic operation and management, transportation safety, accident studies

Tami C. Bond
Effect of human activities on global and regional atmospheric chemistry, including chemistry, physics, and optics of combustion aerosols; physical and socioeconomic factors that govern emissions

Frank Boukamp
Building information modeling, knowledge representation and reasoning, ontological engineering, construction quality and safety

William G. Buttlar
Mechanics of transportation facilities and materials, micromechanical simulation of creep and fracture in particulate composites, asphaltic materials

Ximing Cai
Water resources management and policy, international water resources development, large-scale system optimization, drought management

Samuel H. Carpenter, Emeritus
Bituminous materials, pavement evaluation, climatic factors

Mark M. Clark
Membrane, colloid, and interfacial science; biomimetic membranes, flocculation and mixing

Barry J. Dempsey, Emeritus
Climatic effects on pavements and materials, drainage, geosynthetic materials

Robert H. Dodds, Jr.
Fracture mechanics and fatigue, computational solid mechanics, structural engineering

Carlos A. Duarte
Computational mechanics, three-dimensional computational fracture mechanics, multiscale modeling, computational micromechanics of materials

J. W. Eheart
Environmental systems analysis and management, water quality modeling

Amr Elnashai
Testing, analysis, field observations, study of the effects of earthquakes on complex multiphysics civil engineering systems
Khaled El-Rayes
Optimizing the utilization of construction resources during the construction of critical civil infrastructure, optimal construction planning and control, multi-objective optimization, parallel computing, optimal lighting design for nighttime construction, optimizing recovery and reconstruction efforts after natural disasters

Larry A. Fahnestock
Earthquake engineering; behavior, performance, and design of steel structures; experimental evaluation of large-scale structural components and systems

Kevin T. Finneran
Anaerobic microbial ecology and physiology, biotransformation and bioremediation, contaminant fate and transport, bioenergy and biologically produced hydrogen, sustainable bioremediation

Douglas A. Foutch
Dynamic characteristics of full-scale structures, analysis and design of earthquake-resistant bridge and steel buildings, wind effects

William L. Gamble, Emeritus
Structural concrete, prestressed concrete bridges, creep and shrinkage of concrete, reinforced concrete slabs, fire-resistant structures

Marcelo H. García
Environmental hydraulics, stratified flows, river mechanics, sediment transport

Jamshid Ghaboussi, Emeritus
Structural and geomechanical computational mechanics, earthquake engineering, computational intelligence and soft computing, information technology in civil engineering

German R. Gurfinkel, Emeritus
Structural design, failure investigations and retrofitting of wood, reinforced concrete, prestressed concrete and steel structures including silos, tanks, tall buildings

Jerome F. Hajjar
Structural analysis, experimental testing, and design of steel and composite steel-concrete structures; earthquake engineering

William J. Hall, Emeritus
Structural engineering, structural dynamics, earthquake engineering

Yousef Hashash
Numerical modeling, static and dynamic soil-structure interaction, deep excavations and tunnels, underground structures, geotechnical engineering, discrete element modeling, visualization, virtual reality and information technology

Neil M. Hawkins, Emeritus
Reinforced, prestressed, and composite steel and concrete structures, fracture mechanics

Edwin E. Herricks
Aquatic ecology, ecosystem management, water quality management standards and legislation

Keith D. Hjelmstad
Structural mechanics, nondestructive evaluation of large structures, fluid/structure interaction

Daniel A. Kuchma
Design, behavior, and numerical modeling of concrete structures, including bridges and buildings; experimental methods, advanced measurement systems, visualization of experimental test data, and model validation

Praveen Kumar
Hydroclimatology, hydrogeomorphology, hydrologic information systems, knowledge discovery in databases, ecohydrology

James M. LaFave
Experimental behavior and modeling of connections and joints in reinforced concrete, brick veneer, GFRP, and aluminum structural systems; earthquake engineering; seismic assessment of bridges; concrete durability

David A. Lange
Construction materials, microstructure and properties of cement and concrete, airport pavement performance

Susan M. Larson
Air quality monitoring and modeling, aerosol physics

Jon C. Liebman, Emeritus
Water resource and water quality systems, solid waste management and disposal

Liang Y. Liu
Construction project controls, productivity analysis and improvements, information technology, sensors and field data collection, construction modeling and simulation
James H. Long  
Soil-structure interaction, foundation engineering

Benito J. Mariñas  
Adsorption and membrane technologies for water quality control, disinfection and disinfection byproduct control processes

Arif Masud  
Multiscale and stabilized finite element methods for multiphysics problems, computational fluid dynamics and fluid-structure interaction, multiscale computational methods for bio- and nanomechanics

Gholamreza Mesri  
Geotechnical engineering, engineering properties, construction problems, and ground modification technology in relation to soft clays and silts, stiff clays and soft rocks, expansive soils and swelling shales, as well as granular materials, especially in connection with onshore and offshore reclamation projects, landslides, and building foundations

Barbara S. Minsker  
Environmental systems analysis and management; data mining and machine learning applications to environmental monitoring and management

Eberhard Morgenroth  
Influence of dynamic reactor operation on the performance of biological treatment processes using activated sludge, biofilms, or membrane bioreactors

Thanh H. Nguyen  
Waterborne pathogen removal for water and wastewater treatment, fate and transport of antibiotic resistant bacteria and pathogens in natural environment

Scott M. Olson  
Geotechnical earthquake engineering, soil liquefaction, geohazards, paleoseismology and paleoliquefaction, seismic and static slope stability, in situ testing, laboratory testing of sands, soil-structure interaction related to bridges, geotechnical instrumentation

Yanfeng Ouyang  
Stability and efficiency of transportation systems, supply network operations, logistics system design, infrastructure system management, transportation safety, traffic flow

Ilinca Stanciulescu Panea  
Nonlinear finite element methods, computational methods for stability analysis in multiphysics problems, nonlinear dynamics

Gary Parker  
Sediment transport, river engineering, river morphodynamics, turbidity currents and deep-sea sedimentation

Glaucio H. Paulino  
Structural analysis, computational mechanics, fracture mechanics and functionally graded materials

David A. Pecknold, Emeritus  
Structural mechanics and dynamics, shell structures, composite materials, neural network material modeling

Feniosky A. Peña-Mora  
Information technology support for collaboration, change management, conflict resolution, and process integration during design and development of large-scale civil engineering systems

John S. Popovics  
Nondestructive evaluation and sensing for civil engineering materials and structures; corrosion; mechanical and dynamic properties of cement-based materials

Shaoying (Shawn) Qi  
Water and wastewater treatment: PAC/GAC adsorption theories and applications for organic removal; packed-bed filtration/ultrafiltration for particle removal; chemical and biological reactions related to water quality control

Arthur R. Robinson, Emeritus  
Structural mechanics, dynamic elasticity, numerical methods applied to nonlinear structural problems

Jeffrey Roesler  
Concrete pavement analysis, design, and large-scale testing; fatigue and fracture of concrete materials; concrete slab curling; fiber reinforced concrete materials; continuously reinforced concrete pavements

Mark J. Rood  
Environmental air quality: aerosol chemistry and physics, development of methods to separate and remove contaminants from gas streams, development of aerosol sampling instrumentation
A. R. Schmidt
Surface-water hydraulics and hydrology; hydrology and hydraulics related to urban stormwater drainage systems, including best management practices, risk-based design and real-time control; and reliability-analysis applications for in water-resources and environmental engineering

Murugesu Sivapalan
Climate-soil-vegetation controls on hydrological variability, land-atmosphere interactions and feedbacks, watershed hydrological modeling, human impacts on water quantity and water quality, flood frequency analysis and risk assessment

Vernon L. Snoeyink, Emeritus
Environmental chemistry, drinking water treatment, water reclamation

Junho Song
Structural reliability, reliability of complex systems, stochastic structural dynamics, performance of lifeline systems, systematic treatment of uncertainty, earthquake engineering, probabilistic structural mechanics, probabilistic strength models

B. F. Spencer, Jr.
Smart structures, pseudo-dynamic substructure testing, structural health monitoring, vibration testing and theory, fatigue and fracture reliability, stochastic and robust structural control and system identification, earthquake engineering, deterministic and stochastic structural dynamics, computational probabilistic methods, structural reliability.

Timothy D. Stark
Foundation engineering, static and seismic stability of natural and man-made slopes, soil liquefaction, geosynthetics

Timothy J. Strathmann
Environmental chemistry, catalysis of contaminant degradation in engineered treatment systems and natural environments, emerging aquatic micropollutants, anaerobic biogeochemical processes, photocatalysis

Leslie J. Struble
Materials, chemical, microstructural and physical properties of cement and concrete, rheology of fresh cement and concrete

Marshall R. Thompson, Emeritus
Flexible pavements, transportation, railroad track structure analysis and design, soil stabilization, paving materials, subgrade soils

Erol Tutumluer
Pavement materials, aggregates and soils, flexible pavements, mechanistic-based pavement design, railroad ballast, aggregate image analysis, geosynthetics, artificial neural networks, full-scale pavement testing, pavement materials stabilization and recycling

Albert J. Valocchi
Transport processes in porous media, groundwater contamination, mathematical modeling, computational methods

William H. Walker, Emeritus
Structural mechanics, structural dynamics, highway bridge dynamics, fatigue and fracture

Y. K. Wen
Vulnerability functions, systematic treatment of uncertainty, effect of redundancy in buildings under seismic loads, Hilbert Spectral Representation and simulation of nonstationary random processes, optimal seismic design based on lifecycle cost consideration

Charles J. Werth
Transport and fate of organic chemicals in soils, sediments, and groundwater, sorption, mass transfer, soil and sediment characterization

Julie Zilles
Microbial physiology and ecology, biological nutrient removal processes, antimicrobial resistance, herbicide degradation

Computer Science

Vikram Adve
Compilers, software reliability, performance analysis, computer architecture

Sarita Adve
Computer architecture, low-power design, adaptive systems, real-time and network processing, performance evaluation methods, parallel computing
Gul A. Agha
Developing new abstractions for building open distributed systems and reasoning about their behavior, parallelism, coordination, real-time behavior

Eyal Amir
Automated reasoning and machine learning

Brian P. Bailey
User interface tools that better support early design tasks, systems and environments that help users maintain information awareness, tools for multimedia authoring and design, interfaces that foster social interaction, human–computer interaction

Geneva G. Belford, Emeritus
Databases and information systems, distributed systems

Stephen Bond
Numerical analysis and scientific computing, with applications in statistical mechanics, and biochemistry; understanding methods that bridge the temporal and spatial scales in multiscale biomolecular modeling using techniques from geometric integration and adaptive finite element methods

Marco Caccamo
Real-time operating systems, real-time scheduling and resource management, wireless sensor networks, quality of service control in next-generation digital infrastructures

Roy H. Campbell
Security, distributed operating systems, ubiquitous computing

Kevin C.-C. Chang
Databases, Internet information access, and digital libraries, with focuses on information integration of heterogeneous sources, Internet query processing, web databases, and ranked top-k query processing

Chandra Chekuri
Design and analysis of algorithms, combinatorial optimization, approximation algorithms, scheduling, graphs, networks

Gerald DeJong
Artificial intelligence

Eric deSturler
Iterative methods, eigenvalue problems, large-scale optimization

AnHai Doan
Databases, data integration and sharing, data mining, information discovery on the Web, efficient use and maintenance of meta-data, schema matching, machine learning

Jeffrey G. Erickson
Algorithms, data structures, and lower bounds; computational and discrete geometry

Margaret Fleck
Automated reasoning and machine learning

David Forsyth
Artificial intelligence, computer vision, machine learning

Michael Garland
Computer graphics, geometric modeling, human–computer interaction, visualization

Maria J. Garzaran
Compilers, software reliability, parallel computer architecture, thread-level speculation

William D. Gropp
High performance scientific computing, with particular emphasis on parallel computing

Elsa Gunter
Formal systems

Carl A. Gunter
Security, networks, software engineering, programming languages

Indranil Gupta
Distributed systems, distributed protocols, probabilistic protocols, design methodologies, sensor networks

Jiawei Han
Database systems, data mining, data warehousing, stream data mining, web mining, spatiotemporal data mining, biodata mining

Mehdi T. Harandi
Artificial intelligence, information systems, HCI, software engineering

Sariel Har-Peled
Algorithms, data structures, computational geometry, clustering, learning, computer graphics
Luddy Harrison
System architecture

John C. Hart
Computer graphics, computational topology

Michael T. Heath
Scientific computing, parallel computing

Anil N. Hirani
Numerical analysis, discrete exterior calculus, differential geometry, computational mechanics, computational astrodynamics

Julia Hockenmaier
Computational linguistics, computational biology, automated reasoning, machine learning, natural language processing

Jennifer C. J. Hou
Design, analysis, and implementation of self-adjusting protocols for wireless networks, enabling technology for large-scale network simulation and emulation, wireless-enabled cyber physical space for healthcare, design, fundamental property analysis, evaluation of data-centric wireless sensor networks

Sheldon H. Jacobson
Operations research, discrete optimization, heuristic design and analysis, applied probability, health care, aviation security, homeland security

Ralph E. Johnson
Object-oriented design, design patterns, frameworks, software architectures

Laxmikant V. Kale
Numerical, parallel, and scientific computing, operating systems

Samuel N. Kamin
Programming languages, software components, functional programming applied to scientific computation, denotational semantics, program specification and verification, domain-specific languages

Karrie Karahalios
Human–computer interfaces

Samuel T. King
Security, operating systems, experimental software systems, virtual machines

Negar Kiyavash
Digital rights management, computer, communication and multimedia security, cryptography

Robin Kravets
Mobile computing and communication, location management, power management, transport protocols, ad hoc networks, personal area networks

Steven M. LaValle
Robotics, motion planning, computational geometry, artificial intelligence, computational biology, computer vision, computer graphics, control theory

Haiyun Luo
Networking and distributed systems

Darko Marinov
Software engineering, programming languages, software testing

Jose Meseguer
Formal executable specification and verification; software composition, reflection, and metaprogramming; object-oriented specification and software architecture; concurrent, distributed, and mobile computing; logical frameworks and formal interoperability; logical and semantic foundations

Klara Nahrstedt
Quality-of-Service (QoS) management, integration of guaranteed and best effort services for audio/video/DATA traffic, QoS-aware resource management, QoS routing, multimedia security, soft real-time scheduling, middleware support for distributed multimedia applications

Luke Olson
Numerical partial differential equations (PDEs), numerical linear algebra, high-performance computing

David A. Padua
Computer architecture and systems, parallel computing, compilers

Madhusudan Parthasarathy
Software engineering, formal methods

Lenny Pitt
Artificial intelligence, theoretical computing

Jean A. Ponce
Computer vision, robotics, computer graphics
Manoj M. Prabhakaran
Cryptography, other topics in theoretical computer science

Grigore Rosu
Software and software related aspects; design, semantics, and implementation of programming and specification languages; automated software engineering and formal methods, especially “push-button” techniques for certification, monitoring, synthesis, and modularization; automated reasoning about computer systems, applications of logics, theorem proving; algorithms, (co)algebra, category theory

Dan Roth
Artificial intelligence, theoretical computing

Lui Sha
Distributed real-time computing systems, dynamic real-time architecture, Quality-of-Service (QoS) driven resource management, security and fault tolerance in networked embedded systems

Saurabh Sinha
Gene regulation, comparative genomics, sequence analysis, evolution

Marc Snir
Large-scale parallel and distributed systems, parallel computer architecture, grid computing, parallel programming

Josep Torrellas
Parallel and sequential computer architecture, processor-memory integration, thread-level speculation, low power design, reliability

Mehesh Viswanathan
Analysis and validation of software systems, including design of efficient algorithms, characterization of computational limitations, development of formal models for system specification, and implementation of software tools for program analysis

Marianne S. Winslett
Databases, security, parallel computation

Yizhou Yu
Data-driven graphical methods, computer animation, mesh editing, image and video processing

Chengxiang Zhai
Text processing and management, statistical natural language processing, machine learning, bioinformatics

Yuanyuan Zhou
Operating systems, file and storage systems, architecture, distributed systems, parallel systems, system support for database

Craig Zilles
Computer architecture, dynamic optimization, compiler construction, simulation methodologies, computer science education

Electrical and Computer Engineering

Ilesanmi Adesida
Electronic and transport properties of ultra-low dimensional semiconductor structures, advanced processing methods for electronic devices, high-speed optoelectronic devices and integrated circuits, radiation effects

Narendra Ahuja
Computer vision, robotics, image processing, sensors, pattern recognition, virtual environments, intelligent interfaces

Jont Allen
Speech recognition based on the articulation index and aspects of information theory, bioacoustics, circuits, communications, electromagnetics, signal and image processing

Tangul Basar
Optimum transmitter-receiver design in communication systems, spread spectrum communication system, jamming problems in information transmission, minima stochastic optimization problems with applications in communication systems, mobile radio systems

Tamer Basar
Information technology research; control over wired and wireless networks; usage-limited sensing, estimation, and control; robust identification and control; dynamic games and stochastic teams; nonlinear and adaptive robust control; decentralized and distributed detection and estimation; routing, pricing, and congestion control; modeling and control of communication networks; mobile and distributed computing; information security and intrusion detection; incentive mechanisms through pricing; neural networks-based identification and control; applications of control and game theory in economics
Rashid Bashir  
BioMEMS and biosensors, bionanotechnology, nanomedicine, applications of MEMS and nanotechnology in medical and biological problems, multiscale tissue engineering.

Jennifer Bernhard  
Reconfigurable active and passive antennas, phased array antennas, wireless sensor systems

Stephen G. Bishop  
Optical and electrical characterization of crystalline and amorphous semiconductors and semiconductor nanostructures, compound semiconductors (GaAs, InP, AlGaAs, ZnSe, SiC), defects in semiconductors, iso-electronic defects, rare earth-doped chalcogenide glasses and GaN. Experimental techniques, including photoluminescence, nuclear magnetic resonance, electron spin resonance, magneto-optics, photoemission, infrared spectroscopy

Richard Blahut  
Communications, signal processing, information theory, optical recording

Stephen Boppart  
Optical biomedical imaging, molecular imaging, lasers in medicine and biology, optical coherence tomography, image-guided surgery, medical engineering, optical diagnostics of cancer

Yoram Bresler  
Biomedical imaging systems; statistical signal and image processing; inverse problems; statistical pattern recognition; sensor-array processing

Donna J. Brown  
Asynchronous learning technologies and environments; WWW-based education; VLSI placement and routing; parallel and distributed algorithms and architectures; analysis and design of algorithms, with a particular interest in approximation algorithms; graph theory

Marie-Christine Brunet  
Numerical algorithms, parallel computing

Andreas Cangellaris  
Numerical techniques for electromagnetic modeling and simulation, microwave circuit design, speed VLSI interconnects, electronic packaging, electromagnetic computer-aided design for high-speed digital and RF/microwave electronics, antenna modeling, optoelectronic interconnects, electromagnetic modeling for nonlinear optics

Scott Carney  
Optical physics, including imaging, near-field microscopy, classical and quantum coherence theory, beam propagation, fundamental issues of energy conservation, mathematical methods in inverse scattering and the propagation of light

Nicholas Carter  
Architectures that combine programmable processors and reconfigurable logic, computing using nanotech devices, design techniques to integrate computation and sensing

Patrick Chapman  
Power electronics, electric drives, vibrations in electromechanical systems, monolithic integrated power circuits, numerical magnetic modeling, biomechanical energy conversion

Deming Chen  
Synthesis and architecture exploration for programmable logic devices; CAD for multicore and SoC under process variation; reconfigurable computing; nanoscale IC design and CAD; high-level synthesis with physical planning; design space exploration for SoC; algorithmic design and applications

Keh-Yung Cheng  
Molecular beam epitaxy technology, optoelectronic integrated circuits, high speed devices, in situ fabrication of nanostructures, quantum wire lasers, vertical cavity surface emitting lasers, Sb-based IR detectors and electronic devices

Weng C. Chew  
Electromagnetics: wave propagation in inhomogeneous media, microwave integrated circuits, microstrip antennas, and fast algorithms for radiation scattering, low frequency electromagnetics, and layered media; parallelization of fast algorithms; inverse scattering, imaging, and physics-based signal processing
Yun Chiu
Integrated circuits, VLSI signal processing, device modeling and CAD, wire-line and wireless communications

Hyungsoo Choi
Precursors for nanoscale materials synthesis, including syntheses and development of tailored organometallic, inorganic, and polymeric precursors; thin film and nanoparticle fabrication, including thin films, micro- and nanoparticles, and nanowires/tubes via sol-gel processing, charged liquid cluster beam (CLCB) deposition, chemical vapor deposition (CVD), chemical solution deposition (CSD), and precision particle fabrication (PPF) technology; electronic and optical materials, including fabrication of electronic, optical, and magnetic materials for various devices involving thin films, micro- and nanoparticles, nanowires/tubes of metals, metal nitrides and oxides utilizing their electronic, optical, optoelectronic, and magnetic properties; bimaterials, including fabrication of micro- and nanospheres/capsules of biodegradable/compatible materials for advances drug delivery and tissue engineering

Kent Choquette
Vertical cavity surface emitting lasers (VCSELs), micro- and nanocavity lasers, optoelectronic devices, selective oxidation of compound semiconductors, hybrid heterogenous integration, nanoprocesing fabrication, photonic crystal materials, Si-based optoelectronics

Shun L. Chuang
Optoelectronics, semiconductor lasers, modulators, photodetectors, photons, quantum electronics, fiber optical sensors, electromagnetics

James J. Coleman
Semiconductor lasers, optoelectronics, epitaxial growth

Todd P. Coleman
Wireless networks, information theory, operations, research, computational neuroscience

Brian Cunningham
Nanotechnology, photonic crystals, biosensors, micro/nanofabrication methods and materials detection instrumentation

Minh Do
Image and multidimensional signal processing, wavelets, imaging, multiscale geometric analysis, visual information representation

J. Gary Eden
Ultraviolet and visible lasers and laser spectroscopy, microcavity plasma devices and arrays, micro- and nanophotonic resonators; optical physics, including femtosecond laser spectroscopy and technology, and the interaction of intense optical fields with matter, laser magnetometry

Milton Feng
High-speed devices and ICs for wireless and light emitting transistors for optoelectronics (optoelectronic IC), monolithic microwave and millimeter-wave IC, digital IC, high field transport properties, RF-MEMS for wireless communications, advanced Si-CMOS device physics

Matthew Frank
Computer system architecture, parallel computing, program analysis, concurrency control, online algorithms

Patricia Franke
Atmospheric dynamics, including the dynamics and thermodynamics of the upper atmosphere through data analysis of radar and lidar data and through the numerical simulations of different types of flow; radar and optical remote sensing of the upper atmosphere; computational electromagnetics, application of finite difference time domain techniques to the problems of radar backscatter from turbulent regions of the neutral atmosphere and the ionosphere and application of different numerical methods and parallel computing for computationally demanding problems; computational fluid dynamics

Steven J. Franke
Development and application of radar and signal processing techniques for remote sensing in the middle and upper atmosphere; application of tomographic imaging to the middle and upper atmosphere using arrays of ground-based sensors and low-earth orbit satellites; low-power wireless RF communications; high efficiency linear power amplifiers for RF communications and radar applications

Leon A. Frizzell, Emeritus
Ultrasonic biophysics, ultrasonic bioengineering

Chester S. Gardner
Optical communication, laser altimetry, laser remote sensing and ranging, laser guide stars, adaptive optics
George Gross
Electricity planning and analysis, power system operations, competitive electricity markets and auction mechanisms, transmission services and pricing, ancillary services, congestions management, reliability and security, energy policy and economies, restructuring of the electricity business

Christoforos Hadjicostis
Systems and control, error control coding, fault diagnosis and tolerance in dynamic systems, testing and verification, discrete event systems, algebraic systems, coding and graph theory

Bruce Hajek
Communication networks information theory, computer networks stochastic analysis, optimization wireless communication

Lippold Haken
Analysis, synthesis, and processing of musical sounds, real-time computer music systems, music notation and representation, music technology for the blind

Mark Hasegawa-Johnson
Acoustic phonetics, audio signal processing and speech recognition, speech and auditory physiology

Karl Hess, Emeritus
Hot carriers in semiconductors, electronic transport in heterojunction structures and superlattices, numerical simulation of semiconductor devices (supercomputing applications), quantum transport in mesoscopic systems, laser diode simulation, molecular and electron nanostructures, theory and simulation, deuterium processing and MOS reliability, quantum computing, theorem of Bell

Nick Holonyak, Jr.
Semiconductors, semiconductor device physics, semiconductor crystal growth and junction formation, diffused Si devices, SCRs, TRIACs, double injection, luminescence, light emitting diodes (LEDs), heterojunctions, lasers, tunnel diodes, compound semiconductors, quantum well heterostructures, superlattices, quantum well lasers, impurity-induced layer disordering, Al-based III-V native oxides and their use in heterostructures devices

Kuang C. Hsieh
Semiconductor materials/devices processing and characterization

Thomas S. Huang
Image processing, image compression, computer vision, human computer interaction, image and video databases

Seth Hutchinson
Robotics, computer vision, artificial intelligence

Wen-Mei Hwu
Architecture, compilation, and microarchitecture of high performance parallel computer systems

Ravishankar K. Iyer
Design and evaluation of reliable and secure networks and systems, computer measurement and modeling, dependability and security validation and benchmarking

Kanti Jain
Microelectronic, optoelectronic, microsystem and biophotonic devices; novel micro and nanofabrication technologies

Jianming Jin
Computational electromagnetics, finite element methods, electromagnetic analysis and design in magnetic resonance imaging, wave scattering and propagation, electromagnetic interference and compatibility, microwave and millimeter wave circuits, antennas and electromagnetic theory

Douglas L. Jones
Digital signal processing, time-varying and time-frequency analysis, signal processing for communications, binaural hearing aids, signal processing for MEMS

Farzad Kamalabadi
Remote sensing and imaging, multidimensional signal and image processing, signal reconstruction and tomography, ionospheric and space physics
Kyekyoon (Kevin) Kim
Growth of GaN-based compound semiconductors and fabrication of optoelectronic and electronic devices using plasma-assisted MBE; plasma-arc-driven electromagnetic railgun for fueling of plasma devices; charged liquid cluster beam generation and application to thin film deposition, micropattern generation, and nanoparticle fabrication; generation of solid and hollow, charged and neutral, monodisperse, micro- and nanospheres for biomedical and other applications; plasma display panels; development of novel thin film deposition techniques using plasmas, charged particles, electrostatic spraying, and their combinations with other techniques; MEMS and sensors; ionized source (cluster) beam deposition for low-temperature growth of high-quality films; inertial confinement fusion targets

Ralf Koetter
Practical and theoretical aspects of coding theory, complexity, algorithms, communication systems, networks

Philip T. Krein
Power electronics, electric machinery and electromechanics, electric and hybrid vehicle systems

Erhan Kudeki
Radar remote sensing; atmospheric winds, waves, and turbulence; ionospheric plasma instabilities; incoherent scatter electric field measurements; midlatitude field aligned irregularities and meteor trails

P. R. Kumar
Wireless networks, sensor networks, convergence of control, communication and computation, semiconductor manufacturing, manufacturing systems, machine learning, adaptive systems, control, stochastic systems

Jean-Pierre Leburton
Theory of semiconductor devices, modeling and simulation of nanostructures, electronic and optical properties of heterostructures and low dimensional systems, transport in quantum structures, electronic properties, charging effects in quantum dots and nanocrystals, spin effects in nanostructures, quantum computation and quantum information processing, nanobio-electronics

Stephen Levinson
Speech processing, language acquisition, natural language understanding, speech synthesis

Xiuling Li
Metalorganic chemical vapor deposition (MOCVD), selective area epitaxy, III-V semiconductor optoelectronic devices, semiconductor nanotubes and nanowires, nanoelectronics

Zhi-Pei Liang
Magnetic resonance imaging, pattern recognition, statistical learning, bioinformatics

Daniel Liberzon
Nonlinear control theory, analysis and synthesis of hybrid dynamical systems, systems with imprecise measurements and/or modeling uncertainty, stochastic differential equations and control

Chang Liu
MEMS, microsensors, microintegrated fluidics systems, MEMS for nanotechnology, wireless interface for sensors, sensitive skin

Michael C. Loui
Computational complexity theory, ethics in engineering and computing, scholarship of teaching and learning

Steven Lumetta
Optical network architecture, computer architecture, cluster computing, parallel computing, user-level communication, validation and reliability

Joseph W. Lyding
Scanning tunneling microscopy and spectroscopy, STM-based nanolithography and nanofabrication, silicon-based molecular electronics, carbon nanotubes and carbon-based nanotechnology merged with silicon, growth of 3-D silicon nanostructures, deuterium processing and hot electron degradation in semiconductor devices, atomically precise dopant mapping, cross-sectional STM of semiconductor heterostructures, oxide silicon interface mapping, carbon nanotube purification

Yi Ma
Computer vision, including multiple view geometry, structure from motion, dynamic vision, real-time tracking, and active vision; systems theory, including geometric nonlinear control, hybrid systems, vision-based robotic control and navigation
Jonathan Makela
Ionospheric physics, especially irregularities at low- and mid-latitudes and their effects on trans-ionospheric satellite signals, response of the Earth's ionosphere to geomagnetic storms; optical and radio remote sensing techniques from ground- and satellite-based platforms

Sean Meyn
Optimal control, Markov processes (with or without control), stochastic approximation and adaptive control, reinforcement learning and simulation, spectral theory and large deviations, information theory, stochastic networks

Pierre Moulin
Image and video processing, compression, statistical signal processing, information hiding, information theory

David Nicol
Cyber-security, modeling and analysis of computer and communications systems, high performance simulation, parallel processing

William D. O'Brien, Jr.
Ultrasonic biophysics and bioeffects, acoustic microscopy, ultrasonic bioengineering, ultrasonic dosimetry, ultrasonic tissue characterization, acoustic imaging techniques

Michael L. Oelze
Ultrasound, including backscatter microscopy, quantitative imaging, computed tomography; use of ultrasound for cancer diagnosis and therapy; bioeffects of ultrasound; sonoporation; coded excitation and ultrasound

Thomas Overbye
Power systems operation and control, power system stability, power system analysis by computer methods, power system visualization

Sanjay Patel
Computer architecture, microarchitecture, high-performance and reliable computer systems, the implications of future generation applications and implementation technologies on systems design

Janak H. Patel
VLSI testing and testability, VLSI design automation

William R. Perkins, Emeritus
Control systems, system theory, sensitivity theory and robust control, large-scale dynamic systems

Constantine D. Polychronopoulos
Parallelizing/optimizing compilers for multithreaded architectures, program restructuring and optimization; code generation and optimization for superscalar processors; parallel programming languages; environments for parallel programming; partitioning, scheduling, and run-time environments for parallel computers; multiprocessor operating systems with multithreading support; parallel computer architectures; performance evaluation of parallel architectures

Umberto Ravaioli
Monte Carlo simulation of high speed electronic devices; numerical methods for semiconductor device simulation; quantum devices; supercomputation and visualization; reliability of MOS devices; micro- and nano-electromechanical systems (MEMS and NEMS); charge transport in biological systems (ionic channels); properties of carbon nanotubes

Elyse Rosenbaum
Design of ESD-protected RFICs, modeling and simulation of ESD protection circuits, latch-up, design of very high speed I/Os, gate oxide reliability

William Sanders
Dependability, security, and performance evaluation; intrusion- and fault-tolerant systems; reliable and secure distributed systems

Dilip V. Sarwate
Communications

Peter W. Sauer
Electric machinery modeling, analysis and control, power system dynamic modeling and simulation, power system stability

Jose Schutt-Aine
Electronic packaging, microwave theory and measurements, and digital circuit modeling, including integration of modeling and simulation tools, high-performance computation for simulation of packages, applications of V-shaped transmission lines
Naresh Shanbhag
Design and VLSI implementation of low-power, high-performance multimedia digital signal processing and communications systems, noise-tolerant deep submicron VLSI systems, fundamental bounds on efficiency of VLSI information processing systems, power-aware reconfigurable DSP systems, low-power DSP and circuits, DSP and communication system design, digital ASIC design

Andrew Singer
Statistical signal processing, communications, machine learning, data compression, sonar/lidar/optical signal processing

Mark W. Spong
Nonlinear control theory, robotics, mechatronics, networked control systems, teleoperation, bipedal locomotion

Richard W. Sproat
Computational linguistics, speech technology, linguistics, writing systems, psycholinguistics

Rayadurgam Srikant
Internet, wireless networks, sensor networks, game theory, queuing theory, information theory

Gary Swenson
Remote sensing of the atmosphere from ground-based, aircraft, and spacecraft using optical methods; space environment issues with a particular emphasis on spacecraft glows

Gregory Timp
Nanoelectronics, including fabrication, development, and characterization of the performance of silicon MOS nanotransistors to discover the fundamental limitations of the silicon MOSFET; nanobiotechnology, including nanometer-scale lithography used to probe biological function and study molecular transport through nanopores; synthetic nanopore sensors for rapidly and inexpensively sequencing DNA; laser-guided assembly, including arrays of optical traps to assemble nanosystems

John Tucker
Metal silicide source/drain MOS transistors at ~10nm gate length, atom-scale electron devices made by STM patterning of donors in silicon, nanoscale architectures

Nitin Vaidya
Wireless networking, mobile computing, fault-tolerant computing

Venu Veeravalli
Sensor networks, wireless communication, detection and estimation theory, information theory

Pramod Viswanath
Communication theory, wireless communication, information theory, communication networks

Benjamin W. Wah
Nonlinear optimization, parallel processing, distributed processing, artificial intelligence, computer networks, multimedia signal processing

Martin Wong
Computer-aided design of VLSI, design for manufacturing, routing for high-speed packaging, field-programmable systems, design and analysis of algorithms, combinatorial optimization

Jianhua (David) Zhang
Lasers and laser spectroscopy, electromagnetics, plasma diagnostics, optics, cryogenics, electric and electronic circuits

Industrial and Enterprise Systems Engineering

Ali Abbas
Decision theory and analysis; utility theory, data mining, information theory

Carolyn L. Beck
Control systems, modeling and model reduction for the purposes of control, systems theory

Scott A. Burns
Numerical methods, engineering design optimization, structural engineering

Xin Chen
Production, inventory and supply chain management optimization, optimal stochastic control, computational mathematics, operations research, operations management

Henrique L. M. dos Reis
Nondestructive testing and evaluation, structural analysis and design, composite materials

Liming Feng
Financial engineering, applied probability, stochastic modeling
David E. Goldberg
Genetic algorithms and evolutionary computation in search, optimization and machine learning, innovation

W. Brent Hall
Reliability engineering, conditional reliability and decision making, structural optimization, cold-formed steel design

Harrison Kim
Large-scale system decision making utilizing design optimization and system of systems (SoS) methodology

Manssour H. Moeinzadeh
Biomechanics, dynamic modeling, experimental mechanics

Angelia Nedich
Scheduling and planning, resource allocation, network optimization, game theory and optimization, control theory and stochastic systems

Jiming Peng
Numerical methods for optimization, variational inequalities, computational complexity analysis, approximation methods

Raymond L. Price
New product development, technical visionaries and serial innovators, innovation and creativity, leadership

Vinayak V. Shanbhag
Optimization theory and algorithms, computational game theory, equilibrium programming under uncertainty, design/planning/operations in electricity markets, inventory control, communication networks

R. S. Sreenivas
Discrete-state/discrete-event systems, approximate algorithms, on-line algorithms

Dušan M. Stipanović
Controls, differential games, large-scale systems

Tolga Tezcan
Optimization and optimal control policies

Deborah L. Thurston
Multiattribute decision-making under uncertainty and risk, environmentally conscious design and manufacturing

Louis Wozniak
Control theory, systems identification and simulation, speed control, power systems

Ali Yassine
Product development and management of complex engineering systems

Materials Science and Engineering

John R. Abelson
Plasma-assisted deposition of semiconductor, dielectric, and conductive thin-films for electronic applications; the physics and chemistry of film growth; fabrication of photovoltaic cells and thin-film transistors for macroelectronics

Leslie H. Allen
Thin-film physics, microelectronic processing, interfaces, nanoscale, size-dependent material properties, nanocalorimetry

Robert S. Averback
Ion beam modifications of materials, ion beam analysis, radiation damage, nanophase materials

Pascal Bellon
Far from equilibrium materials, simulations and modeling of materials processing (energetic beams, plastic deformation), electron microscopy

Paul V. Braun
Materials chemistry, polymers, biomaterials, organic and inorganic self-assembly, electronic materials and photonics

David Cahill
Epitaxial growth, scanning tunneling microscopy, ion-surface interactions, thermal properties of thin films, strained layer heterostructures

Jianjun Cheng
Biomaterials, polymers, gene delivery, nanomedicine, self-assembly

James Economy
Synthesis and characterization of advanced composites thermosets and high surface area adsorption systems

Gert Ehrlich, Emeritus
Surface studies including crystal growth on the atomic level, atomic interactions and clusters
Phillip H. Geil  
Processing-morphology-property relationships in polymers, blends, and composites

Steve Granick  
Polymers and biopolymers, nanorheology/tribology, surface spectroscopies

Joseph Greene, Emeritus  
Thin-film physics, surface science, crystal growth, electronic properties

Duane D. Johnson  
Computer simulation of physical properties and processes in materials and computational method development

Waltraud M. Kriven  
Phase transformations in oxide ceramics (TEM, high-temp XRD, and synchrotron), geopolymers, processing-microstructure-property relations in structural ceramics and composites, synthesis of oxide fibers, bioceramics, electron microscopy

Jennifer A. Lewis  
Colloidal assembly, phase behavior of complex fluids, direct-write assembly, rheology, drying, film formation

Erik Luijten  
Theoretical and computational statistical mechanics and thermodynamics of materials, phase behavior of complex fluids (polymers, ionic liquids, colloidal systems), development of computational methods

David A. Payne  
Electrical ceramics, dielectric materials, microstructure-property relations, processing, characterization, ferroics, crystal growth, materials chemistry, sol-gel, magneto resistance

Ian M. Robertson  
Radiation effects in materials, micromechanics and micromechanisms of fracture in aggressive and nonaggressive environments, electron microscopy

Angus A. Rockett  
IV, III–V, and chalcogenide semiconductors, materials for solar cells, theory of crystal growth, defects in semiconductors, contact metallurgies, solid phase reaction kinetics, surface science, microelectromechanical systems

John A. Rogers  
Electroactive polymers, plastic electronics, microfluidics, elastomers, soft lithography

Kenneth S. Schweizer  
Statistical mechanical theories of structure, self-assembly, thermodynamics, phase transitions, rheology and dynamical phenomena in macromolecular solutions, melts and alloys, colloidal and nanoparticle suspensions, and other complex fluids and soft materials

Jian-Ku Shang  
Solid interfaces, composite materials adhesion, structural ceramics, layered materials

Moonsub Shim  
Nanoscale materials, chemistry and physics of low-dimensional systems, nanomaterial/biomolecule interfaces and hybrid structures, semiconductor nanocrystals, carbon nanotubes

Nancy R. Sottos  
Experimental solid mechanics, micro- and nanomechanics, self-healing materials, composite materials, thin film reliability

Dallas Trinkle  
Atomistic and mesoscale modeling of mechanical behavior of materials, defects, and defect interactions; development of computational coupling techniques to extend applicability of electronic-structure methods

John H. Weaver  
Nanostructured materials; surface and interface phenomena for metals, semiconductors, superconductors, and insulators; ordered and disordered solids; clusters and fullerene-based systems

Pierre Wiltzius  
Colloidal self-assembly, photonic materials, novel approaches to processing at sub-micron length scales, liquid crystals, polymers, biopolymers, biomimetics, aggregation phenomena, pattern formation, phase behavior in soft condensed matter systems

Gerard C. L. Wong  
Biopolymers, biomolecular materials, biological and biomimetic self-assembly, gene therapy, synchrotron x-ray probes

Jian-Min Zuo  
Direct observation of chemical bonds in crystals; surface, interface structures, and bonding and their effects on the mechanic and electronic properties of advanced materials; charge states, charge fluctuations, and low-dimensional charged phases in complex oxides; advanced electron microscopy and nanocrystallography
Mechanical Science and Engineering

Andrew G. Alleyne
Automotive systems, control systems

Narayan R. Aluru
Bioengineering, computational science and engineering, engineering mechanics, fluid dynamics, nano-, micro-, and meso-technology

Armand J. Beaudoin
Bioengineering, materials behavior, materials processing

Joseph Bentsman
Control systems, dynamic systems

Lawrence A. Bergman
Dynamic systems

M. Quinn Brewster
Combustion and propulsion, heat transfer

Richard O. Buckius
Combustion and propulsion, fluid dynamics, heat transfer

Clark W. Bullard, Emeritus
Energy systems and thermodynamics, environmental engineering, heat transfer

Sahraoui Chaieb
Bioengineering, computational science and engineering, engineering mechanics, fluid dynamics, materials behavior, nano-, micro-, and meso-technology

John C. Chato, Emeritus
Bioengineering, energy systems and thermodynamics, heat transfer

Kenneth T. Christensen
Experimental fluid mechanics; turbulence; microfluidics, bio-fluid dynamics; multiphase flows

Harry Dankowicz
Automotive systems, bioengineering, control systems, dynamic systems, engineering mechanics, nano-, micro-, and meso-technology

Jonathan A. Dantzig
Computational science and engineering, engineering mechanics, fluid dynamics, heat transfer, materials behavior, materials processing

Richard E. DeVor
Engineering statistics and quality control, environmental engineering, manufacturing systems, nano-, micro-, and meso-technology

Geir E. Dullerud
Control systems, dynamic systems

Nicholas X. Fang
Design and manufacturing of photonic metamaterials and devices, 3-D micro-nanofabrication

Placid M. Ferreira
Design methodology and tribology, manufacturing systems, nano-, micro-, and meso-technology, production management

John G. Georgiadis
Bioengineering, computational science and engineering, energy systems and thermodynamics, fluid dynamics, heat transfer, nano-, micro-, and meso-technology

Gustavo Gioia
Fluid and solid mechanics, boundary layers, constitutive theory, fracture, foams, granular materials, phase transitions, turbulence physics, geological mechanics, turbulence physics

Nick G. Glumac
Combustion and propulsion, energy systems and thermodynamics, materials processing

Robert B. Haber
Computational solid and fluid mechanics, multi-scale material modeling, topology optimization, continuum mechanics, fracture mechanics, materials processing and microstructure evolution, coupled continuum and atomistic models

Pega S. Hrnjak
Energy systems and thermodynamics, fluid dynamics, heat transfer

K. Jimmy Hsia
Experimental solid mechanics, fracture, micromechanics, plasticity
Elizabeth Hsiao-Wecksler  
Bioengineering, control systems, dynamic systems, engineering mechanics

Yonggang Huang  
Computational science and engineering, engineering mechanics, materials behavior, nano-, micro-, and meso-technology

Anthony M. Jacobi  
Energy systems and thermodynamics, fluid dynamics, heat transfer, nano-, micro-, and meso-technology

Iwona Jasiuk  
Solid mechanics; biomechanics; mechanics of materials; micromechanics; composite, biological and nano-materials; bone mechanics; composite interfaces; elasticity

Harley Johnson  
Computational science and engineering, engineering mechanics, materials behavior, nano-, micro-, and meso-technology

Amy Wagoner Johnson  
Synthetic biomaterials, failure mechanics of metals and biomaterials

Shiv G. Kapoor  
Environmental engineering, manufacturing systems, nano-, micro-, and meso-technology

Scott D. Kelly  
Bioengineering, computational science and engineering, control systems, dynamic systems, engineering mechanics

William Paul King  
Nanomanufacturing, scanning probe microscopy, micro/nano heat and mass transfer

Herman Krier  
Combustion and propulsion, fluid dynamics, heat transfer, energy systems and thermodynamics

Peter Kurath  
Design methodology and tribology, engineering mechanics, materials behavior

Dimitrios Kyritsis  
Power generation, bio-fuels, laser-diagnostics, reactive fluid mechanics

Chia-Fon Lee  
Automotive systems, combustion and propulsion, computational science and engineering, energy systems and thermodynamics, environmental engineering, fluid dynamics, heat transfer

Thomas J. Mackin  
Bioengineering, design methodology and tribology, engineering mechanics, materials behavior, nano-, micro-, and meso-technology, operations research

Moshe Matalon  
Combustion theory, chemically reacting flow, theoretical fluid mechanics, applied mathematics, asymptotic and perturbation methods

Prashant G. Mehta  
Dynamical systems and control theory

Norman R. Miller, Emeritus  
Control systems, design methodology and tribology, dynamic systems, nano-, micro-, and meso-technology

Ty A. Newell  
Energy systems and thermodynamics, environmental engineering, fluid dynamics, heat transfer

Martin Ostoja-Starzewski  
Biomechanics; stochastic mechanics, mechanics and transport in random media, computational mechanics, thermomechanics, waves, helices

Udatta S. Palekar  
Operations research, supply chain management, retail management

Carlos A. Pantano-Rubino  
Compressible and incompressible fluid dynamics, fluid-structure interaction, turbulence, combustion and computational fluid mechanics

Arne J. Pearlstein  
Computational science and engineering, fluid dynamics, materials processing

James W. Phillips  
Experimental solid mechanics

Michael L. Philpott  
Design methodology and tribology, manufacturing systems, nano-, micro-, and meso-technology
Andreas A. Polycarpou
Tribology, micro-, nano-tribology, magnetic storage
tribology, dynamic systems, engineering mechanics,
materials behavior, nano-, micro-, and meso-technology

M. Taher A. Saif
Bioengineering, engineering mechanics, materials
behavior, nano-, micro-, and meso-technology

David Saintillan
Dynamics of complex fluids, microscale transport,
electrokinetic phenomena, biophysical fluid dynamics

Srinivasa Salapaka
Control systems, dynamic systems, nano-, micro-, and
meso-technology

Hüseyin Şehtıoğlu
Engineering mechanics, materials behavior

Mark A. Shannon
Bioengineering, combustion and propulsion,
computational science and engineering, energy systems
and thermodynamics, heat transfer, materials processing,
nano-, micro-, and meso-technology

Petros Sofronis
Materials behavior, computation science and engineering,
engineering mechanics, nano-, micro-, and meso-
technology

D. Scott Stewart
Combustion and propulsion, computational science and
engineering, dynamic systems, energy systems and
thermodynamics, engineering mechanics, fluid dynamics,
materials behavior, nano, micro-, and meso-technology

James A. Stori
Manufacturing systems, operations research

Brian G. Thomas
Computational science and engineering, engineering
mechanics, fluid dynamics, heat transfer, materials
behavior, materials processing

Daniel A. Tortorelli
Computational science and engineering, design
methodology and tribology, engineering mechanics

Kimani C. Toussaint
Optical microscopy, optical polarization control,
nanophotonics, biophotonics

Spyros I. Tseregounis
Tribology, lubrication, automotive systems, jet engine
tribology

Charles L. Tucker
Computational science and engineering, engineering
mechanics, fluid dynamics, heat transfer, materials
behavior, materials processing

Alexander F. Vakakis
Dynamic systems

S. Pratap Vanka
Combustion and propulsion, computational science and
engineering, energy systems and thermodynamics, fluid
dynamics, heat transfer, materials processing, nano-, micro-,
and meso-technology

Ning Wang
Cytoskeletal biomechanics, machanotransduction, bio-
imaging of cytoskeletal structures and stress distribution in
living cells

Robert A. White, Emeritus
Automotive systems, combustion and propulsion, fluid
mechanics, fluid dynamics

Min-Feng Yu
Mechanics, electromechanics, actuation, sensing and
robotics a applied to nanoscale systems

Xudong Zhang
Bioengineering, computational science and engineering,
human factors and ergonomics

Nuclear, Plasma, and Radiological
Engineering

Roy A. Axford
Application of the Lie Theory of Local Transformation
Groups to the solution of linear and nonlinear systems of
differential equations that arise in engineering science,
theoretical physics, applied mathematics, computational
physics of nuclear energy systems

Brent J. Heuser
Hydrogen/metal systems, defects in materials, thin-film
structures, numerical simulations of spallation source
systems, neutron scattering techniques
Barclay G. Jones
Thermal-hydraulics, reactor safety, multiphase flow, boiling heat transfer, boiling induced suspended, particle deposition, turbulence measurement and modeling, flow-induced vibrations and hydroacoustics, human-machine interfaces for reactor control and simulation, food irradiation-safety

Ling Jian Meng
Ultra-high-resolution imaging systems for biomedical/molecular imaging applications; novel imaging sensor based on room temperature semiconductor detectors

George H. Miley
Fusion systems, plasma engineering, reactor kinetics and control, nuclear pumped lasers, direct energy conversion, hydrogen energy production and fuel cells, low-energy nuclear reactions in solids

Magdi Ragheb
Computational methods, reactor theory, Monte Carlo methods, radiation protection and shielding, probabilistic risk assessment, applied artificial intelligence, supercomputing

David N. Ruzic
Experimental fusion research, modeling of edge plasma atomic physics, atomic properties of potential first-wall materials, plasma-material interaction, plasma processing of semiconductors, extreme ultraviolet (EUV) sources for lithography, physical and chemical vapor deposition

Clifford E. Singer
Energy economics, energy and security, advanced propulsion systems, nuclear proliferation, South and Northeast Asia nuclear programs

James F. Stubbins
Development, analysis, and application of materials, primarily for energy-related applications; nuclear systems design and analysis; nuclear materials, nuclear fuels, irradiation damage and effects, mechanical properties, high temperature corrosion, electron microscopy

Rizwan Uddin
Nuclear reactor theory, homogenization techniques, computational methods, reactor thermal hydraulics, virtual nuclear systems, nonlinear dynamical systems, computational biology

Physics

Peter M. Abbamonte
Experimental condensed matter physics, resonant soft x-ray scattering; electron self-organization, oxide devices; quantum phase transitions; collective excitations

Aleksei Aksimentiev
Theoretical biological physics, molecular motors, mechanical proteins, silicon biotechnology, biomolecular modeling

Gordon A. Baym
Theoretical physics, matter under extreme conditions, neutron stars, early universe, ultrarelativistic heavy ion collisions, condensed matter theory, Bose–Einstein condensation in trapped atomic systems

Douglas H. Beck
Experimental nuclear and particle physics; nucleon structure; fundamental symmetries; electric dipole moments

Alexey Bezryadin
Experimental condensed matter, nanometer-scale mesoscopic physics, molecular electronics, quantum phase transitions in one-dimensional superconductors, DNA electronics

David M. Ceperley
Computational condensed matter physics, electronic structure, quantum statistical mechanics, Monte Carlo methods, low-temperature physics, high-pressure physics

Yia-Chung Chang
Theoretical condensed matter physics, electronic structure, density functional theory, strongly correlated electron systems, low-dimensional electronic systems

Yann R. Chemla
Experimental biological physics, high-resolution optical tweezers, molecular motors, nucleic acid and protein translocases

Tai-Chang Chiang
Experimental condensed matter physics, surface science; atomically uniform films; electronic properties of impurities, surfaces, and quantum structures

Robert Clegg
Experimental biophysics with an emphasis on kinetics and optical spectroscopy
S. Lance Cooper
Experimental condensed matter physics, optical effects in solids, Raman scattering, spectroscopic studies of low-carrier-density magnetic systems, spectroscopic studies of the magnetic oxides

Karin Dahmen
Theoretical condensed matter physics, nonequilibrium dynamical systems, including pattern formation in homogeneous systems and inhomogeneous systems having quenched disorder

Paul T. Debevec
Experimental nuclear physics, muon physics, fundamental interactions and properties of elementary particles

Brian DeMarco
Experimental atomic, molecular, and optical physics; quantum information science; atomic Bose–Einstein condensates and Fermi gases

James N. Eckstein
Experimental condensed matter physics; correlated electron systems; quantum electronic properties of complex oxide materials and heterostructures; quantum properties of thin-film devices

Bob I. Eisenstein, Emeritus
Experimental high-energy physics, weak interactions of $B$ mesons

Aida X. El-Khadra
Theory and phenomenology of fundamental particle interactions, including QCD, weak interactions, lattice field theory, heavy quark physics, standard model parameters

Steven M. Errede
Experimental high-energy physics, collider physics, electroweak interactions, strong interactions, fundamental forces

C. Peter Flynn
Experimental condensed matter physics, materials physics; defects and diffusion; magnetism; low-energy electron microscopy; crystal growth

Eduardo Fradkin
Field theory and condensed matter physics; high-temperature superconductors, strongly correlated systems, electronic liquid crystal phases, fractional quantum Hall effect, topological states of quantum matter, topological quantum computing

Charles Gammie
Theoretical astrophysics, including theory of star and planet formation, accretion disks and related phenomena, galactic structure, astrophysical fluid dynamics, computational astrophysics

Russell W. Giannetta
Experimental condensed matter physics, including superconductivity, low-temperature physics, mesoscopic physics; magnetic resonance; nanostructures

Gary E. Gladding
Experimental high-energy physics, mixing of charmed mesons; physics education research

Paul Goldbart
Theoretical condensed matter physics, random systems, mesoscopic physics, superconductivity and superfluidity

Nigel Goldenfeld
Theoretical condensed matter physics, pattern formation in spatially extended systems, high-temperature superconductivity, biocomplexity, statistical mechanics, polymers, liquid crystals, disordered systems

Ido Golding
Experimental biological physics; spatio-temporal dynamics in living cells—real-time studies having single-event resolution

George Gollin
Experimental high-energy physics, interactions of the electroweak gauge bosons

Andrew V. Granato, Emeritus
Experimental condensed matter physics, properties of simple liquids and glasses, amorphous materials

Laura H. Greene
Experimental condensed matter physics, highly correlated electron systems, high-temperature superconductivity, novel materials

Matthias Grosse Perdekamp
Experimental high-energy nuclear physics, nucleon structure, spin-dependent structure of the proton, quark transversity distribution in the proton, spin-dependent quark fragmentation functions
Taekjip Ha
Experimental biological physics, DNA-protein, protein-protein interactions, protein and RNA folding, membrane biophysics, fluorescence microscopy of biological systems, single-molecule spectroscopy and manipulations

David Hertzog
Experimental nuclear physics, precision muon physics

Lillian Hoddeson
History of 20th-century science and technology, including electronics, atomic weapons, modern physics, big science, oral history

Leland E. Holloway, Emeritus
Experimental high-energy physics

Alfred Hubler
Nonlinear and complex dynamics, control of chaos, pattern formation, information flows; science education

Icko Iben, Jr., Emeritus
Structure and evolution of stars, comparisons between theoretical models of stars and observed properties of stars

E. Atlee Jackson, Emeritus
Dynamic lessons from nature's evolutionary processes, human creativity

Thomas Junk
Experimental high-energy physics, search for the Higgs boson

Sheldon Katz
Theoretical high-energy physics; algebraic geometry and its interaction with theoretical physics, especially string theories and supersymmetric field theories

Miles V. Klein, Emeritus
Experimental condensed matter physics; optical effects in solids; electronic, vibrational, and magnetic excitations in solids

Paul G. Kwiat
Experimental atomic, molecular, and optical physics; foundations of quantum mechanics; quantum information physics

Susan A. Lamb
Theoretical astrophysics; galaxy collisions and star formation

Frederick K. Lamb
Theoretical astrophysics; neutron stars, black holes, pulsars, x-ray stars, and strong gravitational fields; space policy, nuclear weapons, and arms control

Anthony J. Leggett
Theoretical condensed matter physics, macroscopic manifestations of quantum mechanics, foundations of QM, superfluid $^3$He, thermal and acoustic properties of glass, high-temperature superconductivity, Bose-condensed alkali gases, formation of topological defects in quenching

Robert G. Leigh
Theoretical high-energy physics, quantum field theory, supersymmetric gauge theory, superstring theory

Benjamin L. Lev
Experimental ultracold atomic and molecular physics, quantum optics, and quantum information science

Tony M. Liss
Experimental high-energy physics, proton-antiproton collisions, top quark physics

Naomi C. R. Makins
Experimental nuclear physics, hadronic structure, origin of spin in the proton and neutron, nucleon structure

Richard M. Martin
Theoretical condensed matter physics, the electronic structure of condensed matter

Nadya Mason
Experimental condensed matter physics, nanometer-scale mesoscopic physics, quantum properties of carbon nanotubes, low-dimensional superconductivity, quantum phase transitions

Telemachos Mouschovias
Theoretical astrophysics, interstellar gas dynamics, theory of star formation in the presence of magnetic fields, magnetohydrodynamics, numerical solution of partial differential equations

Alan M. Nathan
Experimental nuclear physics; physics of sports

Munir H. Nayfeh
Experimental and theoretical atomic physics, laser atomic spectroscopy, silicon nanotechnology
Mark Neubauer
Experimental particle physics; particle astrophysics; neutrino physics; Higgs boson; electroweak diboson physics

Yoshitsugu Oono
Theoretical statistical physics in the broadest sense (nonequilibrium, including biological, hydrodynamical, and dynamical systems), applied mathematics

Jen-Chieh Peng
Experimental nuclear physics, heavy ion physics, parton structures of the nucleons and nuclei, including production and decays of charm and beauty mesons

Philip W. Phillips
Theoretical condensed matter physics, quantum critical phenomena, quantum magnetism, strongly correlated electrons

Kevin T. Pitts
Experimental high-energy physics, CP violation in bottom quark decays, searches for new phenomena

Klaus Schulten
Theoretical biological and computational physics, statistical physics

Mats Selen
Experimental high-energy physics, production and decays of heavy b and c quarks; experimental astrophysics; physics education

Paul Selvin
Experimental biological physics, new forms of resonance energy transfer techniques, structure and dynamics of biological macromolecules, fluorescence

Stuart L. Shapiro
Theoretical astrophysics and general relativity theory; physics of black holes and neutron stars; computational physics and astrophysics; hydrodynamics and stellar dynamics

Ralph O. Simmons, Emeritus
Experimental condensed matter physics, properties of noble gas solids and liquids

Charles P. Slichter, Emeritus
Experimental condensed physics, nuclear magnetic resonance, NMR studies of high-temperature superconductors

John D. Stack
Theoretical high-energy physics, quantum field theory, lattice field theory, QCD

Michael Stone
Theoretical condensed matter physics, statistical physics, mathematical physics, quantum field theory

Jeremiah D. Sullivan, Emeritus
Physics and society: nuclear nonproliferation, arms control and international security, science policy

Jon J. Thaler
Observational cosmology, dark matter and dark energy, elementary particles in the evolution of the universe

Dale J. Van Harlingen
Experimental condensed matter physics, superconductivity, microfabrication of superconductor devices, scanning probe microscopy, mesoscopic systems

Smitha Vishveshwara
Theoretical condensed matter physics, strongly correlated systems: disordered systems, localization physics, phase transitions, critical dynamics

Benjamin D. Wandelt
Theoretical astrophysics and cosmology, cosmic microwave background, structure formation, dark matter, early universe

William D. Watson, Emeritus
Theoretical astrophysics, interstellar medium, atomic and molecular processes

Richard L. Weaver
Theoretical condensed matter physics; ultrasonics, stochastic waves, disordered and complex structures, structural acoustics.

Michael Weissman
Experimental condensed matter physics, 1/f noise, spin glasses, amorphous materials, inhomogeneous phase transitions

Scott Willenbrock
Theoretical high-energy physics, including strong, weak and electromagnetic interactions, Higgs phenomenon, grand unification
James E. Wiss
Experimental high-energy physics, photoproduction and $e^+ e^-$ annihilation of charm particles, precision study of the $B$ meson

James P. Wolfe
Experimental condensed matter physics, optical properties of semiconductors, phonon imaging