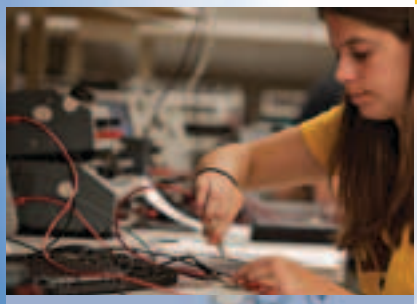
Ira A. Fulton Schools of Engineering

ARIZONA STATE UNIVERSITY

School of

Electrical, Computer and Energy Engineering



2009-2010 Annual Report

Ira A. Fulton Schools of Engineering
ARIZONA STATE UNIVERSITY

Organizational Structure for Ira A. Fulton Schools of Engineering

Schools (Director)	Lead These Engineering Undergraduate Degree Programs	Coordinate Across Engineering for These Grand Challenge Areas…
Biological & Health Systems Engineering (William Ditto)	Bioengineering	**Health Care** – treatments and cures for human diseases and dysfunctions, re-engineering of biological systems and human physiology
Sustainable Engineering & The Built Environment (Paul Westerhoff)	Civil and Environmental Engineering Construction Management Environmental concentration Construction concentration Sustainable Engineering concentration Construction Engineering	**Sustainable Engineering** – advance theory and practice of sustainable engineering; provide access to clean water and clean air; restore and improve urban infrastructure.
Computing, Informatics & Decision Systems Engineering (Ron Askin)	Computer Science Computer Systems Engineering Industrial Engineering Informatics (across all majors)	**Secure Cyberspace** **Health Care Delivery Systems** – information, diagnostics, healthcare policy
Electrical, Computer & Energy Engineering (Stephen Phillips)	Electrical Engineering Nuclear Engineering certificate Electric Power/Energy concentration Arts, Media and Engineering concentration	**Energy** – generation, storage, transmission and distribution **Security and Exploration** – control, communication and identification
Engineering of Matter, Transport, and Energy (Kyle Squires)	Aerospace Engineering Chemical Engineering Materials Science & Engineering Mechanical Engineering Aeronautics concentration Astronautics concentration Computational and Mathematical Mechanics concentration Energy and Environment concentration Engineering Education concentration Materials Engineering minor	**Security and Exploration** – securing cyberspace, communications, monitoring threats, developing "self-healing systems," exploring inaccessible regions

ARIZONA STATE UNIVERSITY

IRA A. FULTON SCHOOLS OF ENGINEERING

Engineering Development
P.O. Box 875506
Tempe, AZ 85287-5506

For more information about ASU, the Ira A. Fulton Schools of Engineering, or the School of Electrical, Computer and Energy Engineering (ECEE), please visit us online at http://engineering.asu.edu/ecee

School of Electrical, Computer and Energy Engineering (ECEE) Annual Report 2009-2010

This publication is written, designed, and produced by the Ira A. Fulton Schools of Engineering for distribution to selected alumni, industry partners, and academic friends worldwide.

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Sunanda Vittal
Molly Bloomfield

Art Director
Elaine Rettger (Studio 18)

Photography
Thomas Story
Brett Dellandre

Contents

Message from the Director

Recovery and Reinvestment -

Stephen M. Phillips

Our school has emerged from the budget stresses of the last two years stronger than ever. ASU has protected our core academic mission from budget cuts and has even made new investments through two new faculty hires this past year. This investment continues with several faculty searches in the current academic year. Of particular note are the positions in photovoltaics and in flexible electronics. These positions support key investment areas for ASU, which have led to two NSF ERC proposal site visits this year. ASU is the lead institution and ECEE faculty play significant roles in each of these ERC proposals.

Our research expenditures continue to grow at an impressive rate nearly tripling in the past five years from $9.9M in the fiscal year ending in 2005 to $28.1M in the fiscal year ending in 2010. New research awards are even higher totaling more than $32.5M and predicting continued growth in expenditures. Our program enrollments are growing with more than 550 undergraduates and more than 750 graduate students, including more than 250 Ph.D. students. The class of entering freshmen includes more than 100 students and our transfer student enrollment at all levels remains strong.

Our school name reflects the strong academic and research programs in the areas of Computer Engineering and Energy Engineering that have been led by Electrical Engineering degree program faculty for many years. We are launching new graduate degrees in Computer Engineering (pending formal university approval). These programs will be jointly administered by ECEE faculty and faculty from the Computer Science and Engineering program.

Our EE program has also been recognized through our strong showing in the recently released NRC rankings of ECE Ph.D. programs. In both the "R" and "S" rankings we have placed in the top-20 group (see table from http://graduate-school.phds.org/rankings/electrical-engineering). While the debate continues about the methodology and accuracy of these rankings, it is rewarding to see the accomplishments of our faculty, staff, and students recognized by this prestigious national organization. These and other new developments and accomplishments are detailed on our web page, **www.engineering.asu.edu/ecee**.

Faculty Honors

NAE Members	3
IEEE Fellows	18
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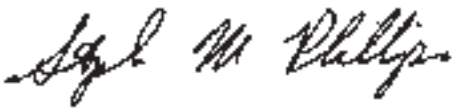
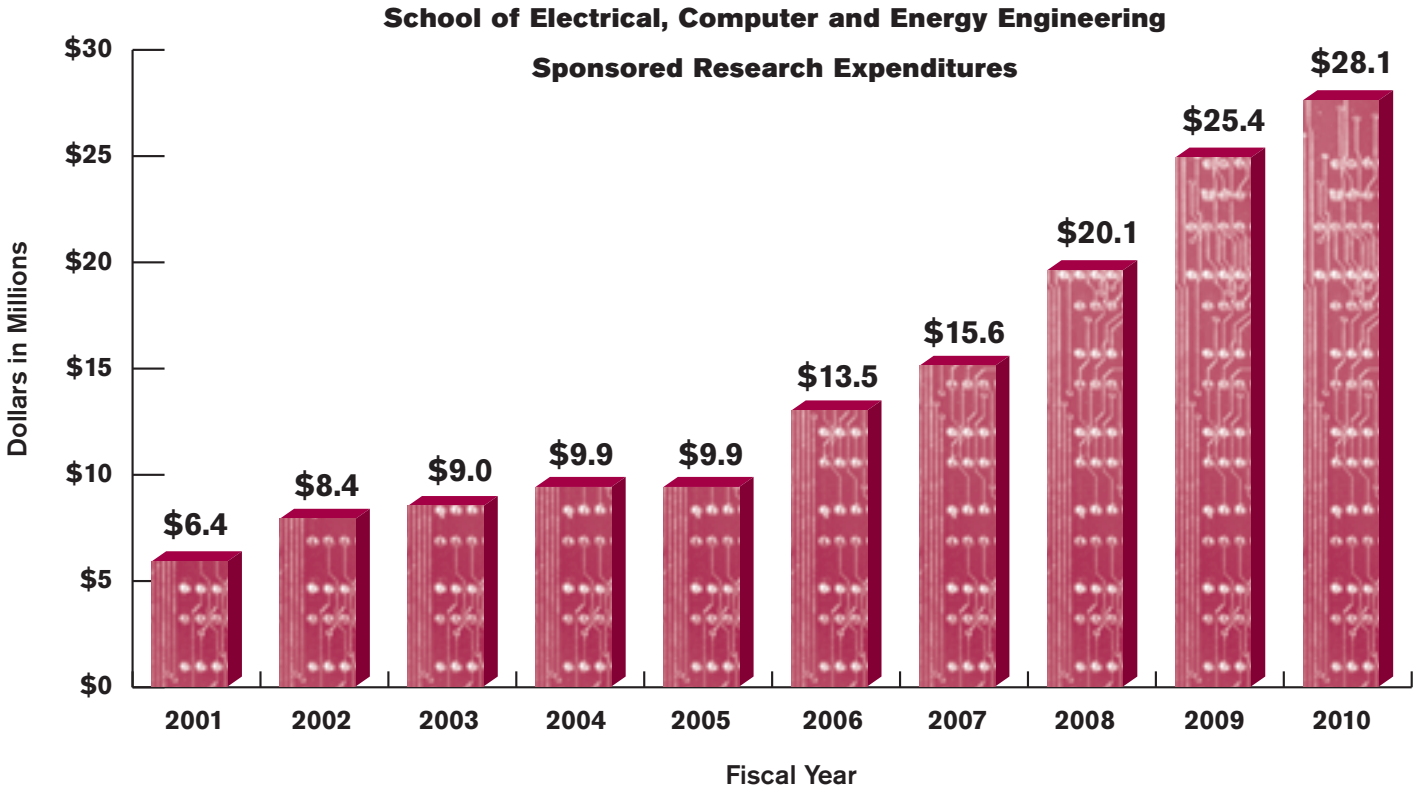


Stephen M. Phillips, Ph.D., P.E.
Professor of Electrical Engineering
Director, School of Electrical, Computer and Energy Engineering



year in review

Farmer Recognized for Outstanding Contributions

The Power and Energy Society of the Institute of Electrical and Electronics Engineers (IEEE) honored Professor **Richard Farmer** with the Outstanding Power Engineering Educator Award. Farmer was cited for his "outstanding contributions and leadership," in power systems engineering education. A member of the U.S. National Academy of Engineering (NAE), Farmer is considered one of the world's leading experts in subsynchronous resonance. Colleagues and students praised Farmer for his real-world industry experience, enriching both student knowledge and training experiences. Farmer worked with the Arizona Public Service utility company for 30 years. While at APS, he also taught power engineering part-time at ASU, where he still continues to teach and mentor.

Cao Named "Exemplar"

Professor **Yu (Kevin) Cao** was one of six faculty members named as an "exemplar" for 2009 by ASU President Michael Crow. Exemplars are considered "rising stars," whose talent and hard work make them leaders among the finest teachers-scholars at ASU. Cao is one of the leading figures in the field of electronic design automation, semiconductor technology modeling and design tools behind nanoscale circuit design and implementation. His research funding, through both external sponsored projects and industry gifts, exceeds $1.8 million.

Heydt Wins Technical Field Award

Professor **Gerald Heydt**, ASU Regents' Professor in ECEE, received the 2010 Richard H. Kaufmann Award from the IEEE for exceptional achievements in electric power quality, and transmission and distribution engineering. The Kaufmann Award is the IEEE Technical Field Award, which recognizes significant contributions to electrical engineering in the industrial environment through the design or application of systems technology, apparatus, devices or materials for plant power distribution, drive systems, process control, or other utilization systems. Heydt's work focuses on electric power quality, transmission and distribution engineering, power systems modeling and computer control, and the dynamic response of electric power systems. He is an NAE member and a site director of the Power Systems Engineering Research Center (PSERC), a nationwide center headquartered at ASU.

Best Paper Award

Professor **Jennifer Blain Christen** won the Best Paper Award from IEEE Circuits and Systems Society for her report on computer-controlled electronic systems for human cells that can thrive outside the body without the use of an incubator. Her article in the *IEEE Transactions on Biomedical Circuits and Systems* was recognized as the best published in the journal over the past three years. The research is focused on ways to more easily transport cell samples so they can be examined directly using microscopes, electronic measuring instruments, and imaging devices—without disrupting the conditions the cells need to survive.

Best Product Award

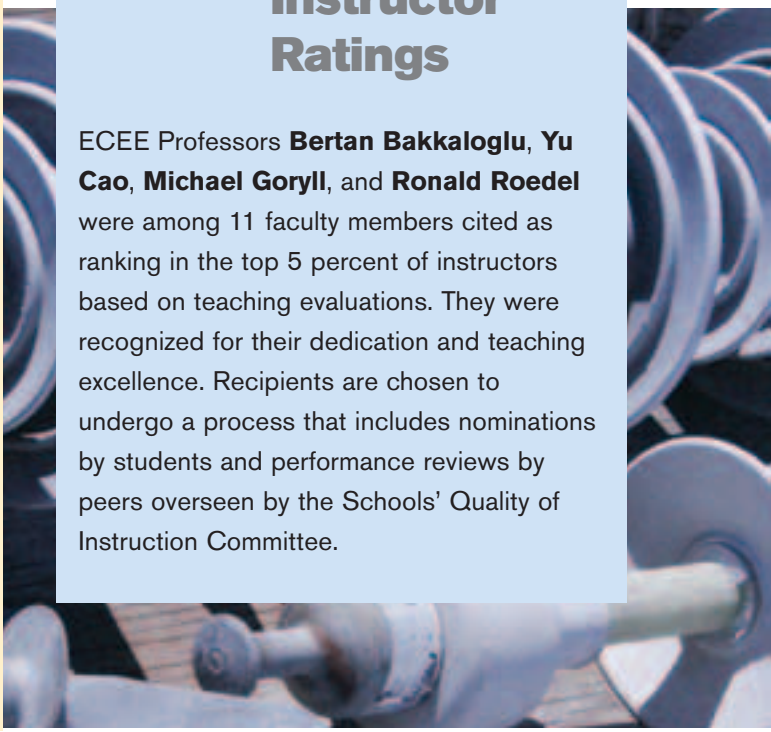
A 2009 Editors' Choice Best Product Award was awarded by Semiconductor International to Environmental Metrology Corporation (EMC) for a unique device called Electro-Chemical Residue Sensor (ECRS). Dr. **Bert Vermeire**, an ECEE associate professor research and chief technology officer at EMC, was instrumental in developing this product with researchers at EMC and the University of Arizona. The ECRS will dramatically reduce the amount of water that has long been required for the semiconductor manufacturing process. A wireless version of the ECRS sensor is being developed through a collaboration of EMC and Connection One at ASU.

Frakes Named ASU Centennial Professor

Professor **David Frakes** won the Centennial award during his first semester at ASU. The award is bestowed on faculty members who student leaders judge to "embody the ideals of service to students inside and outside the classroom." Only two junior-level university faculty members are selected for the award each year. Winners are chosen through a selection processed managed by the Associated Students of ASU, comprised of leaders of the university's Undergraduate Student Government and Graduate and Professional Students Association.

Top 5 Percent of Instructor Ratings

ECEE Professors **Bertan Bakkaloglu**, **Yu Cao**, **Michael Goryll**, and **Ronald Roedel** were among 11 faculty members cited as ranking in the top 5 percent of instructors based on teaching evaluations. They were recognized for their dedication and teaching excellence. Recipients are chosen to undergo a process that includes nominations by students and performance reviews by peers overseen by the Schools' Quality of Instruction Committee.



ECEE Research Faculty

Richard Akis, PhD, McMaster University in Hamilton, Ontario, Canada; Associate Professor Research: Quantum transport in mesoscopic semiconductor devices, quantum chaos in open systems, connection between classical and quantum mechanics.

Stuart Bowden, PhD, University of New South Wales; Associate Professor Research: Characterization of silicon materials for photovoltaic applications.

Hung Chang, PhD, Purdue University; Assistant Professor Research: Biomedical devices, bio-instrumentation, nano-electro-mechanical systems (NEMS).

Erica S. Forzani, PhD, Cordoba National University, Argentina; Assistant Professor Research: Chemical- and bio-sensors.

Zoe Lacroix, PhD, Computer Sciences, Université Paris XI (Orsay) – France; Associate Professor Research: Databases, bioinformatics, Web XML, ontology.

Denis Mamaluy, PhD, B. Verkin Institute for Low Temperature Physics and Engineering; Assistant Professor Research: Quantum transport simulation in semiconductor nano-structures.

Jun Shen, PhD, University of Notre Dame; Research Professor: Physics of organic LEDs, MEMS, novel logic, and memory devices and circuits.

Bert Vermeire, PhD, University of Arizona; Associate Professor Research: Solid-state electronics.

Seth Wilk, PhD, Arizona State University; Assistant Professor Research: Biosensors, ion channel proteins, silicon microfabrication.

Weimin Wu, PhD, Arizona State University; Assistant Professor Research: Physics and modeling of semiconductor devices.

Peiming Zhang, PhD, Institute of Chemistry at the Chinese Academy of Sciences; Associate Professor Research: DNA electronics.

ECEE Affiliate Faculty

Affiliate Professors provide additional support to ECEE. They are from other academic units, and their duties are primarily in research, advising, and student mentoring.

Terry Alford, PhD, Cornell University: Silver and copper metallization and low-k dielectrics for future integrated circuit (IC) technologies, advanced metallization for lowpower electronics.

Karamvir Chatha, PhD, University of Cincinnati: VLSI design and CAD, embedded systems design, system-level design, hardware-software cosynthesis, reconfigurable computing, high-level synthesis.

Sandeep Gupta, PhD, Ohio State University: Wireless networks, mobile and ubiquitous/pervasive computing, embedded sensor networks for biomedical applications.

Jiping He, PhD, University of Maryland, College Park: Neural interface technologies for neuroprosthetics, rehabilitation robotics for stroke or spinal cord injury, learning and adaptation in neuromuscular control systems.

Ranu Jung, PhD, Case Western Reserve University: Neural engineering.

Darryl Morrell, PhD, Brigham Young University: Engineering pedagogy, engineering applications of probability theory, particularly decision theory.

Jitendran Muthuswamy, PhD, Rensselaer Polytechnic Institute: Microelectromechanical systems (MEMS) for neural communication.

Nathan Newman, PhD, Stanford University: Semiconductor, superconductor and dielectric materials, thin film materials synthesis, materials characterization.

Sethuraman Panchanathan, PhD, University of Ottawa: Multimedia computer and communications, haptic user interfaces, assistive and rehabilitative devices and technologies.

Daniel Rivera, PhD, California Institute of Technology: Life cycle and hierarchical issues in process control system identification, robust process control.

Sarma Vrudhula, PhD, University of Southern California: VLSI CAD for low power embedded systems and optimization, statistical optimization for VLSI.

Guoliang Xue, PhD, University of Minnesota: QoS routing, resource allocation in wireless networks, security and survivability in sensor networks.

ECEE Adjunct Faculty

These are faculty from industry and other institutions, who support ECEE research and teaching.

Alan Chin, Founder and CEO, nLiten Energy Corporation

Josef P. Debbins, Staff Scientist, St. Joseph's Hospital & Medical Center

T. Russell Hsing, Exec. Director, Emerging Technologies & Services Research Dept.,Telcordia Technologies

Frank M. Jahnke, President, Sonata Biosciences, Inc.

Elias Kyriakides, Asst. Prof., Dept. of Electrical & Computer Engr., University of Cyprus

Chaker Larabi, Assoc. Prof., Univ. of Poitiers, France

Michael McGarry, Asst. Prof., Dept. of Electrical & Computer Engr., University of Akron

James Pipe, Director for Neuroimaging Research, Barrow Neurological Insititute, Phoenix, Arizona

Shalini Prasad, Assoc. Prof., Electrical Engr. and Computer Science, Wichita State University

Katerina Raleva, Assoc. Prof., Dept. of Electronics, Univ. Ss. Cyril & Methodius, Skopje, Macedonia

John Wood, Sr. Research & Development Electronic Engineer, Freescale Semiconductor

ECEE Faculty Associates

These are faculty from industry, who support ECEE research and teaching.

Ahmed Helmy, Staff Analog Design Engineer, Intel Corp.

MD Murshidul Islam, Design Engineer, Intel Corp.

Bassam Matar, Prof. of Engineering Science & Technology, Glendale Community College

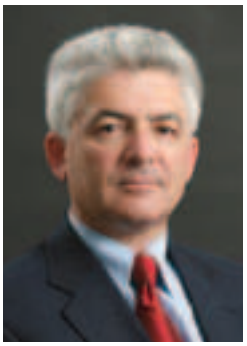
Radu Secareanu, Research Staff, Advanced Circuits Research Group, Motorola

Hongjiang Song, Sr. Staff Design Engineer, Intel Corp.

Nital S. Patel, Pathfinding Group Leader, Intel Corp.

Glen Abousleman, Electrical Engineer, General Dynamics

Faculty Named IEEE Fellow



Professor **Gennady Gildenblat** was honored with the title of IEEE Fellow in 2009 for his contributions to the modeling of metal-oxide semiconductor field effect transistors. Gildenblat joined ASU in 2006 from Penn State University. He worked in GE's Corporate Research and Development Center in Schenectady, NY, for several years, where he was engaged in semiconductor device physics and IC technology development. His area of expertise is semiconductor device physics and modeling, novel semiconductor devices and semiconductor transport, and integrated circuit technology. He has over 140 publications including several books, invited articles, and U.S. patents.

Rodriguez Inspires Young Minds into Engineering

Engineering: Go For It magazine, published by the American Society for Engineering Education, featured ECEE Professor **Armando Rodriguez** in its "Class Acts" section. Rodriguez is lauded for his work in recruiting and mentoring young students in science, engineering, math, and technology fields. He leads a National Science Foundation-funded program that provides scholarships to students pursuing education in those areas.

Recent Faculty Books

Gennady Gildenblat, ed., *Compact Modeling - Principles, Techniques and Applications*, Springer, 2010.

Gang Qian and Y. Ma, eds., *Intelligent Video Surveillance: Systems and Technology*, Taylor and Francis CRC Press, January 2010.

Dragica Vasileska, *Cutting Edge Nanotechnology*, In-Tech, Vienna, March 2010.

Dragica Vasileska, **S. M. Goodnick** and G. Klimeck, *Computational Electronics: Semiclassical and Quantum Transport Modeling*, CRC Press, June 2010.

D. K. Ferry, **S. M. Goodnick**, and J. P. Bird, *Transport in Nanostructures*, 2nd Edition (revised), Cambridge University Press, Cambridge, 2009.

David Frakes, William Singhose, and Jeff Donnell, *Introductory Biomechanical Design Tools*, Lulu Online Press, 2009.

Daniel Tylavsky, *Digital Design for the Laboratory: Hardware & Simulation (using LogicWorks 5)*, Ver 1, 5th ed., CenterPoint Publishing, 2009.

Junshan Zhang and Weiyan Ge, *Network Scheduling: Joint PHY and MAC Optimization for Wireless Scheduling*, Verlag Dr. Muller Publisher, 2009.

Junshan Zhang and Dong Zheng, *Physical-layer Aware Control and Optimization in Wireless,* Verlag Dr. Muller Publisher, 2009.

Constantine Balanis, ed., *Modern Antenna Handbook*, John Wiley & Sons, Inc., 2008

Richard G. Farmer and P. M. Anderson, *Series Compensation of Power Systems*, China Electric Power Press, Beijing, China, 1996. Chinese Translations, 2008.

Lina J. Karam and Naji Mounsef, *Introduction to Engineering: A Starter's Guide with Hands-On Digital Multimedia Explorations and Robotics*, Morgan-Claypool, 2008.

Antonia Papandreou-Suppappola, Sandeep P. Sira, and Darryl Morrel, *Advances in Waveform-Agile Sensing for Tracking, Series on Algorithms and Software*, Morgan & Claypool Publishers, 2008.

ECEE Employee Service and Impact & Excellence Awards

The following ECEE faculty and staff were recognized for their service and professional excellence during the annual Engineering awards luncheon, held April 15, 2010:

Service Award

45 Years – Joseph Palais

25 Years – Michael Kozicki

20 Years – James Aberle, Karen Andersen, Douglas Cochran, Keith Holbert, Brian Skromme

10 Years – Yu Hui, Ying-Cheng Lai, Antonia Papandreou-Suppappola

5 Years – Abbas Abbasour-Tamijani, Kevin Anderson, Bertan Bakkaloglu, Hugh Barnaby, Yu Cao, Lawrence Clark, Bert Vermiere, Vijay Vittal, Brian Wagner

Impact Award Nominees

Cheryl McAfee, Cheryl Ream, Clayton Javurek, Darleen Mandt, Emily Fassett, Esther Korner, Farah Kiaei, James Laux, Jared Broderick, Lori Brichetto, Mia Kroeger, Nancy Osgood, Sabrina Beck, Theo Eckhardt

Excellence Nominees

Cynthia Moayedpardazi, Stacy Esposito

Team Nominations

Excellent Research Advancement Team:
Loriann Brichetto, Theo Eckhardt, Stacy Esposito

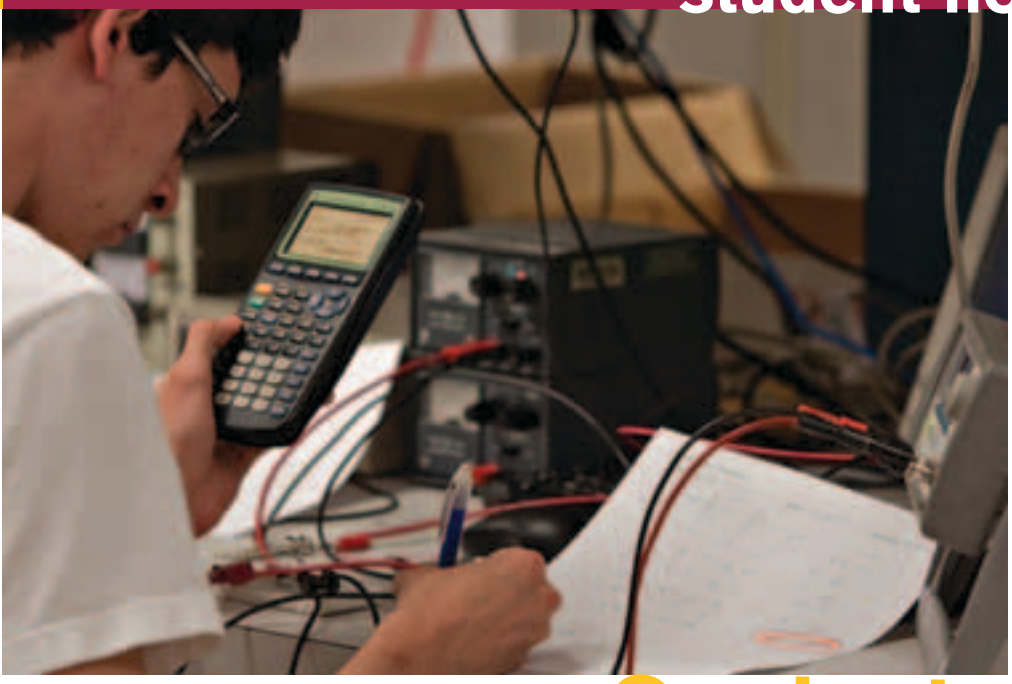
Excellent Payroll Specialists: Donna Rosenlof, Farah Kiaei, Phouney Lopez

Helpful to Graduate Students and Their Success:
Darleen Mandt, Farah Kiaei, Rebecca Davis

Strong Dedication to the Success of Engineering Faculty: Lori Brichetto, Stacy Esposito, Nancy Osgood

Sun Awards

Delilah Alirez, Stacy Esposito, Emily Fassett, Phouney Lopez, Cheryl McAfee, Deirdre Meldrum, Cheryl Ream, Donna Rosenlof, Brian Wagner



Graduate Fellowships

Achievement Rewards for College Scientists (ARCS): **Ben Green**

Dean's Award: **William Detlaff, Edgar Marti-Arbona**

Ford Graduate Engineering Fellowship: **Timothy Day, Kyle Foley**

Fulton Fellow: **William Detlaff**

NASA Graduate Student Researchers Program (GSRP): **Jeffrey Dickeson**

NASA Training Grant, GSRP: **Helen Schwerdt**

NSF Graduate Research Fellowship: **Michael DiNezza**

Palais Outstanding Student Doctoral Award: **Qingfei Chen**

Peter E. Crouch Excellence Fund: **Robert Santucci**

Raytheon: **Vicente Molieri**

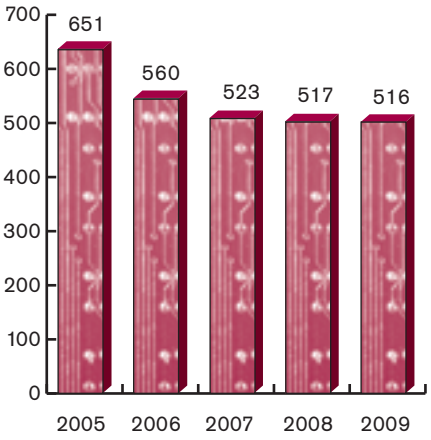
Science Foundation Arizona (SFAz): **Derek Caselli, Michael DiNezza, Stephen Herman, Berkay Kanberoglu, Mojtaba Rahmati, Emre Yunus**

University Graduate Fellowship (UGF): **Adam Bailey, Paul Hale, Chenhui Niu, James Wilson**

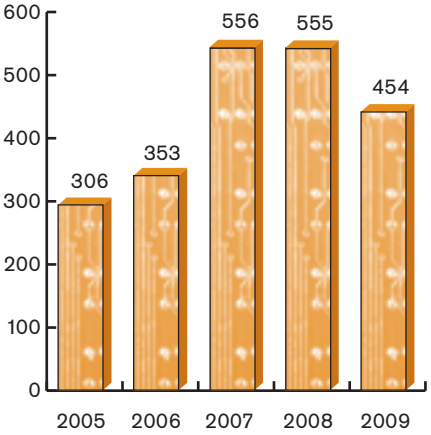
ECEE Enrollment Information

(Fall Semester Enrollments)

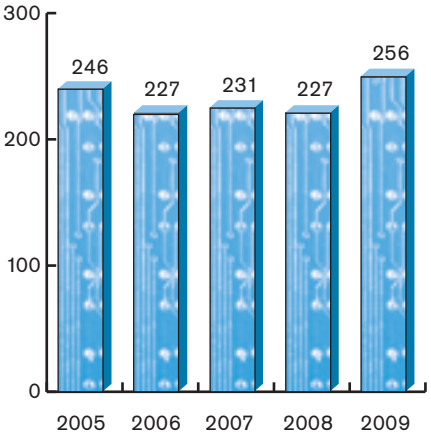
Undergraduate



Master's



PhD



doctoral graduates

Summer 2009

Baohua Li, "Robust Dynamic Programming for Markov Decision Processes and Filtering Applications to Video Target Tracking," Chair: J. Si.

Alex Smolyanitsky, "Simulation of Solid-State and Protein Nanopores," Chair: M. Saraniti.

Changchun Li, "Realistic Application Driven Comprehensive and Functional Video Target Detection and Tracking Systems For Electro-Optical and Infrared Cameras," Chair: J. Si.

Yinpeng Chen, "Constraint-aware Computational Adaptation Framework to Support Real-time Multimedia Applications," Co-Chairs: H. Sundaram, G. Qian.

Sunita Vikas Malhara, "Mechanical State Estimation of Transmission Line Sag Using Tilt Sensors," Chair: V. Vittal.

Ruisheng Diao, "Power System Online Security Assessment Using Synchronized Phasor Measurements and Decision Trees," Chair: V. Vittal.

Fall 2009

Hani Ahmad, "Digitally Controlled DC-DC Buck Converter Utilizing Frequency Discriminators," Chair: B. Bakkaloglu.

Ho Min Kwon, "Acoustic Scene Characterization in Wireless Sensor Networks," Chair: A. Spanias.

Jiqing Zhang, "Human Movement Sensing and Analysis Using Floor Pressure Data," Chair: G. Qian.

Xiaoyin Yao, "Radiation Hardened High Performance Microprocessor Cache Design," Chair: L. Clark.

Richard Steenis, "Plant-Friendly Input Signal Design for System Identification and Robust Control Performance," Chair: D. Rivera.

Adam Matthew Burke, "Imaging Evidence of Scarred Wave Functions in INAS Open Quantum Dots Via Scanning Gate Microscopy," Co-Chairs: D. Ferry, S. Goodnick.

Lanping Deng, "Algorithm-Architecture Co-exploration for Signal Processing on Reconfigurable Platform," Chair: C. Chakrabarti.

Oluwaseun Adeyemi Amoda, "Evaluation of Models for Predicting Hottest-Spot Temperature in Substation Distribution Transformers," Chair: D. Tylavsky.

Michael Lee McLain, "Analysis and Modeling of Total Dose Effects in Advanced Bulk CMOS Technologies," Chair: H. Barnaby.

Spring 2010

Zhenyu Huang, "Advanced FDTD Methods and the Applications on Scattering Problems," Chair: G.W. Pan.

Masoud Koochakzadeh, "Widely Tunable Filters for Software Defined Radio Applications," Chair: A. Abbaspour-Tamijani.

Md Murshidul Islam, "A Low Cost Digital Controller for a Switching DC-DC Converter with Improved Regulation," Chair: D. R. Allee.

Qingfei Chen, "Dynamics, Control and Shock Mitigation in Nonlinear Microelectromechanical and Nanoelectromechanical Resonant Devices," Chair: Y.-C. Lai.

Timothy E. Day, "Electron Transport Through Magnetic Quantum Point Contacts," Chair: S. Goodnick.

Anthony T. Huynh, "The Impact of Failure of Components on the Reliability of Power Distribution Systems," Chair: G. T. Heydt.

Zhonghai Guo, "Numerical and Analytical Approaches to Electromagnetic Modeling and Simulation," Chair: G. W. Pan.

Ryan Robison, "Mitigation of Artifacts in T1-weighted Spiral Projection Imaging," Chair: D. Frakes.

Ying Li, "Dynamic Waveform Design for Sensor Systems with Novel Estimation of Sensing Environment Characteristics," Chair: A. Papandreou-Suppappola.

Min Chen, "Design for Reliability: From Silicon Characterization, Model Calibration, to Efficient Simulation," Chair: Y. Cao.

Spring 2010 (cont.)

Kyle Foley, "Surface Plasmon Resonance Imaging of Surface Impedance," Chair: N. Tao

Doeg Rodriguez Sanabria, "Design of External Insulation for VLF/LF Bands Via Breakdown Investigations," Chair: R. S. Gorur.

Narendra V. Lakamraju, "MEMS Fabrication Using Aluminum Films," Chair: S. M. Phillips.

Gordon Wichern, "Robust Segmentation and Retrieval of Environmental Sounds," Co-Chairs: H. Thornburg, A. Spanias.

Yong Mo Yang, "MEMS Sample Preparation Stages for a Point-of-Care-Testing Test (POCT) Device," Chair: J. Chae.

Lifeng Wang, "MEMS Resonators for Communications Transceivers," Chair: S. M. Phillips.

Fabio Alessio Marino, "Advanced Simulation Methods for Physical Investigation on High Electron Mobility Transistor," Chair: M. Saraniti.

Kailash Chandrashekar, "Power Scalable and Low Power Design Techniques for Pipeline ADCs," Chair: B. Bakkaloglu.

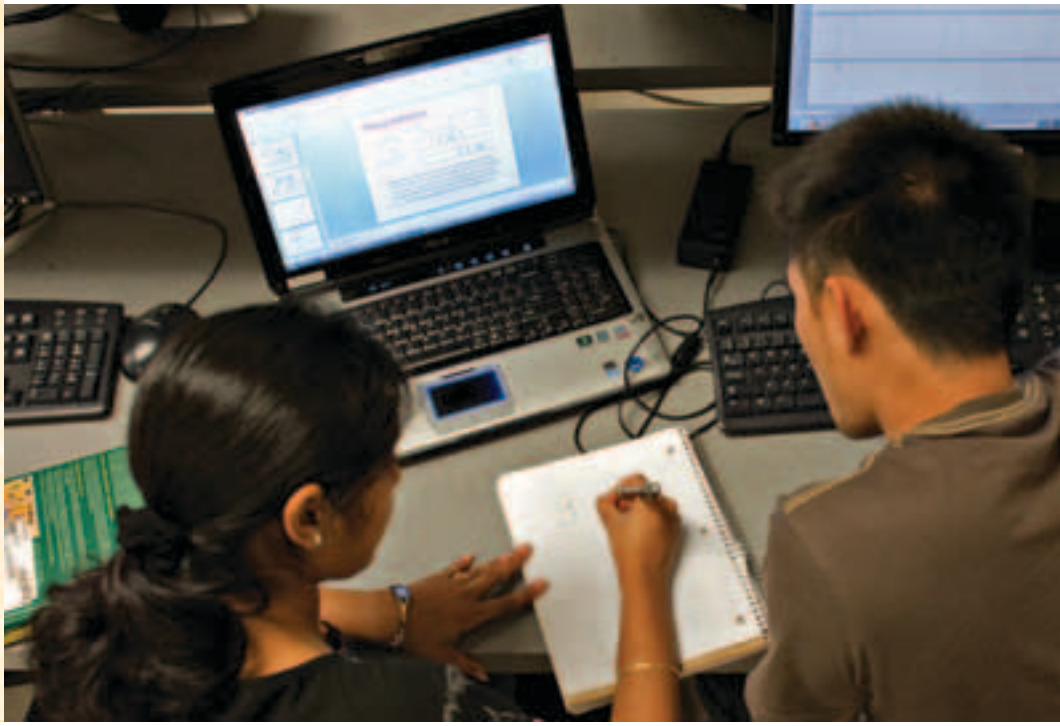
Hyung Seok Kim, "Adaptive Blocker Rejection Continuous-Time Sigma-Delta ADC," Co-Chairs: S. Kiaei, B. Bakkaloglu.

Bishnu Prasad Sapkota, "Voltage Stability Assessment and Enhancement of a Large Power System Using Static and Dynamic Approaches," Chair: V. Vittal.

Palais Award

Dr. **Qingfei Chen** is the recipient of the 2009-2010 Palais Award. This is the 8th year of the award. Chen's mentor is professor Ying-Cheng Lai. Qingfei was the best of 36 electrical engineering graduating doctoral students. Chen earned a perfect 4.0 GPA and produced an outstanding publication record of 17 journal papers, all published in first rate refereed publications such as Applied Physics Letters, Physical Review, and Chaos.

Professor **Joseph Palais**, graduate program chair, and his wife Sandra, established the Palais Outstanding Doctoral Student Award. It is presented annually to the best graduating doctoral student in the electrical engineering program. Chen's dissertation is titled, "Dynamics, control and shock mitigation in nonlinear microelectromechanical and nanoelectromechanical resonant devices." Chen received $1,000 and a commemorative plaque.



student honors & awards

Two ECEE Students Receive Fulbright Scholarships

Christina Clancey Rivera, a National Hispanic Scholar and a May graduate in electrical engineering, and **Jeremy Wendt**, a senior in ECEE, were among a record number of ASU students (21) who received Fulbright Scholarships this year. Rivera will study at the University of Alcala in Spain, where she will begin research in electrical energy generation systems known as microgrids. Wendt, a former Peace Corps volunteer, plans to go to Bangladesh to study the role of solar electrification in the country. He will work with faculty at the Independent University Bangladesh to analyze the impacts of using photovoltaic power.

Goldwater Scholarship

ECEE sophomore **Edward Lee** is a recipient of the prestigious Goldwater Scholarship, one of four ASU students to receive this nationwide award for undergraduates in the math, science, and engineering fields. Lee is conducting research in ASU's Flexible Display Center on improving medical imaging for health care and radiological weapons detection. The Goldwater Scholarship provides $7,500 per student for up to two years.

ASU Innovation Awards

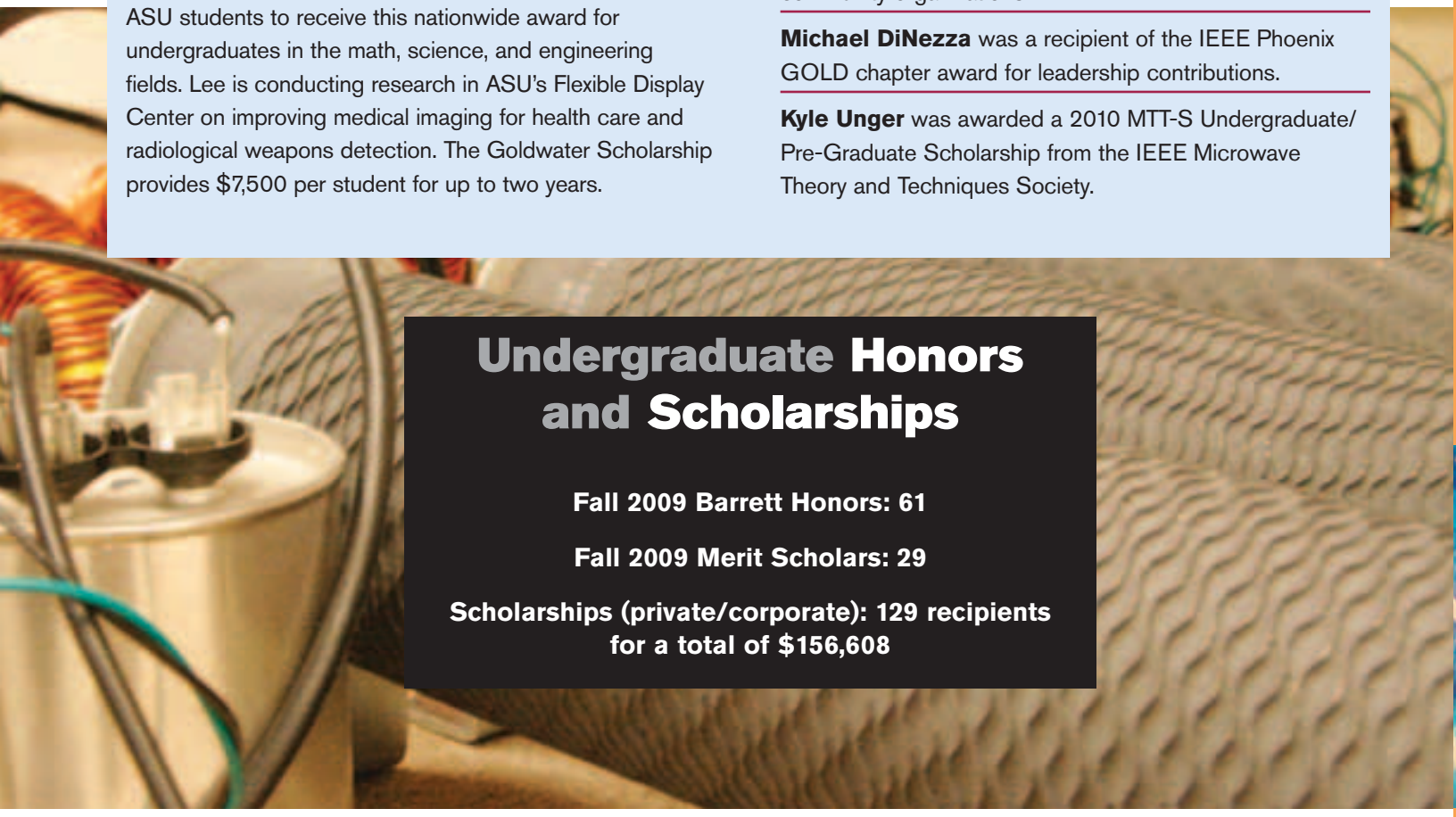
ECEE students were front and center in developing exciting new ideas and concepts at the inaugural ASU Innovation Challenge held this past spring semester. They won awards for transforming ideas into impact. ECEE undergraduates **Robin Daugherty**, **Kevin O'Connor**, and **Alfonso Dominguez** won for their project titled "Large-Area Flexible Chemical Sensors." ECEE graduate student **Shubo Liu**, in collaboration with students from mechanical engineering and computer science, received an award for a project titled, "eBird Hotspot Wiki with Threat Watch." Each team received $2,000 to develop the projects.

IEEE Awards

Vijay Sundaram was awarded the IEEE Phoenix Section Al Gross Student Scholarship for overall scholastic achievements and active involvement in professional and community organizations.

Michael DiNezza was a recipient of the IEEE Phoenix GOLD chapter award for leadership contributions.

Kyle Unger was awarded a 2010 MTT-S Undergraduate/ Pre-Graduate Scholarship from the IEEE Microwave Theory and Techniques Society.

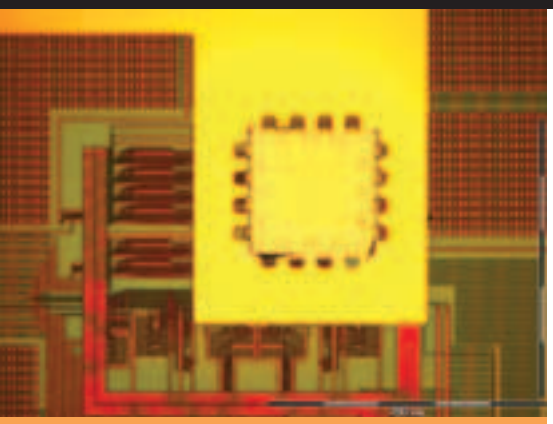


Undergraduate Honors and Scholarships

Fall 2009 Barrett Honors: 61

Fall 2009 Merit Scholars: 29

Scholarships (private/corporate): 129 recipients for a total of $156,608



"Stacking cells" method to improve chip memory

Researchers in the Center for Applied Nanoionics (CANi) have developed an innovative method for significantly improving the memory capacity of electronic devices.

The research, which is led by CANi director and ECEE Professor, Dr. **Michael Kozicki**, demonstrates the capability for building stackable memory based on "ionic memory technology," making it an ideal candidate for storage cells in high-density memory. Best of all, the new method uses well-known electronics materials.

The concept of stackable memory is akin to one's ability to store boxes in a small room.

Kozicki outlined the new memory device in a technical presentation he made in November at the 2009 International Electron Devices and Materials Symposia in Taiwan. He worked with **Sarath C. Puthen Thermadam**, an electrical engineering graduate student.

Current technology is fast reaching the physical limits of device memory, spurring research into new types of memory that can store more information into less and less physical space. One way of doing this is to stack memory cells.

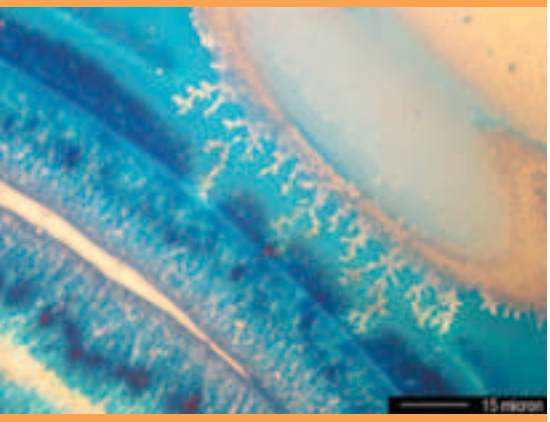
The concept of stackable memory is akin to one's ability to store boxes in a small room. You can store more boxes (each representing a memory cell) if you stack them and take advantage of the three dimensions of the room, rather than only putting each box on the floor.

Stacking memory cells has not been achieved before because the cells could not be isolated, according to Kozicki. Each memory cell has a storage element and an access device—the latter allowing you to read, write, or erase each storage cell individually.

The new approach continues to use silicon, but not single crystal silicon, which can be deposited in layers as part of the three-dimensional memory fabrication process.

Kozicki said the team is working on how to find a way to build an electrical element, called a diode, into the memory cell. The diode would isolate the cells, an idea that usually involves several additional layers and processing steps when making the circuit.

His team, however, has found an elegant way of achieving diode capability by substituting one known material for another, in this case replacing a layer of metal with doped silicon.



MURI grant will research battlefield communications network

A Multidisciplinary University Research Initiative (MURI) grant of more than $600,000 from the U.S. Department of Defense was awarded to Professor **Junshan Zhang** to improve the reliability of communications networks under battlefield conditions.

"Battlefield wireless networks often operate under hostile conditions that include adverse radio frequency environments, interference, bursts of traffic and changing network topology," said Zhang, an associate professor in ECEE. There is an "urgent need to develop fundamental network science for identifying, representing and controlling information dynamics" in Department of Defense networks, he added.

Advances in this research area also promises to provide more reliability for various types of airborne and ground-based communications networks.

Zhang's work is ASU's part of the $7 million MURI award, titled "Information Dynamics as a Foundation for Network Management," led by Princeton University, with research partners at the California Institute of Technology, Stanford University, University of California-Irvine, the University of Pennsylvania, and the University of Wisconsin-Madison.

ECEE student engineers a "micro mascot"

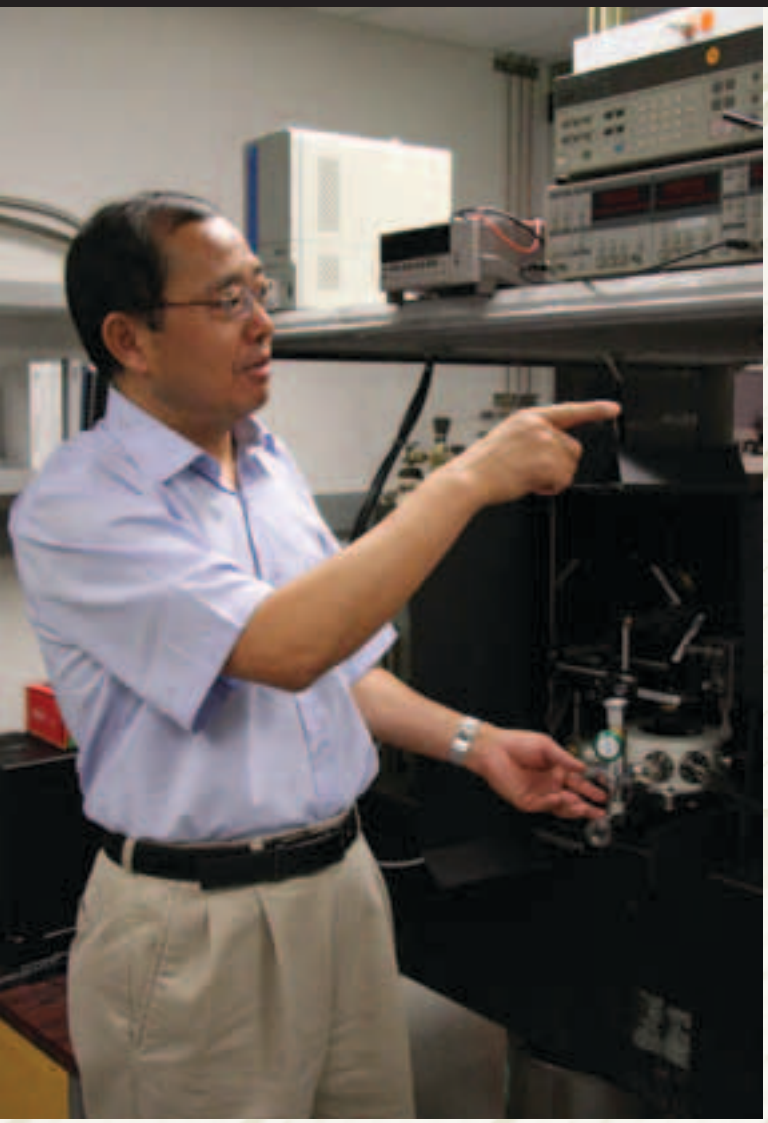
Adam Burke, an ECEE doctoral student may have found the tiniest—yet most cleverly inventive—way to show school spirit. He has created "Micro Sparky," a microscopic etching of Sparky, the ASU Sun Devil mascot.

Micro Sparky measures at slightly less than five microns in height. That's smaller than a human red blood cell, which typically measures at six to eight microns—too small to be seen without an optical microscope.

Burke used electron beam lithography to etch the pattern into a material called indium arsenide placed on top of another material called indium aluminum antimonide. The Sparky pattern was created by drawing it onto the surface of the materials with a directed beam of electrons.

"You can control this process like the way you control your hand when you draw a picture," said Burke, whose academic adviser is electrical engineering professor **David Ferry**, an ASU Regents' Professor.

Burke's accomplishments at ASU have helped him earn a position as a senior research assistant in the College of Physics at the University of New South Wales in Australia.



Cun-Zheng Ning in his nanophotonics laboratory at ASU.

New alloy holds promise for energy-efficient lighting

A recent advance by electrical engineering researchers in developing nanowires could lead to more efficient photovoltaic cells for generating energy from sunlight, and to better light-emitting diodes (LEDs) that could replace less energy-efficient incandescent light bulbs.

ECEE Professor **Cun-Zheng Ning** and **Alian Pan**, an associate research professor in electrical engineering, are working to improve quaternary alloy semiconductor nanowire materials. Semiconductors are the material basis for technologies such as solar cells, high-efficiency LEDs for lighting, and for visible and infrared detectors.

A critical parameter of semiconductors is to widen their band gaps, which will determine, for example, if a given wavelength of sun light is absorbed or left unchanged in a solar cell. To improve efficiency in solar cells, it's necessary to increase the range of band gaps.

To improve efficiency in solar cells, it's necessary to increase the range of band gaps.

In recent attempts to grow semiconductor nanowires with "almost" arbitrary band gaps, the research team led by Ning and Pan, used a new approach to produce an extremely wide range of band gaps. They alloyed two semiconductors, zinc sulfide (ZnS) and cadmium selenide (CdSe) to produce the quaternary semiconductor alloy ZnCdSSe, which produced continuously varying compositions of elements on a single substrate.

With the new materials, Ning said he hopes to build a monolithic lateral super-cell that contains multiple sub-cells in parallel, each optimized for a given wavelength band. The multiple sub-cells can absorb the entire solar spectrum.

Such solar cells will be able to achieve extremely high efficiency with low fabrication cost. The team is working on both the design and fabrication of such solar cells.

Connection One:
Integrated Circuits and Systems Research Center

Director: Bertan Bakkaloglu

Connection One is a National Science Foundation Industry/University Cooperative Research Center (I/UCRC) focused on developing next-generation antennas, low-power computer chips, advanced transistor models and cutting-edge multiple-function circuitry to enhance technologies ranging from cellular and environmental to medical and defense applications.

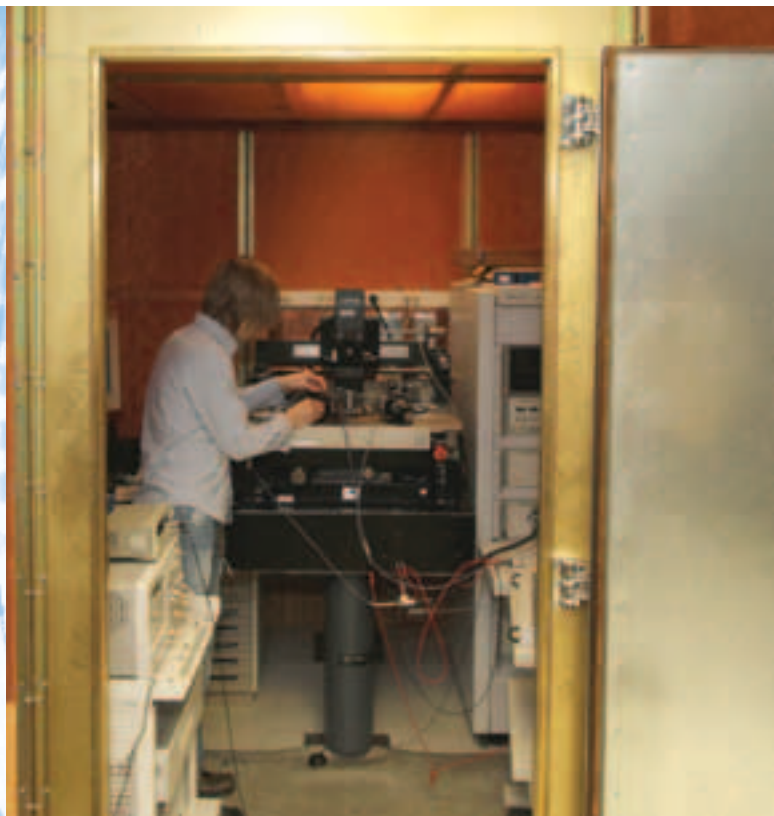
Connection One conducts research on a broad range of topics, including MEMS and nanotechnologies for RF and mixed-signal ICs, RF transmitter and receiver design, ultra-low power systems design, VLSI design, RADHARD electronics, RFIC remote sensing wireless devices, ultra-low power smart sensors, etc.

Photos by Jean Dixon.

Highlights, 2009-2010:

- EE professors and Connection One/WINTech faculty, **Sayfe Kiaei** and **Bahar Jalali-Farahani**, in collaboration with Ohio State University faculty, John Volakis, received an NSF award titled "Parallel Co-Simulation & Co-Design Methodology for Electronic System-in-Package." This project is focused on a seamless co-design integration platform for circuit, EMC/EMI, and PCB tools through a robust and systematic domain decomposition framework.
- Professor **Sulev Ozev** won a best paper award at a prestigious IEEE conference, the European Test Symposium, 2009, for her paper titled, "Defect Filter for Alternate RF Test." The work involved collaboration with researchers at Intel Corp. and TIMA, France.
- Professors **Kiaei**, **Ozev**, and **Bakkaloglu** won an NSF grant titled, "GOALI: Autonomous Self-Healing Sensor Network Radio and Mixed-Signal Readout System Design." The project will investigate the effect of in-field wear out on sensor network hardware and invent ways to mitigate the degradation.

For a list of projects and areas of research, visit the Connection One website at www.connectionone.com



WINTech:
Wireless Integrated Nanotechnology Center

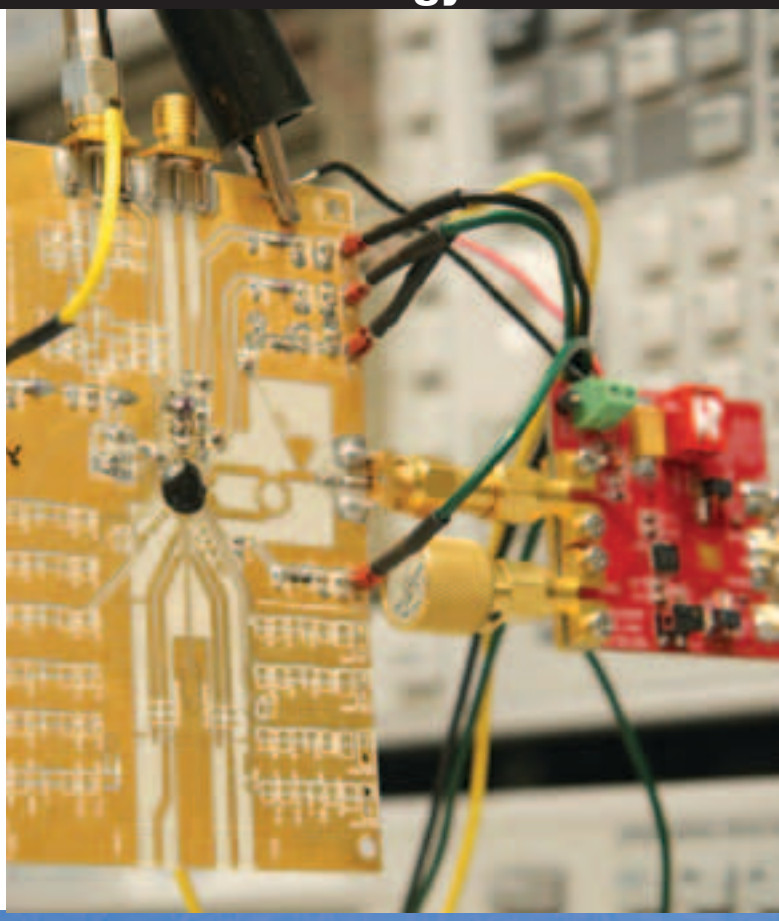
Director: Bert Vermeire

The focus of WINTech is the design and advancement of small, highly integrated electrical and electro-mechanical systems. WINTech has students and faculty from electrical, chemical, materials, and bio-engineering as well as computer science and engineering.

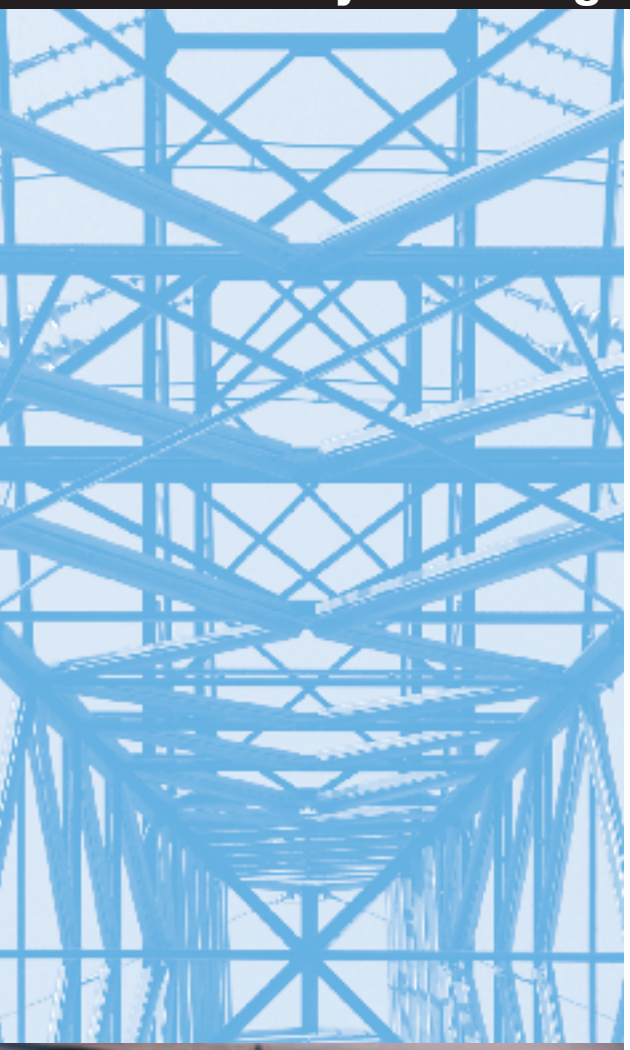
WINTech's core technologies include self-autonomous fully independent systems, self-powered devices, ultra-low power consumption devices, embedded SOC software and hardware, adaptive materials and ad hoc network functional systems that operate in a large distributed fashion. Connection One is its NSF-funded I/UCRC.

Arizona State University is the lead university, partnering with the University of Arizona, the University of Hawaii, Rensselaer Polytechnic University and The Ohio State University. Industrial partners include Analog Devices, BAE Systems, Crystal IS, Freescale Semiconductor, General Dynamics C4 Systems, IBM, Intel, Kyocera, Motorola, Raytheon, Sensor Electronic Technology Inc., Space Micro, Texas Instruments, Timbre, Velox, and Vixar.

For more information, visit http://wintech.asu.edu



PSERC:
Power Systems Engineering Research Center



Director: Vijay Vittal
Site Director: Gerald Heydt

PSERC is a National Science Foundation Industry/University Cooperative Research Center (I/UCRC) comprising 13 universities and over 35 industry members, addressing challenges in the electric power industry raised by new market structures and ways of doing business.

PSERC's diverse focus includes new emerging technologies in the electric power industry, customer demands for customized services, strategic choices between centralized and decentralized technologies, institutional changes creating mega-RTOs, new environmental priorities and the need for well-trained power engineers of the future, who are knowledgeable about the trends transforming the industry. PSERC draws on university capabilities and industry know-how to creatively address these challenges. Its core purpose is to empower minds to engineer the future electric energy system.

The multidisciplinary expertise of PSERC's researchers includes power systems, applied mathematics, complex systems, computing, control theory, power electronics, operations research, non-linear systems, economics, industrial organization, and public policy. PSERC partners with private and public organizations that provide integrated energy services, transmission and distribution services, power system planning, control and oversight, market management services, and public policy development. PSERC's comprehensive research program spans

- Market research with a focus on market design, verification, and validation in the context of electricity market restructuring
- Transmission and distribution for improved performance through new applications of innovative technologies
- Systems research to increase use, efficiency and reliability of increasingly complex and dynamic power systems

Highlights for 2009-2010:

- The Department of Energy (DoE) awarded a cooperative agreement on January 16, 2009, to the Arizona State University (ASU) Board of Regents to operate the Power Systems Engineering Research Center (PSERC). The cooperative agreement is for five years at a total value of $18,750,000, with the DoE providing $15 million and the universities providing $3,750,000 (cost share). PSERC research is leveraged by its association with industry members and its affiliation with the non-profit Consortium for Electric Reliability Technology Solutions, comprised of four national laboratories (Lawrence Berkeley, Oak Ridge, Pacific Northwest, and Sandia), an industry partner (the Electric Power Group), and PSERC.

Additional information on PSERC is available at http://www.pserc.org

SenSIP:
Sensors, Signal and Information Processing Center

Director: Andreas Spanias

The Sensor, Signal and Information Processing Center (SenSIP), directed by Professor Andreas Spanias, is an NSF-Industry/University Cooperative Research Center (I/UCRC) focused on state-of-the-art research in integrated sensing and processing and wireless sensor networks. SenSIP integrates multidisciplinary research in biosensing, communications, networks, signal and information processing, energy and defense applications, non linear dynamics, and controls. Its objective is to develop a research and education partnership with local and national companies. SenSIP's collaborators include the School of Arts, Media and Engineering (AME) and ASU's Biodesign Institute. SenSIP is an ABOR (Arizona Board of Regents) center.

More than 20 ASU engineering faculty members – primarily electrical and computer engineers – form the core group of SenSIP researchers. To date SenSIP's members include leading companies in the high-tech, defense, aerospace and communications industries, such as Intel, Lockheed Martin, National Instruments, Raytheon Missile Systems, LG Communications and Acoustic Technologies.

Highlights, 2009-2010:

- SenSIP became an NSF I/UCRC site and will receive $360,000 over the next five years with $750,000 in industry matching. This will involve a partnership with the Texas Net-Centric I/UCRC consortium in Texas.
- SenSIP signed on a new industry partner in LG Communications.
- SenSIP received several industry grants, including a grant to research application of signal processing for analyzing and testing photovoltaic array performance; a grant for algorithm and software development won by Professors **Iasemidis** and **Tsakalis**; and an Intel industry contract won by Professor **Lina Karam**.
- Several federal grants were also awarded: Professor **Lai** and collaborators will research chaotic scattering and the design of complex networks; Professor **Martin Reisslein** is leading an NSF grant involving outreach to high schools; Professor **Chaitali Chakrabarti** continues her research with a large NSF-CSR grant on reclaiming Moore's Law through ultra energy-efficient computing. Professors **Junshan Zhang**, **Tolga Duman**, and **Antonia Papandreou-Suppappola** are involved in four AFOSR-MURI sites in the areas of signal processing, communications, sensors, and information networks.
- The SenSIP educational software J-DSP is part of four NSF education and research projects. The software is being tested in at least 20 universities including MIT, Johns Hopkins University, ASU, Georgia Tech, and Rose Hulman Institute of Technology.

Areas of Concentration:

Waveform-Agile and Adaptive Sensing

Biomedical Processing and Biosensing

Real-time Digital Signal Processing (DSP)

Algorithm and Software Development for for DSP Chips and FPGAs

Data Mining and Genomic Signal Processing

Signal and Infomation Processing for Energy Systems

Speech, Audio, and Multimedia Signal Processing

Image and Video Processing and Coding

Multimedia Networks and Video

Information Theory and Information Networks

Wireless Communications, Channel Coding and Encryption

Sensor Networks and Bodynets

Signal Processing for Arts and Media

Java-DSP (J-DSP) for Signal Analysis , Communictions, and Controls

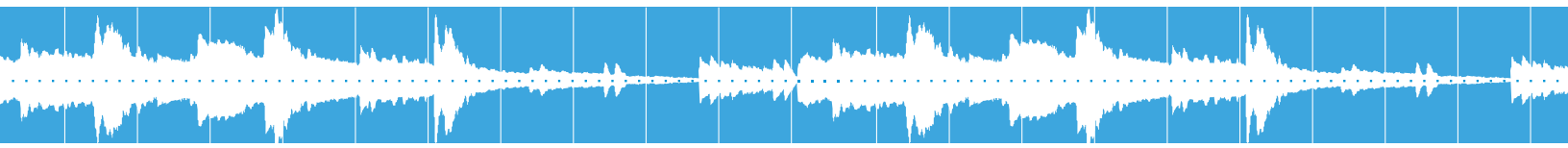
Low-power Signal Processing and Architectures

MRI Signal and Image Processing

Adaptive Controls and Neural Networks for Brain Dynamics

Nonlinear dynamics and chaos, quantum transport, and biological physics

More information can be obtained at http://sensip.asu.edu/. SenSIP News is also on Facebook and Twitter: http://twitter.com/asusensip



AIRE:
Arizona Initiative for Renewable Energy

Director: Stephen Goodnick

The Arizona Initiative for Renewable Energy (AIRE) is part of ASU's LightWorks initiative, whose focus is to pull light-inspired research at ASU under one strategic framework. Under this initiative, AIRE's goal is to research and develop reliable, affordable, and renewable energy sources and storage suitable for commercialization in the Southwest United States.

LightWorks encompasses key energy issues in bioenergy, photovoltaics, solar thermal, fuel cell/energy storage, and energy system testing. It creates prototypes and systems analysis for renewable energy sources and develops curricula and training both on the technology of renewable energy, as well as its social, economic and policy advancement implications. LightWorks/AIRE's core renewable energy efforts include:

- ASU's Solar Power Laboratory is headed by ECEE Professor **Christiana Honsberg**, who joined ASU in January 2009 from the University of Delaware. SPL has a focus on solar cell efficiency limits, ultra-high efficiency photonic energy conversion, new materials, nanostructures and designs for efficient photovoltaic and photothermal solar energy conversion, as well as new, low-cost, scalable manufacturing approaches.
- ASU's Center for Bioenergy and Photosynthesis pursues transdisciplinary research in the use of biological and artificial systems based on biological principles.
- The Center for Renewable Energy Electrochemistry (CREE), a leader in renewable electrochemically based energy storage and conversion research for improved electrochemical performance through alternative electrolytes, was recently awarded a $5 million Advanced Research Projects Agency–Energy (ARPA-e) grant on metal-air battery systems in partnership with Fluidic Energy, Inc.
- ASU's Tubes in the Desert project researches how photosynthetic organisms store energy and ways to develop similar processes that can be utilized in manmade systems.
- The Laboratory for Algae Research and Biotechnology at the ASU Polytechnic Campus researches algae samples as a renewable and sustainable source of oil for biodiesel and other bioproducts.
- ASU is one of the few schools to receive multiple Solar America Initiative awards from the U.S. Department of Energy.
- Cross-disciplinary efforts that address the energy grid infrastructure, supply chain, policy, and transition include the participation of many ASU centers, academic programs and institutes, including the Decision Theater, Center for Solid State Sciences, the Flexible Display Center, the Power Systems Engineering Research Center, the Photovoltaics Lab, the College of Design, the Solar Power Laboratory, the Center for Renewable Energy Electrochemistry, the Consortium for Science Policy Outcomes, and Arizona Technology Enterprise, to name a few.

Highlights, 2009-2010:

- ASU entered into a strategic three-year partnership agreement with the University of Tokyo, Japan. The two universities will collaborate on research projects, exchange educational information and materials, conduct joint lectures and symposia, and exchange services of faculty members, research staff, and students. Joint efforts will include the study of high-efficiency, multi-junction solar cells, using compound semiconductor materials to optimize the absorption of the full solar spectrum, led by ECEE Professor **Yong-Hang Zhang** and photon research for improved efficiency in collaboration with ECEE Professor **Christiana Honsberg**.
- The Center for Bioenergy and Photosynthesis received a $14.02 million grant from the Department of Energy's Energy Frontier Research Center to research bioinspired solar fuel production.
- ASU has now over five awards from DoE's Solar America Initiative, one of the highest in the nation.
- ASU received two ARPA-e awards in 2009 for $10 million (biofuels and storage).

Visit the AIRE website for more information: http://aire.asu.edu/

AINE:
Arizona Initiative for Nano-Electronics

Director: Stephen Goodnick

The Arizona Initiative for Nano-Electronics (AINE) serves as an umbrella organization that directs the efforts of four different research centers, while coordinating their work with other industry and multidisciplinary initiatives.

The main focus of AINE is partnering with both research-based institutions and relevant industry members in order to significantly impact the future technology areas related to ultra-low power and ultra-high speed electronics, as well as hybrid biomolecular electronics. AINE consists of four research centers:

Center for Biomolecular Integrated Circuits

Director: Trevor Thornton

The CBIC aims to combine the realms of electronics and biological functions. It seeks to use micro-electro-mechanicalsystems (MEMS) fabrications and microelectronic technologies to enhance the working of existing circuit technologies and their biological and chemical capabilities.

http://www.asu.edu/aine/cbic/cbic_main.html

Center for Applied Nanoionics

Director: Michael N. Kozicki

The CANi lies at the cutting edge of worldwide research in materials and devices that rely on ion transport and chemical change at the nanoscale. (See story in Features section.) Outreach into the educational, research and industrial communities is a significant part of CANi's work. The CANi intends to act as a liaison between academic research in the field as well as relevant industry players by holding an annual symposium in the field.

http://www.asu.edu/aine/cani/cani_main.html

Center for Computational Nanoscience

Director: Marco Saraniti and **Mark van Schilfgaarde**

The CCN's strength lies in novel devices and the prediction of device performance, which is especially crucial for nanoelectronics technologies. The center brings together faculty from different science disciplines whose interests involve the area of modeling and simulation. Many of CCN's researchers are known as developers of formalism and methodology in the area of electronic structure, which is relevant to the fundamental properties of devices.

http://www.asu.edu/aine/ccn/ccn_main.html

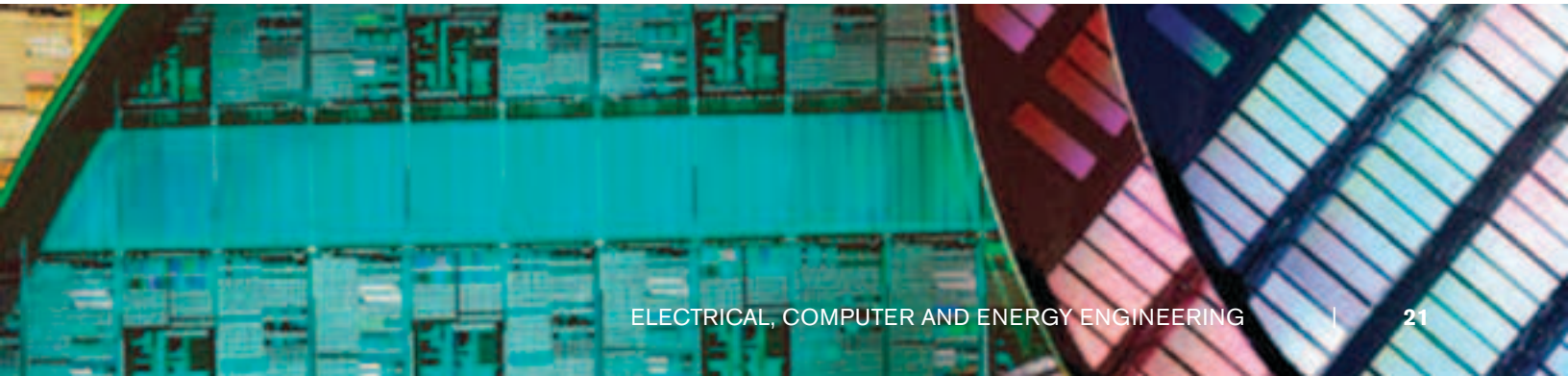
Center for Photonics Innovation

Director: Yong-Hang Zhang

The CNP has four main areas of research: optical properties of compound semiconductor nanostructures and devices; silicon-based nanophotonic structures and devices; energy conversion materials and devices; and organic and biophotonics. The center combines work in a range of theoretical and applied research, from photon-matter interactions to optical sensors for medical and biological use.

http://www.asu.edu/aine/nanop/nanop_main

Additional information about AINE and its constituent research centers can be found at: http://www.asu.edu/aine/



James T. Aberle
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Associate Professor, PhD, University of Massachusetts

James T. Aberle received the BS and MS degrees in electrical engineering from the Polytechnic Institute of New York (now Polytechnic University) in 1982 and 1985, respectively, and the PhD degree in electrical engineering from the University of Massachusetts in 1989. From 1982 to 1985, he was employed by Hazeltine Corporation, Greenlawn, N.Y., where he worked on the development of wide-band phased array antennas. He was a graduate research assistant at the University of Massachusetts from 1985 to 1989, where he developed and validated computer models for printed antennas. He has been a faculty member at Arizona State University since 1989, and is currently an associate professor of electrical engineering. His research interests include the design of radio frequency systems for wireless applications as well as the modeling of complex electromagnetic phenomena. In addition to his position as a faculty member at ASU, Dr. Aberle has been a NASA/ASEE summer faculty fellow at NASA Langley Research Center (1993), a visiting academic at the Royal Melbourne Institute of Technology in Melbourne, Victoria, Australia (1997), a visiting researcher at Atlantic Aerospace Electronics Corp. in Greenbelt, MD (1998), and a senior member of the technical staff at a start-up company (2000-2002).

Research Interests: Antennas and RF systems for wireless communications, modeling of complex electromagnetic phenomena.

Selected Publications:

Hang Song, Bakkaloglu, B., Aberle, J. T., "A CMOS adaptive antenna-impedance-tuning IC operating in the 850MHz-to-2GHz band," Solid-State Circuits Conference - Digest of Technical Papers, 2009. ISSCC 2009 IEEE International, pp. 384-385, 385a, 8-12 Feb. 2009.

J. T. Aberle, "Two-Port Representation of an Antenna With Application to Non-Foster Matching Networks," IEEE Transactions on Antennas and Propagation, vol. 56, no. 5, 1218-1222, May 2008.

J. T. Aberle, S.-H. Oh, and G. A. Taylor, "Frequency-Agile Antennas for a Software-Defined and Cognitive Radio," Ed. R. Waterhouse, Printed Antennas for Wireless Communications, John Wiley and Sons, 379-406, 2007.

David R. Allee
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Professor, PhD, Stanford University

David R. Allee received his BS in electrical engineering from the University of Cincinnati in 1984 and MS and PhD in electrical engineering from Stanford University in 1986 and 1990, respectively. He was a post-doctoral fellow at Cambridge University in 1990 and 1991. While at Stanford University, and as a Research Associate at Cambridge University, he fabricated scaled field effect transistors with ultra-short gate lengths using custom e-beam lithography. He also invented several ultra-high resolution lithography techniques including direct e-beam irradiation of SiO2, and nanometer scale patterning of various organic and inorganic films with scanning tunneling lithography (ASU). Since joining Arizona State University, his primary focus has been on mixed signal integrated circuit design. As a founding member of the NSF Center for Low Power Electronics and the Whitaker Center for Neuromechanical Control, he has designed several custom analog to digital converters and telemetry ICs. David is currently Director of Research for Backplane Electronics for the Flexible Display Center at Arizona State University, and he is investigating a variety of flexible electronics applications. He has been a regular consultant with several semiconductor industries on low voltage, low power mixed signal circuit design. He has co-authored over 85 archival scientific publications.

Research Interests: Ultra-small device fabrication, mixed-signal circuit design for analog-to-digital conversion, and telemetry

Selected Publications:

D. R. Allee, A. Avendano-Bolivar, B. Gnade, S. Gowrisanker, R. Krishna, K. Kaftanoglu, M. Quevedo-Lopez, and S. Venugopal, "Flexible CMOS and Electrophoretic Displays," Society for Information Displays, International Symposium, Digest of Technical Papers, San Antonio, Texas, May 31-June 5, 2009. (Invited Paper)

D. R. Allee, C. Balanis, K. Baugh, E. Forsythe, B. Gnade, T. Jackson, H. McHugh, D. Morton, M. Quevedo, and S. Venugopal, "Flexible Integrated Sensor Systems," Special Operations Forces Industry Conference, Tampa, Florida, June 2-4, 2009.

D. R. Allee, E.J. Bawolek, L. T. Clark, J. J. Ravindra Fernando, K. Kaftanoglu, Z. P. Li, S. O'Rourke, R. Shringarpure, H. Shivalingaiah, S.G. Uppili, S. M. Venugopal, and B. D. Vogt, "Degradation Effects in a-Si:H Thin Film Transistors and Their Impact on Circuit Performance," IEEE Transactions on Electron Devices, vol. 56, no. 6, 1166-1176, June 2009.

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Associate Professor, PhD, University of Minnesota

Rajapandian Ayyanar joined the ASU faculty as an assistant professor in August 2000. He received a BE in electrical engineering from P.S.G. College of Technology, India in 1989; an MS in power electronics from the Indian Institute of Science in 1995; and a PhD in power electronics from the University of Minnesota in 2000. He has published over 70 journal and conference papers in the area of power electronics and renewable energy integration and holds two U.S. patents. Dr. Ayyanar was awarded the ONR Young Investigator Award in 2005.

Research Interests: Power electronics, DC-DC converters, voltage regulators and power management, power conversion and control for renewable energy interface, especially PV and wind, smart grid technologies, plug-in electric vehicles, and motor drives.

Selected Publications:

D. Zhao, V. S. S. Pavan Kumar Hari, G. Narayanan, R. Ayyanar, "Space-vector-based hybrid pulsewidth modulation techniques for reduced harmonic distortion and switching loss," IEEE Transactions on Power Electronics, vol. 25, March 2010, pp. 760-774.

R. Ayyanar and B. S. Oraw, "Voltage Regulator Optimization Using Multiwinding Coupled Inductors and Extended Duty Ratio Mechanisms," IEEE Transactions on Power Electronics, vol. 24, 1494-1505, June 2009.

R. Ayyanar, H. K. Krishnamurthy, and X. Mao, "Optimal Variable Switching Frequency Scheme for Reducing Switching Loss in Single-Phase Inverters Based on Time-Domain Ripple Analysis," IEEE Transactions on Power Electronics, vol. 24, 991-1001, April 2009.

R. Ayyanar and X. Mao, "Average and Phasor Models of Single Phase PV Generators for Analysis and Simulation of Large Power Distribution Systems," Proc. IEEE Applied Power Electronics Conference (APEC), 1964-1970, Feb 15-19, 2009.

W. J. Lambert, R. Ayyanar, S. Chickamenahalli, "Fast load transient regulation of low voltage converters with the low-voltage transient processor," IEEE Transactions on Power Electronics, vol. 24, pp. 1839-1854, July 2009.

R. Ayyanar and N. Mohan, "Zero Voltage Switching DC-DC Converter," U.S. patents 6,611,444 and 6,310,785.

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Associate Professor, PhD, Oregon State University

Bertan Bakkaloglu joined the ASU faculty in August 2004. He received a PhD in electrical and computer engineering in 1995 from Oregon State University. Prior to ASU, Dr. Bakkaloglu was with Texas Instruments where he was responsible for analog, mixed signal and RF system-on-chip development for wireless and wireline communication transceivers. He is a steering committee member for IEEE Radio Frequency Integrated Circuits Conference, IEEE Circuits and Systems for Medical and Environmental Applications Workshop and founding chair of the IEEE Solid State Circuits Society Phoenix Chapter. He is an associate editor of IEEE Transactions on Circuits and Systems.

Research Interests: RF and mixed-signal IC design, integrated power management circuits for high reliability applications, biomedical and chemical instrumentation ICs.

Selected Publications:

B. Bakkaloglu, W. Y. Chu, and S. Kiaei, "A 10 MHz Bandwidth, 2 mV Ripple PA Regulator for CDMA Transmitters," IEEE Journal of Solid-State Circuits, vol. 43, no. 12, 2809-2819, December 2009.

H. Hedayati, W. Khalil, B. Bakkaloglu, "A 1 MHz Bandwidth, 6 GHz 0.18 m CMOS Type-I DS Fractional-N Synthesizer for WiMAX Applications," IEEE Journal of Solid-State Circuits, vol. 44, no. 12, pp. 3244-3252, Dec. 2009.

J. N. Kitchen, C. Chu, S. Kiaei, B. Bakkaloglu, "Combined Linear and D-Modulated Switch-Mode PA Supply Modulator for Polar Transmitters," IEEE Journal of Solid-State Circuits, vol.44, no. 2, pp. 404-413, Feb. 2009.

B. Bakkaloglu, H. Barnaby, K. Chandrashekar, H. H. Chung, T. Copani, I. Deligoz, S. Goswami, A. Jain, H. Karaki, S. Kiaei, J. Kitchen, and B. Vermeire, "A Fully Integrated Pulsed-LASER Time-Of-Flight Measurement System with 12ps Single-Shot Precision," IEEE Custom Integrated Circuits Conference, 359-362, September 21-24, 2008.

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Constantine A. Balanis joined the ASU faculty in 1983 and is now a Regents' Professor of electrical engineering. He has published over 130 journal papers, 225 conference papers, 12 book chapters, 8 magazine/newsletter papers, and numerous scientific reports. He has also published three books: Antenna Theory: Analysis and Design, Advanced Engineering Electromagnetics, and Introduction to Smart Antennas.

Research Interests: Computational electromagnetic methods (FDTD, FEM, MoM, GO/GTD/UTD, PO/PTD) for antennas, scattering and high-intensity radiated fields (HIRF), flexible antennas using FDC plastic, smart/adaptive antennas for wireless communications.

Honors and Distinctions: Regents' Professor; Honorary Doctorate-University of Thessaloniki (Greece); IEEE Life Fellow; IEEE Third Millennium Medal; IEEE AP Society Chen-To Tai Distinguished Educator Award; ASU Outstanding Graduate Mentor Award; ASU School of Engineering Graduate Teaching Excellence Award; ASU College of Engineering Distinguished Achievement Award; IEEE Region 6 Individual Achievement Awards; IEEE Phoenix Section Special Professionalism Award.

Selected Publications:

C. A. Balanis, C. R. Birtcher, C. Polycarpou, and V. Kononov, "Non-Uniform Field Modeling of Ferrite-Loaded Cavity-Backed Slot Antennas," IEEE Trans. Antennas Propagat., vol. 57, 2009.

P. Bevelacqua and C. A. Balanis, "Geometry and Weight Optimization for Minimizing Sidelobes in Wideband Planar Arrays," IEEE Trans. Antennas Propagat., vol. 57, no. 4, pp. 1285-1289, April 2009.

C. A. Balanis, D. DeCarlo, and J. Lambert, "Spherical Cap Adaptive Antennas for GPS," IEEE Trans. Antennas Propagat., vol. 57, no. 2, 406-413, February 2009.

C. A. Balanis, Ed., Modern Antenna Handbook, John Wiley & Sons, Inc., 1680, 2008.

C. A. Balanis, C. R. Birtcher, and B. Yang, "The Effects of Passengers on Mutual Coupling in a Simplified Fuselage: Simulations and Measurements," IEEE Trans. Electromagnetic Compatibility, vol. 50, no. 3, part II, 751-754, August 2008.

Hugh Barnaby
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Hugh Barnaby joined the ASU faculty in 2004. Prior to coming to ASU, he was an assistant professor at the University of Arizona. His primary research focuses on the analysis, modeling, and experimental characterization of extreme environment effects in semiconductor materials, devices, and integrated circuits. As part of this research, he also develops design and processing techniques that enable the reliable operation of electronics in these environments. In addition, Dr. Barnaby has ongoing research activities in wireless (RF and optical) IC and data converter design, radiation-enabled compact modeling, energy harvesting, and bio-electronics. He has been an active researcher in the microelectronics field for 15 years in both industry and academics, presenting and publishing more than 100 papers during this time.

Research Interests: Semiconductors for hostile environments, device physics and modeling, microelectronic device and sensor design and manufacturing, analog/RF/mixed signal circuit design and test.

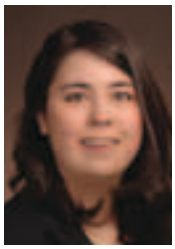
Honors and Distinctions: ONR Faculty Research Fellow; Senior Member IEEE; Session Chairperson, 2008 IEEE IRPS, 2005 RADECS Conference, 2002 IEEE NSREC; Short Course Chairman, IEEE NSREC 2007; Poster Chairman, IEEE NSREC 2006; Short Course Instructor, NSREC 2005; Awards Committee, IEEE NSREC 2003, 2008; Solid State Circuits Society Phoenix Section Chairman.

Selected Publications:

I. S. Esqueda, H. J. Barnaby, M. L Mclain, P. C. Adell, F. E. Mamouni, S. K. Dixit, R. D. Schrimpf, W. Xiong, "Modeling the Radiation Response of Fully-Depleted SOI n-Channel MOSFETs," IEEE Trans. on Nuclear Science , vol. 56, no. 4, pp. 2247-2250, 2009.

X. J. Chen, H. J. Barnaby, P. Adell, R. L. Pease, B. Vermeire, K. E. Holbert, "Modeling the Dose Rate Response and the Effects of Hydrogen in Bipolar Technologies," IEEE Trans. on Nuclear Science, vol. 56, no. 6, pp. 3196-3202, 2009.

W. Chen, T. Copani, H. J. Barnaby, S. Kiaei, "A 14-GHz CMOS receiver with local oscillator and IF bandpass filter for satellite applications," 2009 IEEE Radio Frequency Integrated Circuits Symposium, June 7-9, 2009, pp. 123-126.



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Jennifer Blain Christen joined the ASU faculty in 2008. She received a PhD in 2006 and an MS in electrical engineering in 2001 from the Johns Hopkins University. She conducted her post-doctoral research at the Immunogenetics Department of the Johns Hopkins Medical School. Her research focuses on engineering systems that directly interface biology; this interface usually includes low-power analog circuits and microfluidics.

Research Interests: Bio-compatible integration techniques for CMOS electronics, microfluidics and soft lithography, MEMS devices with emphasis on bio-MEMS, analog and mixed-mode VLSI for bio-medical/ analytical instrumentation including SOS/SOI technologies.

Honors and Distinctions: Transactions on Biomedical Circuits and Systems Best Paper Award (2007-2010); 2010 Science Foundation Arizona Grand Challenges Conference Poster Contest 1st Place; STIMESI MultiMEMS Design Contest, Advanced Category 1st Place 2008; National Science Foundation Graduate Teaching Fellows in K-12 Education, 2005-2006; National Science Foundation Graduate Research Fellowship, 2001-2004; Grant Recipient for the Undergraduate Engineering Research Opportunities Program, sponsored by General Electric Faculty for the Future 1998; Maryland Scholars Award 1997.

Selected Publications:

Song, J., Welch, D., Blain Christen, J., "Amplification Circuit and Microelectrode Array for HL-1 Cardiomyocyte Action Potential Measurement," 2010 IEEE International Symposium on Circuits and Systems, May 2010.

Welch, D., Herman, S., Sen, S., Georgiou, J., Blain Christen, J., "Microfluidic Tilt Sensor Using Optical Detection," 2009 IEEE Circuits and Systems for Medical and Environmental Applications Workshop, December 2009.

Qui, X., Welch, D., Blain Christen, J., Zhu, J., Oiler, J., Yu, C., Wang, Z., Yu, H., "Reactive nanolayers for physiologically compatible microsystem packaging," Journal of Materials Science: Materials in Electronics, pp. 123-127, August 2009.

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Kevin Cao joined the ASU faculty in 2004. He received a PhD in electrical engineering in 2002, an MA in biophysics in 1999 from the University of California, Berkeley, and he conducted his post-doctoral research at the Berkeley Wireless Research Center. He has published more than 120 articles and co-authored one book on nano-CMOS physical and circuit design. He has served on the technical program committee of many conferences and is a member of the IEEE EDS Compact Modeling Technical Committee.

Research Interests: Physical modeling of nanoscale technologies, design solutions for variability and reliability, and reliable integration of post-silicon technologies.

Honors and Distinctions: Promotion and Tenure Faculty Exemplar, Arizona State University, 2009; Distinguished Lecturer of the IEEE Circuits and Systems Society, 2009; Chunhui Award for Outstanding Overseas Chinese Scholars, China, 2008; Best Paper Award at the International Low-Power Electronics and Design, 2007; IBM Faculty Award, 2007 and 2006; NSF Faculty Early Career Development (CAREER) Award, 2006; Best Paper Award at the International Symposium on Quality Electronic Design, 2004; Beatrice Winner Award, International Solid-State Circuits Conference, 2000; Biophysics Graduate Program Fellowship at the University of California, Berkeley, 1997-98; UC Regents Fellowship at University of California, Santa Cruz, 1996-97.

Selected Publications:

D. Acharyya, K. Agarwal, Y. Cao, F. Liu, S. R. Nassif, K. Nowka and W. Zhao, "Rigorous extraction of process variations for 65nm CMOS design," IEEE Transactions on Semiconductor Manufacturing, vol. 22, no. 1, 196-203, February 2009.

T. Austin, V. Bertacco, Y. Cao and S. Mahlke, "Reliable systems on unreliable fabrics," IEEE Design & Test of Computers, vol. 25, no. 4, 322-332, July-August, 2008.

B. H. Calhoun, Y. Cao, X. Li, K. Mai, L. T. Pileggi, R. A. Rutenbar, and K. L. Shepard, "Digital circuit design challenges and opportunities in the era of nanoscale CMOS," Proceedings of the IEEE, vol. 96, no. 2, 343-365, February 2008.

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Junseok Chae joined the ASU faculty in 2005. He received his MS and PhD in electrical engineering in 2000 and 2003, respectively, from the University of Michigan, Ann Arbor. From 2003 to 2005, he was a postdoctoral research fellow at WIMS (Wireless Integrated MicroSystems) – ERC (Engineering Research Center), University of Michigan. His areas of interests are MEMS sensors, integration of nanostructures on MEMS, MEMS packaging, and bio-MEMS. He has published over 60 conference/journal articles and book chapters. He holds a couple of U.S. patents and is a recipient of the NSF CAREER Award on a MEMS protein sensor array.

Research Interests: Microelectromechanical systems sensors/actuators, micro-EMS packaging, hybrid integration: from nano to micro, micro to macro-worlds, and bio-MEMS.

Honors and Distinctions: NSF CAREER Award, 2009; Best Poster Award in IEEE International Conference on Sensors, 2007; First Place Prize and the Best Paper, DAC (Design Automation Conference) Student Design Contest, 2001.

Selected Publications:

J. Chae, and Y. Yang, "Separation of Beta-human Chorionic Gonadotropin and Immunoglobulin G by a Miniaturized Size Exclusion Chromatography Column," Applied Physics Letters, vol. 94, 173902, 2009.

J. Chae, J. Harrison, S. Je, J. Kim, and M. Kozicki, "In-Situ Tuning of Omni-Directional Micro-Electro-Mechanical-Systems Microphones to Improve Performance Fit in Hearing Aids," Applied Physics Letters, vol. 93, 123501, 2008.

S. Choi, Y. Yang, and J. Chae, "Surface Plasmon Resonance Protein sensor Using Vroman Effect," Biosensors and Bioelectronics, vol. 24, no. 4, 899-905, 2008.

J. Chae, J. Giachino, and K. Najafi, "Fabrication and Characterization of a Wafer-Level MEMS Vacuum Package with Vertical Feedthroughs," IEEE Journal of Microelectromechanical Systems, vol. 17, 193-200, 2008.

Chaitali Chakrabarti

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Chaitali Chakrabarti received her BTech in electronics and electrical communication engineering from the Indian Institute of Technology, Kharagpur, India, and her MS and PhD degrees in electrical engineering from the University of Maryland, College Park. She is an associate editor of the IEEE Transactions on VLSI Systems and the Journal of VLSI Signal Processing Systems.

Research Interests: VLSI architectures and algorithms for media processing and wireless communications, low-power embedded system design, including those powered by fuel cell-battery sources, low power algorithm design and algorithm-architecture co-design of signal processing systems.

Honors and Distinctions: Outstanding Educator Award, IEEE Phoenix section, 2001; CEAS Teaching Award, 1993-1994.

Selected Publications:

M. Woh, S. Seo, S. Mahlke, T. Mudge, and C. Chakrabarti, "AnySP: Anytime Anywhere Anyway Signal Processing," IEEE MICRO Top Picks, Jan/Feb 2010, pp. 81-91.

Y. Zhu and C. Chakrabarti, "Architecture-Aware LDPC Code Design for Multi-Processor Software Defined Radio Systems," IEEE Transactions on Signal Processing, Sep 2009, pp. 3679-3792.

J. S. Kim, L. Deng, P. Mangalagiri, K. Irick, K. Sobti, M. Kandemir, V. Narayanan, C. Chakrabarti, N. Pitsianis, and X. Sun, "An Automated Framework for Accelerating Numerical Algorithms on Reconfigurable Platforms using Algorithmic/Architectural Optimizations," IEEE Transactions on Computers, Dec 2009, pp. 1654-1667.

J. Zhuo, C. Chakrabarti, K. S. Lee, N. Chang, and S. Vrudhula, "Maximizing the Lifetime of Embedded Systems Powered by Fuel-Cell Battery Hybrids," IEEE Transactions on VLSI Systems, Jan 2009, pp. 22-32.

M. Woh, Y. Lin, S. Mahlke, T. Mudge, C. Chakrabarti, R. Bruce, D. Kershaw and K. Flautner, "From SODA to Scotch: The Evolution of a Wireless Baseband Processor," Proc. of IEEE/ACM Symposium on Microarchitecture (MICRO), November 2008 -Best Paper Award.

Lawrence T. Clark

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Associate Professor, PhD, Arizona State University

Lawrence T. Clark worked at Intel Corporation after receiving his BS in computer science in 1983. Later, Dr. Clark worked at VLSI Technology Inc. designing PC chipsets. He received his PhD in 1992 after receiving his MS in 1987, both in electrical engineering from Arizona State University. He re-joined Intel in 1992. While at Intel, Dr. Clark also was an adjunct professor at ASU. For the 2003-2004 school year, he was an associate professor at the University of New Mexico. He joined ASU in August 2004. Prof. Clark has been awarded 67 patents, and has about 15 pending. He has published over 85 peer reviewed technical papers. He has approximately 15 years of industry experience in various aspects of chipset, CMOS imager, and microprocessor design, test engineering and TCAD. He contributed to the Pentium, Itanium and XScale microprocessor designs. Most recently, he was a principal engineer at Intel where he managed circuit design for XScale microprocessors.

Research Interests: Circuits and architectures for low power and high performance VLSI, radiation hardened circuit design and CAD for VLSI.

Honors, Distinctions, and Professional Service: Senior member of IEEE; Associate Editor of IEEE Transactions on Circuits and Systems II; Guest Editor of Journal of Solid-state Circuits; Recipient of the Intel Achievement Award and multiple Intel Divisional Recognition Awards.

Recent Publications:

L. Clark and G. Sampson, "Low Power Critical Timing Race Free Programmable Logic Arrays," IEEE J. Solid-State Circuits, vol. 44, 3, 935-946, March 2009.

D. Allee, E. Bawolek, L. Clark, J. Fernando, Z. Li, K. Kaftanoglu, S. O'Rourke H. Shivalingaiah, R. Shringarpure, S. Uppili, S. Venugopal and B. Vogt, "Degradation Effects in a-Si:H Thin Film Transistors and Their Impact on Circuit Performance," IEEE Trans. Elec. Dev., vol. 56, no. 6, 1166-1176, June 2009.

L. Clark, N. Desai and J. Haigh, "Reducing Process Variation Impact on Replica-timed Static Random Access Memories," Integration: The VLSI Journal, 2009.

Douglas Cochran

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Associate Professor, PhD, Harvard University

Douglas Cochran joined the ASU faculty in 1989. Between 2000 and 2005 and again from 2008 through 2010, he was on assignment to program management positions in federal agencies, first at the U.S. Defense Advanced Research Projects Agency and subsequently at the U.S. Air Force Office of Scientific Research. He served as Assistant Dean for Research in the Ira A. Fulton Schools of Engineering between 2005 and 2008. Before coming to ASU, he was a senior scientist at BBN Laboratories. Professor Cochran has served as a visiting scientist at the Australian Defense Science and Technology Organisation, as associate editor of the IEEE Transactions on Signal Processing, and as general co-chair for the 1999 IEEE International Conference on Acoustics, Speech, and Signal Processing and the 1997 U.S.-Australia Workshop on Defense Signal Processing. He holds PhD and SM degrees in applied mathematics from Harvard University and degrees in mathematics from UCSD and MIT.

Research Interests: Sensor signal processing, applied harmonic analysis, detection theory.

Honors and distinctions: Top 5% of Fulton School of Engineering Teaching Faculty Commendation, 2007; U.S. Secretary of Defense Medal for Exceptional Public Service, 2005; Engineering Teaching Excellence Award, 1996-1997.

Selected Recent Publications:

A. Viswanathan, A. Gelb, D. Cochran, and R. Renaut, "On Reconstruction from Non-uniform Spectral Data," Journal of Scientific Computing (in press).

K. Ni, S. Datta, P. Mahanti, S. Roudenko, and D. Cochran, "Using Reed-Muller Sequences as Deterministic Compressed Sensing Matrices for Image Reconstruction," Proceedings of the 2010 IEEE International Conference on Acoustics, Speech, and Signal Processing, Dallas, March 2010.

S. Howard, D. Cochran, W. Moran, and F. Cohen, "Optimal Registration in Networks," Proceedings of the U.S.-Australia Workshop on Defense Applications of Signal Processing, September 2009.

S. Datta, S.D. Howard, and D. Cochran, "Sampling of Homogeneous Polynomials," Proceedings of the International Workshop on Sampling Theory and Applications, May 2009.

Rodolfo Diaz
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During his 20 years in the aerospace industry, Dr. Diaz has worked on many aspects of the interaction between electromagnetic waves and materials, from lightning protection on the space shuttle to the design of microwave lenses and high-temperature broadband radomes for radar missiles to the design and manufacture of radar-absorbing structures for stealth applications. He joined the ASU faculty in 1998 and currently is an associate professor of electrical engineering. Dr. Diaz is the former associate director of the Consortium for Metrology of Semiconductor Nanodefects. He is currently the interim director of the Consortium for Engineered Materials at ASU. He also holds 21 patents ranging from the design of broadband radomes to the amplification of magnetic fields.

Research Interests: Optical scattering of subwavelength objects in complex environments and nanophotonics, analytic theory of natural and artificial media, measurement of electromagnetic properties of materials, combined computational mechanics and electromagnetics.

Honors and Distinctions: 1994 Association of Interamerican Businessmen Award to Distinguished Young Executives in the Professional Category for Excellence in Engineering, San Juan, Puerto Rico.

Selected Publications:

Sang-Soo Je, F. Rivas, R. E. Diaz, J. Kwon, J. Kim, B. Bakkaloglu, S. Kiaei, and J. Chae, "A Compact and Low-Cost MEMS Loudspeaker for Digital Hearing Aids," IEEE Trans. Biomed. Circ. Sys., vol. 3, no. 5, pp. 348-358, Oct. 2009.

A. H. Panaretos and Diaz, R. E. "A simple and accurate methodology to optimize parameter dependent finite-difference time-domain schemes," IEEE Transactions on Microwave Theory and Techniques, vol. 56, no. 5, pp. 1125-1136, May 2008.

A. H. Panaretos, J. T. Aberle, and R. E. Diaz, "The effect of the 2-D Laplacian operator approximation on the performance of finite difference time-domain schemes for Maxwell's equations," Journal of Computational Physics, vol. 227, issue 1, 513-536, November 2007.

Tolga M. Duman
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Professor, PhD, Northeastern University

Tolga M. Duman received a BS from Bilkent University, Turkey in 1993 and his MS and PhD degrees from Northeastern University in 1995 and 1998, respectively, all in electrical engineering. He has been with ASU's School of Electrical, Computer and Energy Engineering since August 1998.

Research Interests: Digital communications, wireless and mobile communications, channel coding, coded modulation, multi-user communications, information theory, and underwater acoustic communications.

Honors and Distinctions: NSF CAREER Award, 2000; IEEE Third Millennium Medal; Editor for IEEE Transactions on Wireless Communications (2003-2008) and IEEE Transactions on Communications (2007-present).

Selected Publications:

Tolga M. Duman and Ali Ghrayeb, Coding for MIMO Communication Systems, Wiley, 2007.

Dario Fertonani and Tolga M. Duman, "Novel Bounds on the Capacity of Binary Deletion Channel," IEEE Trans. on Information Theory, vol. 56, no. 6, pp. 2753-2765, June 2010.

Jun Hu, Tolga M. Duman, M. Fatih Erden, and Aleksandar Kavcic, "Achievable Information Rates for Channels with Insertions, Deletions and Intersymbol Interference with i.i.d. Inputs," IEEE Trans. on Communications, vol. 58, no. 4, pp.1102-1111, April 2010.

Ahmet B. Keha and Tolga M. Duman, "Minimum Distance Computation of LDPC Codes Using a Branch and Cut Algorithm," IEEE Trans. on Communications, vol. 58, no. 4, pp. 1072-1079, April 2010.

Subhadeep Roy, Tolga M. Duman and Vincent McDonald, "Error Rate Improvement in Underwater MIMO Communications Using Sparse Partial Response Equalization," IEEE Journal of Oceanic Engineering, vol. 34, issue 2, pp. 181-201, April 2009.

Richard Farmer
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Research Professor, MS, Arizona State University

Richard Farmer has over 50 years of electric power industry experience. He has been a teaching associate and adjunct professor at Arizona State University since 1966. He has co-authored a book on the application of series capacitors in power systems and has written over 40 industry papers.

Research Interests: Extra-high voltage (EHV) project planning and interaction of turbine generators with EHV transmission systems.

Honors and Distinctions: IEEE Fellow; NSPE Arizona Engineer of the Year; IEEE Power System Engineering Distinguished Service Award; IEEE Third Millennium Medal; IEEE Power System Dynamic Performance Committee Distinguished Service Award; IEEE Phoenix Section Senior Engineer of the Year Award, 2004; National Academy of Engineering Member; Colorado State University Distinguished Alumnus Award; IEEE Charles Concordia Power System Engineering Award; IEEE Power Engineering Society Fellows Committee Chair; National Academy of Engineering Peer Review Committee; 2010 IEEE Power and Energy Society Outstanding Power Engineering Educator Award.

Selected Publications:

S. R. Puchalapalli, R. G. Farmer, G. G. Karady, J. Hernandez, and Y. Suh, "Z-Bus based Frequency Scanning Program for Sub-Synchronous Resonance Screening," Proceedings of 2007 IEEE Lausanne, Power Tech Conference, Lausanne Switzerland.

R. G. Farmer, B. L. Agrawal, and D. G. Ramey "Power System Dynamic Interaction with Turbine-Generators," Electric Power Engineering Handbook, Boca Raton, FL: CRC Press, 2007.

R. G. Farmer, and E. H. Allen, "Power System Dynamic Performance Advancement from History of North American Blackouts," Proceedings of the 2006 IEEE PES Power Systems Conference and Exposition, Oct. 29-Nov. 1, 2006, Atlanta, GA.

P. Sirisooriya, G. G. Karady, and R. G. Farmer, "A Flow-based Approach for Evaluating Fuel Cell Interconnections to a Distribution Feeder," Proceedings of 2005 IEEE St. Petersburg Power Tech Conference.

E. Kyriakides and R. G. Farmer, "Modeling of Damping for Power System Stability Analysis," Electric Power Components and Systems Journal, vol. 32, no. 8, 827-837, August 2004.

David K. Ferry

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Regents' Professor, PhD, University of Texas

David Ferry joined ASU in 1983 following stints at Texas Tech University, the Office of Naval Research and Colorado State University. He has published more than 750 articles, books and chapters and has organized many conferences.

Research Interests: Transport physics and modeling of quantum effects in submicron semiconductor devices, scanning gate microscopy of quantum properties of mesoscopic devices.

Honors and Distinctions: Regents' Professor at ASU; IEEE Cledo Brunetti Award, 1999; Fellow of the American Physical Society; Fellow of IEEE; Fellow of Institute of Physics; ASU Graduate Mentor Award, 2000; IEEE Engineer of the Year, 1990, Phoenix Section; outstanding research awards at Texas Tech University and Colorado State University.

Selected Publications:

F. A. Marino, N. Faralli, T. Palacios, D. K. Ferry, S. M. Goodnick, and M. Saraniti, "Effects of threading dislocations on AlGaN/GaN high-electron mobility transistors," IEEE Transactions on Electron Devices, vol. 57, 353-360 (2010).

A. M. Burke, R. Akis, T. E. Day, G. Speyer, D. K. Ferry, and B. R. Bennett, "Periodic scarred states in open quantum dots as evidence of quantum Darwinism," Physical Review Letters, Vol. 104, 176801 (4 pages) (2010).

D. K. Ferry, L. Huang, R. Yang, Y.-C. Lai, and R. Akis, "Open quantum dots in graphene: Scaling relativistic pointer states," Journal of Physics Conference Series, vol. 220, 012015 (15 pages) (2010).

D. K. Ferry, "Quantum computing and probability," Journal of Physics Condensed Matter, vol. 21, 474201 (6 pages) (2009).

David H. Frakes

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Assistant Professor, PhD, Georgia Institute of Technology

David Frakes joined ASU in the spring of 2008. He received the BS degree in Electrical Engineering and MS degrees in Electrical Engineering and Mechanical Engineering from the Georgia Institute of Technology, where he also earned a PhD in Bioengineering and performed post-doctoral work.

Research Interests: general - image and video processing, fluid dynamics, machine vision; specific - endovascular treatment of cerebral aneurysms, surgical planning for congenital heart defects, suppression of atmospheric distortion in video, and control of flexible systems.

Honors and Distinctions: Mimics Innovation Award (2010); Phase I SBIR Award (2010); Arizona State University Centennial Professor of the Year Award (2009); Georgia Institute of Technology Council of Outstanding Young Alumni (2007).

Selected Publications:

Babiker, M., Gonzalez, L., Albuquerque, F., Collins, D., Elvikis, A., Frakes, D., "Quantitative Effects of Coil Packing Density on Cerebral Aneurysm Fluid Dynamics: An In Vitro Steady Flow Study," Annals of Biomedical Engineering, vol. 38 (7), pp. 2293-301, July 2010.

Sundareswaran, K., Frakes, D., Fogel, M., Soerensen, D., Oshinski, J., Yoganathan, A, "Optimum Fuzzy Filters for Phase-Contrast Magnetic Resonance Imaging Segmentation," Journal of Magnetic Resonance Imaging, vol. 29 (1), pp. 155-65, Jan 2009.

D. Frakes, K. Kanter, R. Krishnankutty, K. Pekkan, J. Rossignac, S. Sharma, K. Sundareswaran, K. Pekkan, B. Whited and A. Yoganathan, "Patient-Specific Surgical Planning and Hemodynamic Computational Fluid Dynamic Optimization through Free-Form Haptic Anatomy Editing Tool (SURGEM)," Medical and Biological Engineering and Computing, vol. 46:11, 139-52, November 2008.

J. Carberry, L. P. Dasi, D. Frakes, H. D. Kitajima, H. L. Leo, K. Pekkan, H. Simon, K. Sundareswaran, A. P. Yoganathan and D. de Zelicourt, "Modified Control Grid Interpolation for the Volumetric Reconstruction of Fluid Flows," Experiments in Fluids, vol. 45:6, 987-97, December 2008.

Gennady Gildenblat

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Gennady Gildenblat received the MSEE (with honors) from the St. Petersburg Electrical Engineering Institute in 1975 and the PhD degree in solid-state physics from the Rensselaer Polytechnic Institute in 1984. He works in the areas of semiconductor device physics and modeling, novel semiconductor devices, and semiconductor transport. Dr. Gildenblat has over 140 publications in these areas, including several books, invited articles and US patents. In 1980, he joined the General Electric Corporate Research and Development Center in Schenectady, NY, where he was engaged in various aspects of semiconductor device physics and IC technology development. Between 1984 and 1986, he supervised the Cryogenic CMOS device engineering study at the Digital Equipment Corporation in Hudson, MA. From 1986, Dr. Gildenblat was with The Pennsylvania State University, until in 2006 when he joined Arizona State University. He has developed advanced surface-potential-based SP and PSP compact MOSFET models. The PSP model (joint development with Phillips) was selected as a new international industry standard by the Compact Model Council (PSPmodel.asu.edu) in 2006. PSP-based compact varactor model (joint development with Jazz Semiconductor) became another industry standard in 2007.

Research Interests: Physics and modeling of semiconductor devices, semiconductor transport physics, integrated circuit technology.

Honors and Distinctions: Fellow of IEEE; recipient of the 2006 Semiconductor Research Corporation Technical Excellence Award.

Selected Publications:

G. Dessai, G. Gildenblat, "Solution space for the independent-gate asymmetric DGFET ," Solid-State Electronics, vol. 54, pp. 382-384, 2010.

G. Dessai, A. Dey, G. Gildenblat, and G. D. J. Smit, "Symmetric linearization method for double-gate and surrounding-gate MOSFET model," Solid-State Electronics, vol. 53, pp. 548-556, 2009.

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Stephen Goodnick is presently Director of the Arizona Initiative for Renewable Energy within the ASU Lightworks. He recently served as Associate Vice President for Research from 2006-2008. He came to ASU in Fall 1996 as department chair. Prior to that, he was a professor of electrical and computer engineering at Oregon State University. He has also been a visiting scientist at the Solar Energy Research Institute and Sandia National Laboratories and a visiting faculty member at the Walter Schottky Institute, Munich, Germany; the University of Modena, Italy; the University of Notre Dame, and Osaka University, Japan. He served as President (2003-2004) of the Electrical and Computer Engineering Department Heads Association (ECEDHA), and as program chair of the Ninth IEEE Conference on Nanotechnology. Dr. Goodnick has published over 195 refereed journal articles, books and book chapters.

Research Interests: Solid state device physics, transport in nanostructures, nanoelectronic devices and circuits, computational electronics, RF and microwave devices, optoelectronic and energy conversion devices.

Honors and Distinctions: Fellow, IEEE, 2004; Alexander von Humboldt Research Fellow, Germany, 1986; College of Engineering Research Award, Oregon State University, 1996; Colorado State University College of Engineering Achievement in Academia Award, 1998; IEEE Phoenix Section Society Award for Outstanding Service, 2002.

Selected Publications:

D. Vasileska, S. M. Goodnick, and G. Klimeck, Computational Electronics: Semi-Classical and Quantum Device Modeling and Simulation, (Taylor and Francis, UK, 600 pages) 2010.

F. A. Marino, N. Faralli, T. Palacios, D. K. Ferry, S. M. Goodnick, and M. Saraniti, "Effects of threading dislocations on AlGaN/GaN high-electron mobility transistors," IEEE Transactions on Electron Devices 57, no. 1, 353-360 (2010).

D. K. Ferry, S. M. Goodnick, and J. Bird, Transport in Nanostructures, 2nd Ed., Cambridge University Press, (Cambridge, U.K., 650 pages) 2009.

S. Yamakawa, R. Akis, N. Faralli, M. Saraniti, S. M. Goodnick, "Rigid ion model of high field transport in GaN," Special Issue of the Journal of Physics: Condensed Matter 21, no. 17, 174206-174222 (2009).

Ravi Gorur
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Professor, PhD, University of Windsor, Canada

Dr. Ravi Gorur joined the faculty at ASU in 1987 as an assistant professor after graduating with a PhD from the University of Windsor, Canada, in 1986. Since 1995, he has held the position of professor, and presently he is the Program Chair in the School of Electrical, Computer and Energy Engineering. Dr. Gorur is a Fellow of the IEEE and the U.S. representative to CIGRE study committee D1 "Materials for Advanced Technologies." He has authored a textbook on outdoor insulators and more than 150 papers in IEEE journals and conferences on the subject of outdoor insulators for electric power transmission and distribution. He works in other related areas such as liquid dielectrics and dielectrics for aircraft and communications systems. He teaches a short course on the subject of insulators that is offered to the industry annually.

Research Interests: Dielectrics and electrical insulating materials for outdoor power delivery, nanodielectrics, electric field calculations, HV testing techniques and computer-aided design.

Honors and Distinctions: IEEE Fellow, 1999; U.S. representative to CIGRE Study Committee D1 (materials for advanced technologies).

Selected Publications:

G. Iyer, R. S. Gorur, A. Krivda and P. Mahonen, "Prediction of electrical performance of medium voltage epoxy insulated equipment," IEEE Transactions on Dielectrics and Electrical Insulation, vol. 17, no. 2, pp. 334-342, 2010.

D. Rodriguez, R. S. Gorur and P. Hansen, "Effect of humidity on the breakdown characteristics of air in nonuniform fields at 30 kHz," IEEE Transactions on Dielectrics and Electrical Insulation, vol. 17, no. 1, pp. 45-52, 2010.

A. Rawat and R. S. Gorur, "Microstructure Based Evaluation of Field Aged and New Porcelain Suspension Insulators," IEEE Transactions on Dielectrics and Electrical Insulation, vol. 16, no. 1, 107-115, 2009.

D. Rodriguez-Sanabria, R. S. Gorur and P. Hansen, "Role of Humidity on the Breakdown Characteristics of Air in Uniform Field Gaps at Very Low Frequency (VLF)," IEEE Transactions on Dielectrics and Electrical Insulation, no. 2172, 2009.

R. S. Gorur, "A Balanced Approach to Insulator Selection and Specification," INMR World Congress on Insulators, Arrester and Bushings, CRETE, 10-20, 2009.

Michael Goryll
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Assistant Professor, PhD, RWTH Aachen University, Germany

Michael Goryll joined the faculty in 2007. He received a PhD in Physics in 2000 and a Diplom in Physics in 1997, both from the RWTH Aachen University, Germany. He performed his post-doctoral research on biosensors at ASU during the years 2003-2005. Before joining ASU, Dr. Goryll spent several years at the Research Centre Juelich, the largest national research lab in Germany, focusing on SiGe Chemical Vapor Deposition and biosensor development.

Research Interests: Surface and interface physics, new materials in CMOS processing, fabrication of nanoscale semiconductor devices, biosensors based on silicon, biological signal transduction phenomena, electrophysiological properties of cell membrane ion channels, lownoise analog amplifier circuit design, electronic instrumentation for biophysical measurements.

Honors and Distinctions: Helmholtz Research Fellowship for outstanding young investigators granted by the Research Centre Julich, Germany (2001-2005); Post-Graduate Scholarship granted by the RWTH Aachen University, Germany (1997-2000).

Selected Publications:

M. Goryll and N. Chaplot, "Miniaturized Ion Channel Reconstitution Platform Based on Silicon Microfabrication," Biophysical Journal 96 (3), 51a, 2009.

F. Lanzerath, D. Buca, H. Trinkaus, M. Goryll, S. Mantl, J. Knoch, U. Breuer, W. Skorupa, and B. Ghyselen, "Boron Activation and Diffusion in Silicon and Strained Silicon-On-Insulator by Rapid Thermal and Flash Lamp Annealings," Journal of Applied Physics 104 (4), 044908-1-7, 2008.

S. J. Wilk, L. Petrossian, M. Goryll, T. J. Thornton, S. M. Goodnick, J. M. Tang, and R. S. Eisenberg, "Integrated electrodes on a silicon based ion channel measurement platform," Biosensors & Bioelectronics 23 (2), 183-190, 2007.

K. M. Indlekofer, M. Goryll, J. Wensorra, and M. I. Lepsa, "Quantum point contact due to Fermi-level pinning and doping profiles in semiconductor nanocolumns," Applied Physics A 87 (3), 559-562, 2007.

Gerald T. Heydt

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Regents' Professor, PhD, Purdue University

Gerald Thomas Heydt is from Las Vegas, NV. He holds a BEEE degree from the Cooper Union in New York and MSEE and PhD degrees from Purdue University. He spent approximately 25 years as a faculty member at Purdue, and in 1994, he took the position of site director of the NSF and industrially supported Power Systems Research Center at ASU. He has industrial experience with the Commonwealth Edison Company in Chicago, E.G. & G. in Mercury, NV, and with the United Nations Development Program. In 1990, he served as the program manager of the National Science Foundation program in power systems engineering. He is the author of two books in the area of power engineering. Dr. Heydt is a Regents' Professor at ASU; he is a member of the National Academy of Engineering, and a Fellow of the IEEE.

Research Interests: Power engineering, electric power quality, distribution engineering, transmission engineering, computer applications in power engineering, power engineering education, power system sensors and instrumentation.

Honors and Distinctions: Fellow of the IEEE; member of the United States National Academy of Engineering; Edison Electric Institute Power Engineering Educator Award, 1989; IEEE Power Engineering Society Power Engineering Educator of the Year, 1995.

Selected Publications:

J. W. Stahlhut, T. J. Browne, G. T. Heydt, and V. Vittal, "Latency Viewed as a Stochastic Process and its Impact on Wide Area Power System Control Signals," IEEE Transactions on Power Systems, vol. 23, no. 1, 84-91, February 2008.

E. Kyriakides, M. M. Albu, G. T. Heydt, "Identification of the Standard Parameters of a Steam Turbine – Generator Using Wavelet Denoising," Journal of Electric Power Components and Systems, vol. 38, no. 10, 1145-1158, October 2007.

R. Perez, G. Heydt, G. Karady, and J. Ramirez, "Electrical and Environmental Considerations of an Arizona - Mexico HVDC Tie," Journal of Electric Power Components and Systems, vol. 35, no. 9, 1027-1040, September 2007.

Keith Holbert

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Office: ERC 581
Associate Professor, PhD, University of Tennessee

Keith Holbert joined the faculty in 1989. He is a registered professional engineer and has published over 100 journal and conference papers.

Research Interests: Process monitoring and diagnostics, sensor fault detection, instrumentation development, fuzzy logic, spacecraft charging, and radiation effects on electronics.

Honors and Distinctions: Tau Beta Pi; Teaching Excellence Award from ASU College of Engineering, 1997; IEEE Senior Member; Outstanding Faculty Award, IEEE Phoenix Section, 2007.

Selected Publications:

K. Lin, K. E. Holbert, "Void Diagnostics in Liquid-filled Pressure Sensing Lines," Progress in Nuclear Energy, vol. 52, no. 5, pp. 503-511, July 2010.

K. E. Holbert, G. G. Karady, S. G. Adhikari, M. L. Dyer, "Magnetic Fields Produced by Underground Residential Distribution System," IEEE Transactions on Power Delivery, vol. 24, no. 3, pp. 1616-1622, July 2009.

K. E. Holbert and K. Lin, "Applying the Equivalent Pi Circuit to the Modeling of Hydraulic Pressurized Lines," Mathematics and Computers in Simulation, vol. 79, no. 7, 2064-2075, March 2009.

G. G. Karady and K. E. Holbert, "Strategies, Challenges and Prospects for Active Learning in the Computer-Based Classroom," IEEE Transactions on Education, vol. 52, no. 1, 31-38, February 2009.

K. E. Holbert and K. Lin, "Blockage Diagnostics for Nuclear Power Plant Pressure Transmitter Sensing Lines," Nuclear Engineering and Design, vol. 239, no. 2, 365-372, February 2009.

Christiana Honsberg

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Professor Christiana Honsberg joined the electrical engineering faculty in 2008. She received her BS, MS, and PhD from University of Delaware in 1986, 1989, and 1992, respectively, all in electrical engineering. Before joining the ASU faculty, Honsberg was an associate professor and director for the high performance solar power program at the University of Delaware. She currently holds one patent in the U.S., Japan, and Europe; three patents are pending.

Research Interests: Ultra-high efficiency solar cells, and silicon solar cells

Selected Publications:

S. P. Bremner, M. Y. Levy, and C. B. Honsberg, "Limiting Efficient of an Intermediate Band Solar Cell Under a Terrestrial Spectrum," submitted Applied Physics Lett., February 2008.

S. P. Bremner, G. M. Liu, N. Faleev, K. Gosh, and C. B. Honsberg, "Growth and characterization of GaAs1−xSbx barrier layers for advanced concept solar cells," Journal of Vacuum Science and Technology B, vol. 26, issue 3, pp. 1149-1152, May 2008.

C. B. Honsberg and M. Y. Levy, "Nanostructured Absorbers for Multiple Transition Solar Cells," IEEE Transaction on Electron Devices, vol. 56, no. 3, 706-711, 2008.

S. P. Bremner, M. Y, Levy, and C. B. Honsberg, "Analysis of Tandem Solar cell Efficiencies under AM 1.5G Spectrum Using a Rapid Flux Calculation Method," Progress in Photovoltaics: Research and Application, available online, February 2008.

O. Jani, I. Ferguson, C. B. Honsberg, and S. Kurtz, "Design and Characterization of GaN/InGaN Solar Cells," Applied Physics Lett., vol. 91, no. 13, 1-3, 2007.

N. Fleev, C. B. Honsberg, O. Jani, and I. Ferguson, "Crystalline Perfection of GaN and A1N Epitaxial Layer and the Main Features of Structural Transformation of Crystalline Defects," Journal of Crystal Growth, vol. 300, 1400-1405, 2006.

O. K. Jani and C. B. Honsberg, "Absorption and Transport via Tunneling in a Quantum Well Solar Cells," Solar Energy, July 28, 2006.

B. S. Richards, S. F. Rowlands, A. Ueranatasun, J. E. Cotter, and C. B. Honsberg, "Potential Cost Reduction of Buried-Contact Solar Cells Through the Use of Titanium Dioxide Thin Films," Solar State Electronics, vol. 50, 1400-1405, 2006.

Joseph Hui
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ISS Chair Professor, PhD, Massachusetts Institute of Technology

Joseph Y. Hui joined ASU as ISS Chair Professor in 1999. He received his BS, MS, and PhD degrees from MIT. He held research and teaching positions at Bellcore, Rutgers University, Columbia University, and the Chinese University of Hong Kong before joining ASU. He founded and holds presidency for Nuon Labs and its subsidiaries, Pcion, Virtuon, and Etherion.

Research Interests: Wireless networks, broadband switching and routing, teletraffic analysis, coding and information theory, virtualization and cloud computing, renewable energy.

Honors and Distinctions: ISS Chair Professor; IEEE Fellow, 1996; HKIE Fellow, 1998; NSF Presidential Young Investigator, 1990; IEEE William Bennett Prize Paper Award, 1984; Henry Rutgers Research Fellow, 1989.

Selected Publications:

"Terabit Ethernet: Access and Core Switching Using Time-Space Carrier Sensing," Accepted for publication, IEEE Systems Journal Special Issue on Broadband Access Networks, January 2011.

J. Hui, and D. Daniel, "Terabit Ethernet: A Time-Space Carrier Sense Multiple Access Method," Proceedings of the 2008 IEEE Globecom, 1-6, 2008.

J. Hui, and L. Li, "First-fit Scheduling for Multistage Packet Switching Networks," Proceedings of 2008 High Performance Switching and Routing Symposium, 197-202, also published as journal paper in 2008.

J. Hui, and D. Daniel, "Virtualization of Local Computer Bus Architectures over the Internet," IEEE Globecom 2007 Internet Protocol Symposium, November 2007.

J. Hui, and P. C. Gurumohan, "Selfish Vs. Social Routing with Competitive Traffic Pricing," in Proceeding of 43rd Annual Allerton Conference on Communication, Control, and Computing, 341-345, September 2005.

J. Hui, S. B. Narasimhamurthy, P. C. Gurumohan, and S. Sreenivasamurthy, "Quanta Data Storage: An Information processing and Transportation Architecture for Storage Area Networks," IEEE Journal on Selected Areas in Communications, vol. 23, issue 10, 2032-2040, October 2005.

Bahar Jalali-Farahani
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Assistant Professor, PhD, Ohio State University

Bahar Jalali-Farahani joined ASU in spring 2006 as an assistant professor. She received her PhD in electrical engineering from The Ohio State University in 2005, and BS and MS degrees in electrical engineering from the University of Tehran, Tehran, Iran in 1996 and 1999, respectively.

Research Interests: Analog integrated circuits especially low-power high-performance designs, reliability issues in deep submicron technology, calibration techniques for analog to digital converters, circuit design for extreme environments, and analog design for wireless communication systems.

Selected Publications:

B. Jalali-Farahani, and A. Meruva, "A 14-b 32MS/s Pipelined ADC with Fast Convergence Comprehensive Background Calibration," Journal of Analog Integrated Circuits and Signal Processing, Springer Publisher, 2009.

A. Meruva and B. Jalali-Farahani, "A 14-b 32MS/s Pipelined ADC with Fast Convergence Comprehensive Background calibration," submitted to International Symposium on Circuits and Systems, September 2009.

J. Wang and B. Jalali-Farahani, "A CT MASH ΣΔ Modulator with Adaptive Digital Tuning for Analog Circuit Imperfections," Midwest Symposium on Circuits and Systems, 646-649, August 2008.

S. Thirunakkarasu A. I. Hossain and B. J. Farahani, "Sigma Delta Modulators with Modified Hybrid Integrators," Midwest Symposium on Circuits and Systems, 642-645, August 2008.

F. Ge and B. Jalali-Farahani, "A Versatile Chopper-Stabilized Rail-to-Rail Operational Amplifier," Midwest Symposium on Circuits and Systems, 113-116, August 2008.

B. Jalali-Farahani and A. Meruva, "Low Power High Performance Digitally Assisted Pipelined ADC," IEEE Annual Symposium on VLSI, ISVLSI08, 111-116, April 2008.

B. Jalali-Farahani and M. Ismail, "Adaptive Noise Cancellation Techniques in Sigma–Delta Analog-to-Digital Converters," IEEE Transactions on Circuits and Systems I, vol. 54, issue 9, 1891-1899, September 2007.

George G. Karady
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Professor, PhD, University of Technical Sciences, Budapest

George G. Karady received his MS and PhD degrees in electrical engineering from the Technical University of Budapest. He was appointed as Salt River Chair Professor at ASU in 1986. Previously, he was with EBASCO Services where he served as chief consulting electrical engineer, manager of electrical systems and chief engineer of computer technology. He was the electrical task supervisor for the Tokomak Fusion Test reactor project in Princeton. He has graduated 19 PhD and 40 MS students. Dr. Karady is an IEEE Fellow. He has published a book and has more than120 journals and 180 conference publications.

Research Interests: Power electronics, high voltage engineering and power systems.

Honors and Distinctions: Fellow of IEEE; Chaired Award Committee of the IEEE PES Chapters and Membership Division from 2000-2005; President, IEEE Phoenix Section, 2004; Honorary Doctoral Degree, Technical University of Budapest, 1994; IEEE Third Millennium Medal, 1999; IEEE Power Engineering Society Working Group (WG) Recognition Award, 2002 as Chair of WG, which prepared the IEEE Standard 1313-2.

Selected Publications:

K. E. Holbert and G. G. Karady, "Strategies, Challenges and Prospects for Active Learning in the Computer Based Classroom," IEEE Transaction on Education, vol. 52, no. 1, 31-38, February 2009.

M. Argin and G. G. Karady, "Characterization of Polyurethane Dielectric Strength," IEEE Transactions on Dielectrics and Electrical Insulation, vol. 15, 50-356, 2008.

G. G. Karady, E. Al-Ammar and S. Venkataraman, "Performance Evaluation of Insulating Links Used for Worker Protection in Cranes," IEEE Transactions on Dielectrics and Electrical Insulation, vol. 15, pp. 453-460, 2008.

Lina Karam

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Professor, PhD, Georgia Institute of Technology

Lina J. Karam received her BA in engineering from the American University of Beirut in 1989, and the MS and PhD degrees in electrical engineering from the Georgia Institute of Technology in 1992 and 1995, respectively. She is currently a full professor and is also the director of the Image, Video, and Usability, the Multi-Dimensional DSP and the Real-Time Embedded Signal Processing Labs at ASU. Prof. Karam is the recipient of a National Science Foundation CAREER Award and a NASA Technical Innovation Award. She served as the technical program chair of the 2009 IEEE International Conference on Image Processing. She also served as the lead guest editor for the special issue on "Visual Quality Assessment" of the IEEE Journal on Selected Topics in Signal Processing. She is currently General Chair (together with Ron Schafer) of the 2011 IEEE DSP/SPE workshops. Dr. Karam serves on the editorial boards of several journals and as an elected member of several IEEE Technical Committees.

Research Interests: Image and video processing, compression, and transmission, visual quality assessment, human visual perception, multidimensional signal processing, digital filtering, source coding, and bio-medical imaging.

Honors and Distinctions: Society of Women Engineers Outstanding Graduate Student Award (1994); U.S. National Science Foundation CAREER Award (1998); Professional Leadership & Service Recognition from the IEEE Signal Processing and the IEEE Communications societies (1999); Associate Editor Service Recognition, March 2002; Senior Member, IEEE, January 2003; Outstanding Technical Contributions Award, Digital Signal Processing, IEEE Phoenix Section, Jan. 2005; ASU Last Lecture Series Nomination, 2005; NASA Technical Innovation Award, 2006.

Selected Publications:

Lina J. Karam, "Lossless Image Compression," in The Essential Guide to Image Processing, Al Bovik Editor, Chapter 16, pages 385-417, Elsevier Academic Press, 2009.

Wei-Jung Chien and Lina J. Karam, "Transform-Domain Distributed Video Coding with Rate-Distortion Based Adaptive Quantization," IET Image Processing Journal, Special Issue on Distributed Video Coding, vol. 3, no. 6, pp. 340-354, Dec. 2009.

Sayfe Kiaei

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Associate Dean for Research, Professor, Motorola Chair in Analog and RF Integrated Circuits, PhD, Washington State University

Dr. Kiaei joined the faculty at Arizona State University in January 2001. From 1993 to 2001, he was a senior member of the technical staff with the Wireless Technology Center and Broadband Operations at Motorola. Kiaei is an IEEE Fellow and a member of IEEE's Circuits and Systems Society, Solid State Circuits Society, and Communication Society.

Research Interests: Wireless transceiver design, RF and mixed-signal ICs

Honors and Distinctions: IEEE Fellow; IEEE Microwave Techniques and Society (MTT) Fellow; Carter Best Teacher Award; IEEE Darlington Award; Global Standards Award (ITU Standards); IEEE Circuits and Systems Society Best Paper Award; Motorola 10X Design Award; IEEE Fellow Selection Committee Chair; IEEE Fellow Committee Award; Associate Dean for Research at ASU's Ira A. Fulton Schools of Engineering; Director of the Connection One Center (NSF I/UCRC Center).

Selected Publications:

Kitchen, J. N., Chu, C., Kiaei, S., Bakkaloglu, B., "Combined Linear and Delta-Modulated Switch-Mode PA Supply Modulator for Polar Transmitters," IEEE Journal of Solid-State Circuits, vol. 44, no. 2, pp. 404-413, Feb. 2009.

Hyungseok, K., Junghan L., Copani, T., Bazarjani, S., Kiaei, S., Bakkaloglu, B., "Adaptive Blocker Rejection Continuous-Time SD ADC for Mobile WiMAX Applications," IEEE Journal of Solid-State Circuits, vol. 44, no.10, pp. 2766-2779, Oct. 2009.

Sang-Soo Je., Rivas, F., Diaz, R. E., Jiuk, K., Jeonghwan K., Bakkaloglu, B., Kiaei, S., Junseok, C., "A Compact and Low-Cost MEMS Loudspeaker for Digital Hearing Aids," IEEE Transactions on Biomedical Circuits and Systems, vol. 3, no. 5, pp. 348-358, Oct. 2009.

Wing-Yee C., Bakkaloglu, B., Kiaei, S., "A 10 MHz Bandwidth, 2 mV Ripple PA Regulator for CDMA Transmitters," IEEE Journal of Solid-State Circuits, vol. 43, no.12, pp. 2809-2819, Dec. 2008

Taleie, S. M., Copani, T., Bakkaloglu, B., Kiaei, S., "A Linear Digital IF to RF SD DAC Transmitter With Embedded Mixer," IEEE Transactions on Microwave Theory and Techniques, vol. 56, no. 5, pp. 1059-1068, May 2008.

Michael N. Kozicki

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Director, Center for Applied Nanoionics

Michael Kozicki joined ASU in 1985 from Hughes Microelectronics. Kozicki is a professor of Electrical Engineering and the director of the Center for Applied Nanoionics. He has served as interim and founding director of Entrepreneurial Programs and director of The Center for Solid State Electronics Research in the Ira A. Fulton Schools of Engineering at ASU. He develops new materials, processes and device structures for next generation integrated circuits and systems. Kozicki holds several dozen key patents in programmable metallization cell technology, in which solid electrolytes are used for the storage and control of information and for the manipulation of mass on the nanoscale. He has published extensively, developed undergraduate and graduate courses in solid state electronics and is a frequent invited speaker at international meetings. He is also a founder of Axon Technologies, an ASU spin-off company involved in the development and licensing of solid-state ionic technologies. Kozicki is a Visiting Professor at the University of Edinburgh in the United Kingdom, and Adjunct Professor at GIST in Korea.

Research Interests: Integrated/solid-state nanoionics, low-energy non-volatile memory, self-healing electrodes and interconnects, and nano-electromechanical systems (NEMS).

Honors and Distinctions: Founder, Axon Technologies Corporation; Visiting Professor, College of Science and Engineering, University of Edinburgh; Adjunct Professor, GIST, Korea; Founding Member, Globalscot Network; Chartered Engineer (UK/EC Professional Engineer); Charter Member of the ASU Academic Council; ASU Faculty Achievement Award (Most Significant Invention), 2007; Best Paper Awards, Non-Volatile Memory Technology Symposium, 2005 and European Symposium on Phase Change and Ovonic Science, 2006; IEEE Phoenix Section Outstanding Educator, Research Award, 2001.

Selected Publications:

U. Russo, D. Kamalanathan, D. Ielmini, A. L. Lacaita, and M. N. Kozicki, "Study of Multilevel Programming in Programmable Metallization Cell (PMC) Memory," IEEE Transactions on Electron Devices, vol. 56, issue 5, 1040-1047, 2009.

Ying-Cheng Lai

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Ying-Cheng Lai joined the ASU faculty in 1999. Prior to that, he was an associate professor of physics and mathematics at the University of Kansas. He has authored or co-authored over 300 papers, including about 275 published in refereed journals. In the past five years, he has given about 50 invited seminars and colloquia worldwide.

Research Interests: Nonlinear dynamics, quantum transport in nanostructures, complex networks, signal processing, and biological physics.

Honors and Distinctions: Outstanding Referee Award, American Physical Society, 2008; NSF ITR Award, 2003; Fellow of the American Physical Society since 1999; AFOSR/White House Presidential Early Career Award for Scientists and Engineers, 1997; NSF Faculty Early Career Award, 1997; Undergraduate Teaching Award in Physics, University of Kansas, 1998; Institute for Plasma Research Fellowship, University of Maryland at College Park, 1992; Ralph D. Myers Award for Outstanding Academic Achievement, University of Maryland at College Park, 1988.

Selected Publications:

J. Ren, W.-X. Wang, B. Li, and Y.-C. Lai, "Noise bridges dynamical correlation and topology in coupled oscillator networks," Physical Review Letters, vol. 104, 058701 (1-4) (2010).

Q.-F. Chen, L. Huang, Y.-C. Lai, C. Grebogi, and D. Dietz, "Extensively chaotic motions in electrostatically driven nanowires and applications," Nano Letters, vol. 10, 406-413 (2010).

W.-X. Wang, R. Yang, and Y.-C. Lai, "Cascade of elimination and emergence of pure cooperation in coevolutionary games on networks," Physical Review E (Rapid Communications), vol. 81, 035102(R)(1-4) (2010).

T. Tel and Y.-C. Lai, "Quasipotential approach to critical scaling in noise-induced chaos," Physical Review E 81, 056208(1-8) (2010).

L. Huang, Y.-C. Lai, D. K. Ferry, S. M. Goodnick, and R. Akis, "Relativistic quantum scars," Physical Review Letters, vol. 103, 054101 (1-4) (2009).

Deirdre R. Meldrum

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Dean, Ira A. Fulton Schools of Engineering, Professor of Electrical Engineering, PhD, Stanford University

Deirdre Meldrum joined the ASU faculty in 2007 as Dean of Engineering, Director of the Center for Ecogenomics in the Biodesign Institute, and Professor of Electrical Engineering. Prior to ASU, she was Professor of Electrical Engineering at the University of Washington, where she founded and directed the UW's Genomation Laboratory. Dr. Meldrum is PI, Director of the National Institutes of Health, Center of Excellence in Genomic Sciences, Microscale Life Sciences Center, funded for $36 million (August 2001 – July 2011). She is Editor for the IEEE Transactions on Automation Science & Engineering. She was General Chair for the IEEE Conference on Automation Science & Engineering in 2007, and General Chair of the IEEE BioRobotics Conference in 2008.

Research Interests: Automation in life sciences, automation, micro- and nano-technologies, microscale systems, lab-on-a-chip, single cell, genomics, ecogenomics, robotics, control systems.

Honors and Distinctions: Distinguished Lecturer IEEE Robotics & Automation Society 2006-2009; Dive in the Alvin submersible off R/V Atlantis to 2200m below sea level at Endeavor Ridge in NE Pacific Ocean, August 2007; Elected Fellow of the IEEE, 2004; Elected Fellow of the American Association for the Advancement of Science, 2003; Presidential Early Career Award for Scientists and Engineers, 1996-2001; NIH Special Emphasis Research Career Award, 1993-1998.

Selected Publications:

S. Bhushan, M. Holl, D. Meldrum, T. Ray and H. Zhu, "Characterization of deep wet-etching of fused silica glass for single cell and optical sensor deposition," Journal of Micromaching and Mechanics, accepted for publication 2009.

J. B. Anderson, L. W. Burgess, J. M. Dragavon, M. R. Holl, M. E. Lidstrom, S. C. McQuaide, D. R. Meldrum, T. W. Molter and A. C. Young, "A novel approach for measuring single cell oxygen consumption rates," IEEE Transactions on Automation Science and Engineering, vol. 5, no. 1, 32-42, January 2008.

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Cun-Zheng Ning joined ASU in 2006 as professor of electrical engineering from the NASA Center of Nanotechnology at NASA Ames Research Center, and University Affiliated Research Center (UARC) of University of California at Santa Cruz, where he was a senior scientist, group leader in nanophotonics and task manager in nanotechnology. He was an ISSP Visiting Professor at University of Tokyo (June-September, 2006) and a research assistant professor at University of Arizona. Ning has published over 130 papers and given over 100 invited/plenary/colloquium talks. He was Associate Editor of IEEE J. Quantum Electronics (2001-2003) and Guest Editor of several special issues of IEEE and OSA journals.

Research Interests: Nanophotonics, nanowires, surface plasmons and nanolasers, nanomaterials-based detectors and solar cells, physics of nanostructures and many-body effects, modeling and simulation of optoelectronic devices, quantum optics, and two-photon lasers, geometric phases, stochastic resonances.

Honors and Distinctions: CSC Technical Excellence Award, 2003; CSC Civil Group Presidential Award for Technical Excellence, 2001; MRJ Award for Technical Achievement, 2000; NASA Group Achievement Award, 1999; IEEE/LEOS Distinguished Lecturer Award, 2007-2009.

Selected Publications:

C.Z. Ning, Semiconductor nanolasers, (Invited Tutorial), Phys. Stat. Sol. B247, 774 (2010).

Pan et al., "Continuous Alloy-Composition Spatial Grading and Superbroad Wavelength-Tunable Nanowire Lasers on a Single Chip," Nano Lett., 2009, vol.9, 784 (2009).

M. T. Hill et al., "Lasing in metal-insulator-metal sub-wavelength plasmonic waveguides," Opt. Express, 17, 11107 (2009).

A. Chin et al. "Near Infrared Sub-wavelength-wire lasing," Appl. Phys Letts, 88, 163115, 2006.

C. Z. Ning, "Two-Photon Lasers Based on Intersubband Transitions in Semiconductor Nanostructures," Phys. Rev. Letts, 93, 187403, 2004.

J. Li and C. Z. Ning, "Induced Transparency by Intersubband Plasmon Coupling in a Quantum Well," Phys. Rev. Letts, 93, 087402, 2004.

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Sule Ozev received her BS degree in electrical engineering from Bogazici University, Turkey, and her MS and PhD degrees in computer science and engineering from University of California, San Diego in 1995, 1998, and 2002, respectively. Ozev joined the electrical engineering faculty in August of 2008 and is currently an associate professor. She is an associate editor for IEEE Transactions on VLSI systems and serves on various program committees, including IEEE VLSI Test Symposium (2008-2010), IEEE/ ACM Design Automation Conference (2007-2009), IEEE Test Conference (2007-2010), IEEE International Conference on Computer Design (2004-2010), and IEEE European Test Symposium (2006-2010). She was the general chair for IEEE International Mixed-Signals, Sensors, and Systems, 2009. In 2006, Ozev received the NSF CAREER award. She has published over 70 conference and journal papers and holds one U.S. patent.

Research Interests: Self-test and selfcalibration for wireless transceivers, analysis and mitigation of process variations for mixed signal and digital circuits, fault-tolerant and reconfigurable heterogeneous systems, mixed signal circuit testing.

Honors and Distinctions: Best Paper Award, European Test Symposium, 2009; IBM Faculty Award, 2007; NSF CAREER Award, 2006; Best Paper Award, ICCD, 2005; Best Dissertation Award, University of California, San Diego, 2003; VLSI Test Symposium TTTC Naveena Nagi Award, 2002; IBM Corporation Co-operative Fellowship Award, 2000-2002; UCSD Flaviu Cristian Research Award, 1999-2001.

Selected Publications:

E. Acar and S. Ozev, "Low Cost MIMO Testing for RF Integrated Circuits," in IEEE Transactions on VLSI Systems, 2010.

E. S. Erdogan and S. Ozev, "Detailed Characterization of Transceiver Parameters Through Loop-Back-Based BiST," in IEEE Transactions on VLSI Systems, 2010.

E. Yilmaz and S. Ozev, "Accurate Multi-Specification DPPM Estimation Using Layered Sampling Based Simulation," IEEE International Symposium on Quality Electronic Design, 2010.

Joseph Palais

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Joseph Palais joined the faculty in 1964 and is the Electrical Engineering Graduate Program Chair. He is also Academic Director, Online and Professional Programs for Global Outreach and Extended Education of the Ira A. Fulton Schools of Engineering. He has published a textbook on fiber optics. The book (in English and in translation) has been used in classes worldwide. He has contributed chapters to numerous books, written over 40 research articles in refereed journals, and presented more than 35 papers at scientific meetings. He has presented over 150 short courses on fiber optics.

Research Interests: Fiber optic communications, holography, and distance education.

Honors and Distinctions: Daniel Jankowski Legacy Award; IEEE Life Fellow; IEEE Educational Activities Board Meritorious Achievement Award; IEEE Phoenix Achievement Award; University Continuing Education Association Conferences and Professional Programs Faculty Service Award.

Selected Publications:

"Micro-Optics-Based Components for Networking," Chapter 18 in the Optical Society of America Handbook of Optics (Volume V), 3rd edition, edited by M. Bass, McGraw-Hill, 2010.

G. Heydt, K. Nigim and J. Palais, "E-Learning Opportunities for Electric Power Engineers," IEEE Transactions on Power Systems, vol. 19, no. 3, 1382-1383, August 2007.

J. Palais, "Long Distance Fiber Optic Communications," Section 3.2 in The Electrical Engineering Handbook (Broadcasting and Optical Communication Technology), Ed. R. C. Dorf, CRC Press and IEEE Press, 3rd ed., 2006.

J. Palais, "Fiber Optic Communications," Upper Saddle River: Prentice-Hall, 5th ed., 2005. Translations: Korean, Chinese, Persian, Japanese and Syrian.

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George Pan joined the faculty in 1995 as a professor and the director of the Electronic Packaging Laboratory. He has written three book chapters, published 60 research articles in refereed journals and presented 100 papers at national/international conferences. He has presented short courses on wavelets in electromagnetics at Moscow State University, the University of Canterbury, CSIRO in Sydney, IEEE Microwave Symposium, Beijing University, the Chinese Aerospace Institute and the 13th Electric Performance of Electronic Packaging (EPEP). His book "Wavelets in Electromagnetics and Device Modeling" (©2003) was among John Wiley's best-selling titles.

Research Interests: Computational electromagnetics, high-speed electronics packaging, magnetic resonant imaging RF coil design and analysis, inverse scattering, rough surface scattering, millimeter-wave antenna systems.

Honors and Distinctions: IET Fellow; IEEE Senior Member; Outstanding Paper Award, Government Microcircuit Applications Conference, Nov. 1990.

Selected Publications:

S. Ogurtsov and G. Pan, "An Eigenvalue Based General Dispersion Relation for Conditionally and Unconditionally Stable FDTD Algorithms," IEEE Trans. Antennas and Propg., vol. 56, no. 8, 2572-2583, August 2008.

Z. Huang, G. Pan, and R. Diaz, "A Hybrid ADI and SBTD Scheme for Unconditionally Stable Time-Domain Solutions of Maxwell's Equations," IEEE Transactions on Advanced Packaging, vol. 31, no. 1, 219-226, February 2008.

S. Ogurtsov, G. Pan, and R. Diaz, "Examination, Clarification and Simplification of Stability and Dispersion Analysis for ADI-FDTD and CNSS-FDTD Schemes," IEEE Transactions on Antennas & Propagation, vol. 55, no. 12, 3595-3602, December 2007.

G. Pan, J. Lin, and G. Cheng, "Wavelet Based Deconvolution Algorithm for Time-Domain Near-Field ISAR Imaging," IEEE Transactions on Antennas & Propagation, vol. 55, no. 7, 2013-2021, July 2007.

X. Xie, G. Pan, and S. Hall, "A Crank Nicholson Based Unconditionally Stable Time Domain Algorithm for 2D and 3D Problems," Microwave and Optical Technology Letters, vol. 48, no. 2, 261-265, February 2007.

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Antonia Papandreou-Suppappola joined the ASU faculty as an assistant professor in 1999 and was promoted to Associate Professor in 2004 and Professor in 2008. She was recently elected to the position of Member-at-Large of the IEEE Signal Processing Society Board of Governors (2010-2012), and she is currently the Technical Area Chair for Array Processing and Statistical Signal Processing of the 2010 Asilomar Conference on Signals, Systems, and Computers. She has served as the Guest Editor for the special issue on Waveform-Agile Sensing and Processing for the IEEE Signal Processing Magazine (January 2009); Special Sessions Chair of the 2010 IEEE International Conference of Acoustics, Speech and Signal Processing; General Chair of the 2008 Sensor Signal and Information Processing Workshop; Associate Editor for the IEEE Transactions on Signal Processing (2005-2009); Technical Committee Member of the IEEE Signal Processing Society on Signal Processing Theory and Methods (2003-2008); and Treasurer of the IEEE Signal Processing Society Conference Board (2004-2006).

Research Interests: Waveform-agile sensing, time-frequency processing, stochastic signal processing, biosensing.

Honors and Distinctions: NSF CAREER Award, 2002; IEEE Phoenix Section; Outstanding Faculty for Research Award; 2003; Ira A. Fulton Schools of Engineering Teaching Excellence Award, 2005; Top 5% of Ira A. Fulton Schools of Engineering Teachers Teaching Excellence Award, May 2009; IEEE Phoenix Section Society Research Award for the SenSIP Center, 2008.

Selected Publications:

Y. Li, S. Sira, A. Papandreou-Suppappola, D. Morrell, "Waveform Time-Frequency Characterization for Dynamically Configured Sensing," Chapter B-VII 6 in Principles of Waveform Diversity and Design, (M. Wicks, V. Amuso, E. Mokole, S. Blunt and R. Schneible, Eds.), SciTech Publishing, Inc., 2010.

A. Papandreou-Suppappola, A. Nehorai, R. Calderbank, "Waveform-Agile Sensing and Processing," IEEE Signal Processing Magazine, vol. 26, no. 1, pp. 10-11, January 2009.

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Stephen M. Phillips received a BS degree in electrical engineering from Cornell University in 1984 and MS and PhD degrees in electrical engineering from Stanford University in 1985 and 1988, respectively. From 1988 to 2002, he served on the faculty of Case Western Reserve University. From 1995 to 2002, he also served as director of the Center for Automation and Intelligent System Research, an industry-university-government collaborative at Case. In 2002, he joined the faculty of Arizona State University as professor of electrical engineering and was appointed department chair in 2005 and school director in 2009. He has held visiting positions at the NASA Glenn Research Center and at the University of Washington and is a professional engineer registered in the state of Ohio.

Research Interests: Applications and integration of microsystems including microelectromechanical systems (MEMS), microactuators, neural recording and neural stimulation; applications of systems and control including adaptive control, instrumentation and control of gas-turbine engines, control of microsystems, prosthetics, feedback control over nondeterministic networks.

Selected Publications:

Narendra V. Lakamraju, Stephen M. Phillips, Sameer M. Venugopal, David R. Allee, "MEMS Shock Sensor Fabricated on Flexible Substrate," 8th Annual Flexible Electronics & Displays Conference, Phoenix, AZ, February 2-5, 2009.

A. T. Al-Hammouri, V. Liberatore, M. S. Branicky, and S. M. Phillips, "Complete Stability Region Characterization for PI-AQM," SIGBED Review, vol. 3, no. 2, 1-6, April 2006.

B. Mi, H. Kahn, F. Merat, A. H. Heuer, D. A. Smith, and S. M. Phillips, "Static and Electrically Actuated Shaped MEMS Mirrors," Journal of Microelectromechanical Systems, vol. 14, no. 1, 29-36, 2005.

B.-K. Lai, H. Kahn, S. M. Phillips, Z. Akase, and A. H. Heuer, "Quantitative Phase Transformation Behavior in TiNi Shape Memory Alloy Thin Films," Journal of Materials Research, vol. 19, no. 10, 2822-2833, 2004.

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Dr. Qian holds a joint appointment with the School of Electrical, Computer and Energy Engineering and the School of Arts, Media and Engineering. Prior to joining ASU, he was a faculty research assistant and then a research associate at the Center for Automation Research at the University of Maryland Institute for Advance Computer Studies. Qian has published over 60 refereed journal articles and conference papers. He is a member of the IEEE.

Research Interests: Computer vision and pattern analysis, sensor fusion and information integration, multimodal sensing and analysis of human movement and activities, human-computer interaction, human-centered interactive systems, machine learning for computer vision

Honors and Distinctions: University Guo-Mo-Ruo Gold Medal, University of Science and Technology of China, 1994; Educational Institution Award for Outstanding Research Faculty, IEEE Phoenix Section 2005.

Selected Publications:

G. Qian, J. Zhang, and A. Kidane, "People Identification Using Gait via Floor Pressure Analysis," in press, IEEE Sensors Journal, 2010.

Y. Ma and G. Qian, eds., "Intelligent Video Surveillance: Systems and Technology," Taylor and Francis CRC Press, Jan 2010.

B. Peng, G. Qian and Y. Ma, "Robust View-Invariant Pose Recognition using Multilinear Analysis and Semi-Supervised Learning," Pattern Recognition Letters, 2009.

H. Jin and G. Qian, "Robust Real-Time 3D Object Tracking with Complex Background Visual Projections," EURASIP Journal on Image and Video Processing, 2008.

S. Rajko, G. Qian, T. Ingalls, and J. James, "Real-Time Gesture Recognition with Minimal Training Requirements and On-line Learning," in Proceedings of IEEE International Conference on Computer Vision and Pattern Recognition, Minneapolis, MN, June 18-23, 2007.

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Martin Reisslein joined the ASU faculty as an assistant professor in 2000. He received a Dipl.-Ing. in electrical engineering from FH Dieburg, Germany, in 1994, an MS in electrical engineering from the University of Pennsylvania in 1996, and a PhD in systems engineering from the University of Pennsylvania in 1998. He has published over 85 journal articles. He has over 2750 citations and an h-index of 23 based on Google Scholar data. He serves as Associate Editor for the IEEE/ACM Transactions on Networking and the Computer Networks Journal.

Research Interests: Multimedia streaming, multimedia traffic characteristics, metro and access fiber/wireless networks, and engineering education.

Honors and Distinctions: NSF CAREER Award, 2002; Editor-in-chief of the IEEE Communications Surveys and Tutorials, 2002-2007; ACM Senior Member; ASEE member; IEEE Senior Member; Informs member; SPIE member; Best Paper Award of Terabit Optical Networking: Architecture, Control, and Management Issues, 2000; Second Best Paper Award of IEEE Consumer Communications and Networking Conference (CCNC), 2006; IEEE Communication Society 2008 Best Tutorial Paper Award.

Selected Publications:

M. P. McGarry, M. Reisslein, F. Aurzada, and M. Scheutzow, "Shortest Propagation Delay (SPD) First Scheduling for EPONs with Heterogeneous Propagation Delays," IEEE Journal on Selected Areas in Communications, 28 (6), August 2010.

C. Chakrabarti, Y. Li, and M. Reisslein, "Energy-efficient Video Transmission over a Wireless Link," IEEE Transactions on Vehicular Technology, vol. 58, no. 3, 1229-1244, March 2009.

G. Ozogul, R. Moreno, and M. Reisslein, "Optimizing Worked-Example Instruction in Electrical Engineering: The Role of Fading and Feedback during Problem Solving Practice," ASEE Journal of Engineering Education, vol. 98, no. 1, 83-92, January 2009.

B. Kulapala, S. Oh, M. Reisslein, and A. Richa,"Continuous-Time Collaborative Prefetching of Continuous Media," IEEE Transactions on Broadcasting, vol. 54, no. 1, 36-52, March 2008.

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Professor, PhD, Massachusetts Institute of Technology

Prior to joining the ASU faculty in 1990, Armando A. Rodriguez worked at MIT, IBM, AT&T Bell Laboratories and Raytheon Missile Systems. He has also consulted for Eglin Air Force Base, Boeing Defense and Space Systems, Honeywell, and NASA. He has published over 185 technical papers in refereed journals and conference proceedings. He has authored three engineering texts. Dr. Rodriguez has given more than 60 invited presentations at international and national forums, conferences and corporations. Since 1994, he has directed an extensive engineering mentoring-research program that has served over 250 students. He has served as the co-director of an NSF-WAESO funded Bridge to the Doctorate Program involving 12 NSF Fellows.

Research Interests: Control of nonlinear distributed parameter systems, approximation theory, sampled data and multi-rate control, embedded systems, rapid prototyping, modeling, simulation, animation, and realtime control (MoSART), control of flexible autonomous machines operating in an uncertain environment (FAME), integrated real-time health monitoring, modeling, and reconfigurable fault-tolerant controls, control of bio-economic systems, renewable resources, and sustainable development, control of semiconductor, aerospace, robotic, and low power electronic systems.

Honors and Distinctions: AT&T Bell Laboratories Fellowship; Boeing A.D. Welliver Fellowship; CEAS Teaching Excellence Award; IEEE International Outstanding Advisor Award; White House Presidential Excellence Award for Science, Mathematics, and Engineering; ASU Faculty Fellow; ASU Professor of the Year Finalist.

Selected Publications:

A. A. Rodriguez, J. J. Dickeson, O. Cifdaloz, R. McCullen, J. Benavides. S. Sridharan, A. Kelkar, J. M. Vogel, and D. Soloway, Modeling and Control of Scramjet-Powered Hypersonic Vehicles: Challenges, Trends, & Tradeoffs, GNC, AIAA-2008-6793, Honolulu, HA, August, 2008.

Rodriguez, A. A. (2008), "Control System Design via H2 Optimization," In The Mechatronics Handbook: Mechatronic System Control, Logic, and Data Acquisition, ed. R. Bishop, pp. 10-1-10-48. Boca Raton, FL: CRC Press.

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Ronald Roedel joined the faculty in 1981 and was associate dean of the Ira A. Fulton Schools of Engineering. He has always tried to carry out research and teaching activities in equal measure. Recently, he has become involved in curriculum reform issues, active-learning strategies, and technology-enhanced education. On the research side, he has been involved in semiconductor research for more than 25 years, first with silicon, then with compound semiconductor materials and now with silicon again. He is the author or co-author of 35 publications and has roughly 50 presentations, two book chapters, and two patents in the fields of semiconductor characterization and engineering education.

Research Interests: Semiconductor materials and devices with a special interest in modeling devices made from large bandgap materials, engineering pedagogy with a special interest in distance learning.

Honors and Distinctions: ASU College of Engineering Teaching Excellence Award three times; NSF Presidential Young Investigator Award, 1984; and the ASU Parents Association Professor of the Year Award, 1999.

Selected Publications:

R. J. Roedel, D. Evans, S. M. Goodnick, "ECE Curriculum in 2013 and Beyond: Vision for Metropolitan Public Research University," IEEE Trans. Education, 46, 508, 2003.

K. Gonzalez-Landis, P. Flikkema, V. Johnson, J. Palais, E. Penado, R. J. Roedel, and D. Shunk, "The Arizona Tri-university Master of Engineering Program," Proceedings of the Frontiers in Education (FIE) Conference, Boston, MA, November 2002.

S. Duerden, J. Garland, C. Helfers, and R. J. Roedel, "Integrated Programs and Cultural Literacies: Using Writing to Help Engineering Students Transition to the Cultural Literacies of College," Proceedings of the American Society of Engineering Education (ASEE) Conference, Montreal, Quebec, CA, June 2002.

R. J. Roedel, "Light Emitting Diodes," Encyclopedia of Materials Research, Elsevier Publishing, 2002.

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Professor, PhD, Technische Universitaet Muenchen

From 1996 to 1998, Marco Saraniti was a Faculty Research Associate in electrical engineering at Arizona State University. He joined the Electrical and Computer Engineering Department of the Illinois Institute of Technology, Chicago, in 1998, where he was awarded the tenure in 2004, and was promoted to the rank of full professor in June 2007. He joined the faculty of the School of Electrical, Computer, and Energy Engineering of ASU in the month of August of 2007. He is the author or coauthor of more than 90 publications, four book chapters, and four technical reports. His current research focuses mainly on computational electronics applied to the simulation of semiconductor devices and biological structures. His recent scientific work covers the following fields: the development of Monte Carlo and cellular automaton techniques for 2-D and 3-D simulation of semiconductor devices, simulation and engineering of semiconductor devices, and the development of numerical methods for the modeling and simulation of membrane proteins.

Research Interests: Computational electronics and biophysics.

Selected Publications:

P. Joshi, A. Smolyanitsky, L. Petrossian, M. Goryll, M. Saraniti, and T. Thornton, "Field effect modulation of ionic conductance of cylindrical silicon-on-insulator nanopore array," J. App. Phys, vol. 107, pp. 0547011-6, 2010.

R. Akis, N. Faralli, D. K. Ferry, S. M. Goodnick, K. A. Phatak, M. Saraniti , "Ballistic Transport in InP-Based HEMTs," IEEE Trans. El. Dev., vol. 56, no.12, pp. 2935-2944, Dec. 2009.

A. Smolyanitsky and M. Saraniti, "Silicon nanopores as bioelectronic devices: a simulation study," Journal of Computational Electronics, vol. 8, no. 2, pp. 90-97, 2009.

R. Akis, J. S. Ayubi-Moak, N. Faralli, D. K. Ferry, S. M. Goodnick, and M. Saraniti, "The upper limit of the cutoff frequency in ultrashort gate-length InGaAs/InAlAs HEMTs: A new definition of effective gate length," IEEE El. Dev. Let. 29, pp. 306-8, 2008.

M. Saraniti, "Artificial cells: Designing biomimetic nanomachines," Nature Nanotechnology, no. 3, pp. 647-648, 2008.

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Regents' Professor, PhD, University of Illinois

Dieter Schroder joined the ASU faculty in 1981 after 13 years at the Westinghouse Research Labs. He has published two books, 180 journal articles, 10 book chapters, and 171 conference presentations, edited 11 books, holds five patents and has graduated 63 MS students and 41 PhD students.

Research Interests: Semiconductor devices, photovoltaics, defects in semiconductors, semiconductor material and device characterization, electrical/lifetime measurements, low-power electronics, device modeling, MOS devices.

Honors and Distinctions: IEEE Life Fellow, IEEE van der Ziel Award, 2007; ASU Regents' Professor, 2010; Distinguished National Lecturer for the IEEE Electron Device Society, 1993-2007; ASU College of Engineering Teaching Excellence Award, 1989, 1998, 2001; National Technical University Outstanding Instructor, 1991-2003; University Continuing Education Association Faculty Service Award, 1997; ASU College of Extended Education Distance Learning Faculty Award, 1998; IEEE Meritorious Achievement Award in Continuing Education Activities, 1998; IEEE Phoenix Section: Outstanding Faculty Member, 2000.

Selected Publications:

I. Rapoport, P. Taylor, J. Kearns and D. K. Schroder, "Two-side surface photovoltage studies for implanted iron diffusion in silicon during rapid thermal anneal," J. Appl. Phys. 107, 013518 1-6, Jan. 2010.

K. Park, P. Nayak, and D. K. Schroder, "Role of the substrate during pseudo-MOSFET drain current transients," Solid-State Electron. 54, 316-322, March 2010.

K. Park, P. Nayak, S. Cristoloveanu, and D. K. Schroder, "Pseudo-MOSFET Substrate Effects of Drain Current Hysteresis and Transient Behavior," IEEE Trans. Electron Dev. 56, 1269-1276, June 2009.

K. Park, P. Nayak, and D. K. Schroder, "Pseudo-MOSFET Drain Current Transients: Influence of the Substrate," IEEE Electron Dev. Lett. 30, 993-995, Sept. 2009.

G. Ng, D. Vasileska, and D. K. Schroder, "Calculation of the electron Hall mobility and Hall scattering factor in 6H-SiC," J. Appl. Phys. 106, 053719 1-6, Sept. 2009.

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Jennie Si received her BS and MS degrees from Tsinghua University, Beijing, China, and her PhD from the University of Notre Dame, all in electrical engineering. She joined the ASU faculty in 1991 where she is currently a professor.

Research Interests: Learning and approximate dynamic programming, estimation and filtering of stochastic processes, neural networks, neurophysiological basis for control, cortical neural information processing, and brain machine interface.

Honors and Distinctions: Listed in several Marquis Who's Who publications since late 1990s; NSF/White House Presidential Faculty Fellow, 1995; Motorola Excellence Award, 1995, NSF Research Institution Award, 1993; IEEE Fellow, 2008; Past associate editor of IEEE Transactions on Automatic Control, IEEE Transactions on Semiconductor Manufacturing, and IEEE Transactions on Neural Networks; Current associate editor of Neural Networks, the official journal of the International Neural Networks Society; General Chair of the 2007 International Joint Conference on Neural Networks; One of 10 students who received the highest honor at Tsinghua University in Beijing, China, 1984.

Selected Publications:

C. Yang, B. Olson, and J. Si, "A multiscale correlation of wavelet coefficients approach to spike detection," Neural Computation, 2010.

B. Li and J. Si, "Approximate robust policy iteration using multilayer perceptron neural networks for discounted infinite-horizon Markov decision processes with uncertain stationary transition matrices," IEEE Trans. on Neural Networks, 2010.

L. Yang, J. Si, K. Tsakallis, and A. Rodriguez, "Direct Heuristic Dynamic Programming for Nonlinear Tracking Control with Filtered Tracking Error," IEEE Transactions on Systems, Man, and Cybernetics, Part B, 2009.

J. Dankert, B. Olson, and J. Si, "Asynchronous decision making in a memorized paddle pressing task," Journal of Neural Engineering. 5 (2008) 363-373, September 2008.

B. Li and J. Si, "Robust Optimality for Discounted Infinite-Horizon Markov Decision Processes with Uncertain Transition Matrices," IEEE Transactions on Automatic Control, 53 (9): 2112-2116, October 2008.

Brian Skromme

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Brian Skromme joined the ASU faculty in 1989, where he is presently a professor in solid-state electronics. From 1985 to 1989, he was a member of the technical staff at Bellcore. He has written over 120 refereed publications in solid-state electronics.

Research Interests: Compound semiconductor materials and devices, especially wide bandgap materials for optoelectronic, high frequency, high-power, and high-temperature applications, optical characterization of semiconductor materials, development of GaN and SiC-based materials and devices.

Honors and Distinctions: Eta Kappa Nu, Young Faculty Teaching Award, 1990-1991; Golden Key National Honor Society Outstanding Professor Award, 1991; listed in Marquis's Who's Who in America.

Selected Publications:

B. J. Skromme, A. Sasikumar, B. M. Green, O. L. Hartin, C. E. Weitzel, and M. G. Miller, "Reduction of low-temperature nonlinearities in pseudomorphic AlGaAs/InGaAs HEMTs due to Si-related DX centers," IEEE Trans. Electron Devices 57 (4), 749-754 (2010).

Y. Wang, P. A. Losee, S. Balachandran, I. B. Bhat, T. P. Chow, Y. Wang, B. J. Skromme, J. K. Kim, and E. F. Schubert, "Achieving low sheet resistance from implanted p-type layers in 4H-SiC using high temperature graphite capped annealing," Mater. Sci. Forum 556-557, 567-571 (2007).

Y. Wang, M. K. Mikhov, and B. J. Skromme, "Formation and properties of Schottky diodes on 4H-SiC after high temperature annealing with graphite encapsulation," Mater. Sci. Forum 527-529, 915-918 (2006).

A. Mahajan and B. J. Skromme, "Design and Optimization of Junction Termination Extension (JTE) for 4H-SiC High Voltage Schottky Diodes," Solid State Electron, 49, 945–955, 2005.

L. Chen, B. J. Skromme, R. F. Dalmau, R. Schlesser, Z. Sitar, C. Chen, W. Sun, J. Yang, M. A. Khan, M. L. Nakarmi, J. Y. Lin, and H.-X. Jiang, "Band-edge Exciton States in AlN Single Crystals and Epitaxial Layers," Appl. Phys. Lett. 85, 4334-4336, 2004.

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Andreas Spanias joined the ASU faculty in 1988. He has published more than 57 journal and 170 conference papers and contributed several book chapters. He authored two textbooks in DSP and Audio Coding and two monographs in the Morgan-Claypool Lecture Series. He has served as associate editor of IEEE Transactions on Signal Processing, as the general co-chair of the IEEE ICASSP-99 and as vice-president of the IEEE Signal Processing Society (SPS). He received the 2005 IEEE SPS Meritorious Service Award. He is currently associate director of the ASU School of Arts, Media and Engineering (AME), director of the Sensors, Signal and Information Processing (SenSIP) center, an NSF I/UCRC, PI of a major multi-university NSF program, and Co-PI of the NSF AME IGERT program. He is a series editor for Morgan-Claypool books.

Research Interests: Digital signal processing, multimedia signal processing, speech and audio coding, adaptive filters, real-time processing of sensor data, signal processing for the arts.

Honors and Distinctions: IEEE Fellow; IEEE Distinguished Lecturer, 2004; Donald G. Fink Prize for paper titled "Perceptual Coding of Digital Audio," 2002; Intel Advanced Personal Communications Award, 1997; Intel Research Council: NDTC Award, 1996; Intel Award for Leadership and Contributions to the 60172 Processor Architecture, 1993; Author of J-DSP software (http://jdsp.asu.edu) ranked in the top three educational resources in 2003 by the UC-Berkeley NEEDS panel.

Selected Publications:

G. Wichern, X. Jiachen, H. Thornburg, and B. Mechtley, and A. Spanias, "Segmentation, Indexing, and Retrieval for Environmental and Natural Sounds," IEEE Transactions on Audio, Speech, and Language Processing, vol. 18, issue 3, pp. 688-707, 2010.

M. K. Banavar, C. Tepedelenlioglu, and A. Spanias, "Estimation Over Fading Channels With Limited Feedback Using Distributed Sensing," IEEE Transactions on Signal Processing, vol. 58, issue 1, pp. 414-425, 2010.

H. Krishnamoorthi, A Spanias, and V. Berisha, "A frequency/detector pruning approach for loudness estimation," IEEE Signal Processing Letters, vol. 16, no.11, pp. 997-1000, Dec. 2009.

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Professor, PhD, Arizona State University

NJ Tao joined the ASU faculty as a professor of electrical engineering and an affiliated professor of chemistry and biochemistry in August 2001. Before that, he worked as an assistant and associate professor at Florida International University. He has 10 patents, and has published over 180 refereed journal articles and book chapters, which have been cited over 7,200 times. He has given over 180 invited and keynote talks worldwide.

Research Interest: Chemical and biological sensors, molecular and nano electronics, nanostructured materials and devices, and electrochemical nanofabrications.

Honors and Distinctions: Alexander von Humboldt Senior Research Award; Hellmuth Fischer Medal; National Science Foundation Two-Year Extension for Special Creativity; Excellence in Research Award, Florida International University; AzTE Innovator of the Year; Molecular Imaging Young Microscopist.

Selected Publications:

Ismael Diez-Perez, Zhihai Li, Joshua Hihath, Jinghong Li, Chengyi Zhang, Xiaomei Yang, Ling Zang, Yijun Dai, Xinliang Feng, Klaus Muellen and N. J. Tao, "Gate-Controlled Electron Transport in Coronenes: Bottom-up Approach Towards Graphene Transistors", Nature Communication, in press, 2010.

X. Shan, U. Patel, S. Wang, R. Iglesias, N. J. Tao, "Imaging Local Electrochemical Current Via Surface Plasmon Resonance," Science, 327, 1363-1366 (2010).

Ismael Díez-Pérez, Joshua Hihath, Youngu Lee, Luping Yu, Lyudmyla Adamska, Mortko A. Kozhushner, Ivan I. Oleynik and N. J. Tao, "Rectification and Stability of a Single Molecular Diode with Controlled Orientation," Nature Chem. 1, 635-641 (2009).

J. L. Xia, F. Chen, J. H. Li and N. J. Tao, "Measurement of Quantum Capacitance of Graphene," Nature Nano., 4, 505-509 (2009).

N. J. Tao, "Push the right button," Nature Chem., 1, 108 (2009).

N. J. Tao, "Switching made simple," Nature Nano., 2, 677-677 (2007).

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Cihan Tepedelenlioglu joined the ASU faculty as an assistant professor in July 2001. He received his BS from the Florida Institute of Technology in 1995, an MS from the University of Virginia in 1998, and a PhD from the University of Minnesota in 2001, all in electrical engineering. In 2001, he received the NSF CAREER Award.

Research Interests: Wireless communications, statistical signal processing, data mining for PV systems.

Honors and Distinctions: NSF CAREER Award, 2001, Member Tau Beta Pi.

Selected Publications:

K. Bai and C. Tepedelenlioglu, "Distributed Detection in UWB Wireless Sensor Networks," IEEE Trans. on Signal Processing vol. 58, no. 2, pp. 804-813, February 2010.

N. He and C. Tepedelenlioglu, "Fast and Low-Complexity Synchronization for Non-Coherent UWB Receivers," IEEE Transactions on Wireless Commun., vol. 6, no. 3, pp. 1014-1023, March 2007.

C. Tepedelenlioglu, "Maximum Multipath Diversity with Linear Equalization in Precoded OFDM Systems," IEEE Transactions on Information Theory, vol. 50, no. 1, pp. 232-235, January 2004.

C. Tepedelenlioglu and R. Challagulla, "Low Complexity Multipath Diversity Through Fractional Sampling in OFDM," IEEE Trans. on Signal Processing, vol. 52, no. 11, pp. 3104-3116, November 2004.

G. B. Giannakis and C. Tepedelenlioglu, "Basis Expansion Models and Diversity Techniques for Blind Equalization of Time-Varying Channels," Proceedings of the IEEE, vol. 86, pp. 1969-1986, October 1998.

Trevor Thornton
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Trevor Thornton joined the ASU faculty in 1998 after having spent eight years at Imperial College in London and two years as a member of the technical staff at Bell Communications Research, New Jersey. He invented the splitgate transistor, which was used to demonstrate the quantization of the ballistic resistance. He is currently the director of the Center for Solid State Electronics Research, which manages the ASU NanoFab, the Southwest regional node of the NSF-supported National Nanofabrication Infrastructure Network.

Research Interests: Nanostructures, molecular electronics and sensors, microelectro-mechanical systems (MEMS), silicon-on-insulator MESFETs.

Honors and Distinctions: Recipient of ASU Co-Curricular Programs Last Lecture Award, 2001.

Selected Publications:

W. Lepkowski, J. Ervin, S. J. Wilk, and T. J. Thornton, "SOI MESFETS Fabricated Using Fully Depleted CMOS Technologies," IEEE Electron Device Letters, vol. 30, 678-680, 2009.

B. R. Takulapalli, G. M. Laws, P. A. Liddell, J. Andreasson, Z. Erno, D. Gust, and T. J. Thornton, "Electrical Detection of Amine Ligation to a Metalloporphyrin via a Hybrid SOIMOSFET," J. Am. Chem. Soc., vol. 130, 2226-2233, 2008.

S. J. Wilk, L. Petrossian, M. Goryll, T. J. Thornton, S. M. Goodnick, J. M. Tang, and R. S. Eisenberg "Integrated Electrodes on a Silicon Based Ion Channel Measurement Platform," Biosensors and Bioelectronics, vol. 23, 183-190, 2007.

L. Petrossian, S. Wilk, P. Joshi, S. Hihath, S. Goodnick, and T. Thornton, "Fabrication of Cylindrical Nanopores and Nanopore Arrays in Silicon-on-insulator Substrates," J. Microelectromechanical Systems, vol. 16, 1419-1428, 2007.

J. Ervin, A. Balijepalli, P. Joshi, V. Kushner, J. Yang, and T. J. Thornton, "CMOS-Compatible SOI MESFETs With High Breakdown Voltage," IEEE Transactions on Electron Devices, vol. 53, 3129-3135, 2006.

National Nanofabrication Infrastructure Network Web site: http://www.nnin.org/

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Konstantinos Tsakalis joined the ASU faculty in 1988 and is currently a professor. He received an MS in chemical engineering in 1984, an MS in electrical engineering in 1985, and a PhD in electrical engineering in 1988, all from the University of Southern California. He holds several patents and has published one book and 143 journal and 98 conference papers.

Research Interests: Applications of control, optimization and system identification theory to semiconductor manufacturing, chemical process control, and prediction and control of epileptic seizures.

Honors and Distinctions: Licensed Chemical Engineer, Technical Chamber of Greece; Member, IEEE, Sigma Xi.

Selected Publications

N. Chakravarthy, K. Tsakalis, S. Sabesan and L. Iasemidis, "Homeostasis of Brain Dynamics in Epilepsy: A Feedback Control Systems Perspective of Seizures," Annals of Biomedical Engineering, vol. 37, 3, 565-585, 2009.

N. Chakravarthy, S. Sabesan, K. Tsakalis and L. Iasemidis, "Controlling epileptic seizures in a neural mass model," Journal of Combinatorial Optimization, Springer Sci. and Bus. Media, 17:98-116, January 2009.

S. Sabesan, N. Chakravarthy, K. Tsakalis and L. D. Iasemidis, "Measuring resetting of brain dynamics at epileptic seizures: Application of global optimization and spatial synchronization techniques," Journal of Combinatorial Optimization, Springer Sci. and Bus. Media, 17: 74-97, January 2009.

V. Atti, A. Spanias, K. Tsakalis, C. Panayiotou, L. Iasemidis and V. Berisha, "Gradient Projection-Based Channel Equalization Under Sustained Fading," Signal Processing, vol. 88, 2, 236-246, February 2008.

K. Tsakalis and L. Lasemidis, "Control Aspects of a Theoretical Model for Epileptic Seizures," International Journal of Bifurcation and Chaos, 16:7, 2013-2027, July 2006.

Daniel Tylavsky

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Daniel Tylavsky is internationally known for applying computation technology to the analysis and simulation of large-scale power system generation/transmission problems. He also is an avid educator who uses team/cooperative learning methods in graduate and undergraduate education and is a pioneer in the use of mediated classrooms. He has been responsible for more than $3.5 million in research funding for both technical and educational research projects. He is a member of several honor societies and has received numerous awards for his technical work, as well as for work with student research.

Research Interests: Electric power systems, numerical methods applied to large-scale system problems, parallel numerical algorithms, new educational methods and technologies, applying social optimization to power system markets, and transformer thermal modeling.

Honors and Distinctions: Senior Member of IEEE; IEEE-PES Certificate for Outstanding Student Research Supervision (three times); six awards for outstanding research from the IEEE-IAS Mining Engineering Committee; various awards for outstanding teaching.

Selected Publications:

J. Cardell, I. Dobson, W. Jewell, M. Kezunovic, T. Overbye, P. K. Sen, and D. J. Tylavsky, "The Electric Power Industry and Climate Change: U.S. Research Needs," Climate Change Panel Paper for the PES General Meeting Summer 2008.

L. Jauregui Rivera and D. J. Tylavsky, "Acceptability of Four Transformer Thermal Models Pt 2: Comparing Metrics," IEEE Transactions on Power Delivery, v. 23, no. 2, 860-865, April 2008.

L. Jauregui Rivera, and D. J. Tylavsky, "Acceptability of Four Transformer Thermal Models Pt 1: Defining Metrics," IEEE Transactions on Power Delivery, vol. 23, no. 2, 866-872, April 2008.

X. Mao, D. J. Tylavsky, N. Logic, "Non-Collocated Measurement Error and Sign Error Identification to Enhance State Estimator," 2007 North American Power Symposium, 404-410, September 2007.

Dragica Vasileska

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Dragica Vasileska joined the ASU faculty in August 1997. She has published over 150 journal articles in prestigious refereed journals, 15 book chapters, and 120 articles in conference proceedings in the areas of solid-state electronics, transport in semiconductors, and semiconductor device modeling. She is the author of three books (D. Vasileska and S. M. Goodnick, Computational Electronics, Morgan & Claupool, 2006; D. Vasileska, Editor, Cutting Edge Nanotechnology, March 2010, and D. Vasileska, S. M. Goodnick and G. Klimeck, Computational Electronics: From Semi-Classical to Quantum Transport Modeling, CRC Press, June 2010). She has also given numerous invited talks. She is a senior member of IEEE, the American Physical Society, and Phi Kappa Phi.

Research Interests: Semiconductor device physics, semiconductor transport, 1-D to 3-D device modeling, quantum field theory and its application to real device structures, spin transport, heating effects in nanoscale devices, current collapse in GaN HEMTs.

Honors and Distinctions: Listed in Who's Who 2007; NSF CAREER Award, 1998; University Cyril and Methodius, Skopje, Republic of Macedonia, College of Engineering Award for Best Achievement in One Year, 1981-1985; University Cyril and Methodius, Skopje, Republic of Macedonia, Award for Best Student from the College of Engineering in 1985 and 1990.

Selected Publications:

A. Ashwin, D. Vasileska, O. Hartin and S. M. Goodnick, "Importance of the Gate-Dependent Polarization Charge on the Operation of GaN HEMTs," IEEE Transactions on Electron Devices, vol. 56, 998-1006, May 2009.

K. Raleva, D. Vasileska, S. M. Goodnick and M. Nedjalkov, "Modeling Thermal Effects in Nanodevices," IEEE Transactions on Electron Devices, vol. 55, issue 6, 1306-1316, June 2008.

H. R. Khan, D. Mamaluy, and D. Vasileska, "Quantum Transport Simulation of Experimentally Fabricated Nano-FinFET," IEEE Transactions on Electron Devices, vol. 54 (4), 784-796, 2007.

S. Krishnan, D. Vasileska, and M. Fischetti, "First Self-Consistent Full Band – 2D Monte Carlo – 2D Poisson Device Solver for Modeling SiGep-Channel Devices," J. Vac. Sci. Technol. B, vol. 24(4), 1997-2003, 2006.

Vijay Vittal

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Professor, Ira A. Fulton Chair in Electrical Engineering, PhD, Iowa State University

Vijay Vittal joined the ASU faculty in 2005. Prior to ASU, he was an Anston Marston Distinguished Professor at the Iowa State University's, Electrical and Computer Engineering Department. At ISU, Dr. Vittal held the Murray and Ruth Harpole Professorship, directed ISU's Electric Power Research Center and was the site director of the NSF I/UCRC Power System Engineering Research Center (PSERC). From 1993 to 1994, he served as a program director of power systems for the NSF Division of Electrical and Communication Systems in Washington, D.C. Currently, he is the director of PSERC, a consortium of 13 universities and over 45 companies. ASU is the lead school. He is the editor-in chief of IEEE Transactions on Power Systems. He has published 120 articles in refereed journals, 103 refereed conference proceeding articles, nine books and book chapters and 13 research and technical reports.

Research Interests: Electric power, power system dynamics and controls, nonlinear systems, computer applications in power, sustainable energy, modeling and simulation of complex systems.

Honors and Distinctions: Member, National Academy of Engineering, 2004; Iowa State University (ISU) College of Engineering Anston Marston Distinguished Professor, 2004; ISU Foundation Award for Outstanding Achievement in Research, 2003; IEEE Power Engineering Society Technical Council Committee of the Year Award, 2000-2001; IEEE Outstanding Power Engineering Educator Award, 2000; Warren B. Boast Undergraduate Teaching Award, 2000.

Selected Publications:

V. Vittal, "The Impact of Renewable Resources on the Performance and Reliability of the Electricity Grid," The Bridge, National Academy of Engineering, vol. 40, no. 1, pp. 5-12, Spring 2010.

Sapkota, B., V. Vittal, "Dynamic VAr Planning in a Large Power System Using Trajectory Sensitivities," IEEE Transactions on Power Systems, vol. 25, no. 1, pp. 461-469, February 2010.

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Hongbin Yu joined the ASU faculty in 2005. He received his PhD in Physics in 2001 from the University of Texas at Austin and his MS in Physics in 1996 from Peking University, P.R. China. He conducted post-doctoral research at California Institute of Technology and University of California at Los Angeles.

Research Interests: Nanostructure and nanodevice fabrication and characterization, transport in metallic and semiconducting nanostructures and molecules, quantum size effect in metallic and semiconducting nanostructures, surface and interface physics and chemistry.

Honors and Distinctions: Graduate Research Award, American Vacuum Society, 2001.

Selected Publications:

Wei Xu, Saurabh Sinha, Feng Pan, Tawab Dastagir, Yu Cao, and Hongbin Yu, "Improved Frequency Response of On-Chip Inductors With Patterned Magnetic Dots," IEEE Electron Device Lett., 31, 207 (2010).

Cunjiang Yu, Kevin O'Brien, Yong-Hang Zhang, Hongbin Yu, and Hanqing Jiang, "Tunable Optical Gratings Based on Buckled Nano-Scale Thin Films on Transparent Elastomeric Substrates," Appl. Phys. Lett., 96, 041111 (2010).

Wei Xu, Alan Chin, Laura Ye, Cun-Zheng Ning and H. Yu, "Electrical and optical characterization of individual GaSb nanowires," Proc. of SPIE, vol. 7224, 72240G, 2009.

D. Eom, C.–S. Jiang, H. Yu, J. Shi, Q. Niu, Ph. Ebert, and C.-K. Shih, "Scanning Tunneling Spectroscopy of Ag Films: The Effect of Periodic vs. Quasiperiodic Modulation," Phys. Rev. Lett., 97, 206102, 2006.

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Hongyu Yu joined ASU in 2008 holding a joint position between School of Earth and Space Exploration and the School of Electrical, Computer and Energy Engineering. He received his BS and MS degrees in electronics engineering from Tsinghua University, Beijing, China in 1997 and 2000, respectively, and a PhD degree in electrical engineering from the University of Southern California in 2005. His research area is focused on Microelectromechanical Systems (MEMS) for earth and space exploration. His goal is to provide miniaturized portable platforms and instruments for scientists to explore a variety of earth environments and space science, such as seismology, biogeochemistry, volcanology, and astrobiology. His current projects include miniature seismometers for earth and moon exploration, flexible and stretchable shear stress sensor for river and hot spring monitoring, wireless UV and IR sensing, 3-D MEMS/NEMS manufacturing, and wireless circuit component development.

Research Interests: Wireless environmental sensing and communication, microfluidic analysis systems, acoustic transducers, micro seismometer, accelerometer, and mass spectrometer.

Selected Publications:

X. Qiu, J. Oiler, J. Zhu, Z. Wang, R. Tang, C. Yu and H. Yu, "Film bulk acoustic-wave resonator based relative humidity sensor using ZnO films", Electrochemical and Solid-State Letters, 13, 2010, J65-J67.

J. Zhu, C. Lee, E. S. Kim, D. Wu, C. Hu, Q. Zhou, K. K. Shung, and H. Yu, "High-overtone Self-Focusing Acoustic Transducers for High Frequency Ultrasonic Doppler," Ultrasonics, online first (http://dx.doi.org/10.1016/j.ultras.2010.02.002).

X. Qiu, J. Zhu, J. Oiler, C. Yu, Z. Wang, and H. Yu, "Film Bulk Acoustic-wave Resonator Based Ultraviolet Sensor," Applied Physics Letter, vol. 94, 16 DOI: 10.1063/1.3122342, 2009.

C. Yu, Z. Wang, H. Yu, and H. Jiang, "A Stretchable Temperature Sensor Based on Elastically Buckled Thin Film Devices on Elastomeric Substrates," Applied Physics Letter, Vol. 95, Issue 14, October 8, 2009.

H. Yu, L. S. Ai, M. Rouhanizadeh, D. Patel, E. S. Kim and T. K. Hsiai, "Flexible Polymer Sensors for In Vivo Intravascular Shear Stress Analysis," J. Microelectromech Syst. 17(5), 1178-1186 (2008).

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Junshan Zhang joined the ASU faculty as an assistant professor in August 2000. He received a BS in electrical engineering from HUST, China, in July 1993, an MS in statistics from the University of Georgia in December 1996, and a PhD in electrical and computer engineering from Purdue University in 2000. He is the recipient of a 2003 NSF CAREER Award and a 2005 ONR YIP award. He won the 2003 Faculty Research Award from the IEEE Phoenix Section. He served as TPC co-chair for WICON 2008, IPCCC 2006 and TPC vice-chair for ICCCN 2006. He was a general chair for IEEE Communication Theory Workshop 2007. He will be the TPC co-chair for INFOCOM 2012. He is an associate editor for IEEE Transactions on Wireless Communications and an editor for Computer Networks Journal and IEEE Wireless Communication Magazine.

Research Interests: Network management, network security, network information theory, and stochastic learning and analysis.

Honors and Distinctions: Member of IEEE and ASEE; 2003 NSF CAREER Award; 2005 ONR YIP Award; IEEE INFOCOM 2009 Best Paper Award run-up; IEEE ICC 2008 Best Paper Award.

Selected Publications:

P. S. C. Thejaswi, J. Zhang, S. Pun, V. H. Poor, and D. Zheng, "Distributed Opportunistic Scheduling with Two-Level Channel Probing," IEEE/ACM Transactions on Networking, 2010.

D. Zheng, W. Ge, and J. Zhang, "Distributed Opportunistic Scheduling for Ad-Hoc Networks with Random Access: An Optimal Stopping Approach," IEEE Transactions on Information Theory, p 205-222, Jan. 2009.

J. Zhang, D. Zheng, and M. Chiang, "The Impact of Stochastic Noisy Feedback on Distributed Network Utility Maximization," IEEE Transactions on Information Theory, p 645-665, Feb. 2008.

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Yong-Hang Zhang joined the faculty in 1996 from Hughes Research Laboratories. He has published more than 170 research articles in refereed journals and conference proceedings, a book chapter, five issued U.S. patents and has edited several conference proceedings. He has presented more than 210 invited and contributed papers presented at various international scientific conferences.

Research Interests: Optoelectronic materials and devices, such as solar cells, laser diodes, and photodetectors.

Honors and Distinctions: IEEE Senior Member, Innovation and Excellence in Laser Technology and Applications Award from Hughes Research Labs, Chair and Co-chair of numerous international conferences and workshops.

Selected Publications:

S. Wang, D. Ding, X. Liu, X.-B. Zhang, D. J. Smith, J. K. Furdyna, and Y.-H. Zhang, "MBE growth of II/VI materials on GaSb substrates for photovoltaic applications," J. of Cryst. Growth, 311, 2116, 2009.

S.-Q. Yu, Y. Cao, S. R. Johnson, Y.-H. Zhang, and Y.-Z. Huang, "GaSb Based Midinfrared Equilateral Triangle-Resonator Semiconductor Lasers," J. Vac. Sci. Technol. B 26, 56-61, 2008.

J.-B. Wang, D. Ding, S. R. Johnson, S.-Q. Yu, and Y.-H. Zhang, "Determination and Improvement of Spontaneous Emission Quantum Efficiency in GaAs/AlGaAs Heterostructures Grown by Molecular Beam Epitaxy," Phys. Stat. Sol. (b) 244, 2740-2751, 2007. (Invited paper for a feature article in a special issue).

S. R. Johnson, D. Ding, J.-B. Wang, S.-Q. Yu, and Y.-H. Zhang, "Excitation Dependent Photoluminescence Measurements of Nonradiative Lifetime and Quantum Efficiency in Bulk GaAs/AlGaAs," J. Vac. Sci. Technol. B, 25, 1077-1082, 2007.

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