# EE External Advisory Council

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Position</th>
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</thead>
<tbody>
<tr>
<td>Ben Adamo</td>
<td>CEO, Phoenix Analog</td>
</tr>
<tr>
<td>Rick Anderson</td>
<td>Senior Software Engineering Manager, Tektronix</td>
</tr>
<tr>
<td>Tom Butler</td>
<td>Engr. Section Mgr., Space &amp; National Systems Div., General Dynamics C4 Systems</td>
</tr>
<tr>
<td>Jack Davis</td>
<td>President, APS</td>
</tr>
<tr>
<td>Neil E. Hejny</td>
<td>Director, Electronics Center, Raytheon Missile Systems</td>
</tr>
<tr>
<td>Joseph W. Jackson</td>
<td>Manager, Flight Controls Business, Honeywell</td>
</tr>
<tr>
<td>Tadija Janjic</td>
<td>Strategic Development Engineer, Texas Instruments</td>
</tr>
<tr>
<td>Karl Johnson</td>
<td>Director of Microwave and Mixed Signal Technologies, Freescale</td>
</tr>
<tr>
<td>David G. Leeper</td>
<td>Sr. Principal Engineer, Ultrawideband Networking Operations, Intel Corp.</td>
</tr>
<tr>
<td>Eric C. Maass</td>
<td>Director, Technology Strategy &amp; Strategic Alliances, Motorola</td>
</tr>
<tr>
<td>Robert L. Melcher</td>
<td>CTO, Syntax-Brillian Corp.</td>
</tr>
<tr>
<td>Mark Phelps</td>
<td>Sr. Director, Electronic Systems Technology, Medtronic</td>
</tr>
<tr>
<td>Bill Twardy</td>
<td>Manager, Research for SRP, SRP</td>
</tr>
<tr>
<td>Peter Zdebel</td>
<td>CTO, ON Semiconductor</td>
</tr>
<tr>
<td>Thomas Zipperian</td>
<td>Unit Director, MESA Fabrication, Sandia National Laboratories</td>
</tr>
</tbody>
</table>

**CURRENT MEMBERS**

- APS
- Freescale™
- General Dynamics C4 Systems
- Honeywell
- Intel
- Motorola
- Syntax-Brillian Corp.
- Medtronic
- MOTOROLA
- ON Semiconductor
- Raytheon
- Sandia National Laboratories
- SRP
- syntaxbrillian
- Texas Instruments
- Tektronix

*EE External Advisory Council*
Contents

LETTER FROM THE CHAIR .................................................. 2 - 3

YEAR IN REVIEW

Faculty Honors, Awards, and News ....................................... 4 - 9
  Professor Tao Leads $2.3 Million NIH Grant ....................... 4
  Professor Ning Wins Three Awards ................................ 4
  Professor Si Elected IEEE Fellow .................................. 4
  NSF Grant Goes to EE Research Team ............................... 5
  Professor Zhang Earns Discovery Award ........................... 5
  Professor Kozicki on Eight’s Horizon .............................. 5
  Professor Palais Receives First Daniel Jankowski Legacy Award 6
  Two EE Faculty Win Best Teacher Awards ......................... 6
  Professor Schroder Receives Distinguished van der Ziel Award 6
  Two EE Faculty Selected APS Outstanding Referees ............. 7
  Faculty Books .................................................................. 7
  ASU’s Epsilon Beta Wins Outstanding Chapter Award .......... 8
  Professor Heydt Obtains Distinguished Overseas Scientist Award 8
  Professor Goodnick Receives Outstanding Leadership and Service Award 8
  Professor Bakkaloglu Selected WiNtech Associate Director .... 8
  New Hires ....................................................................... 9
  Affiliate Professors ......................................................... 9

Students, Awards, and Alumni .............................................. 10 - 13
  Doctoral Graduates ......................................................... 10 - 11
  Palais Award ................................................................. 11
  Undergraduate Electrical Engineering Students Honors and Scholarships .......... 11
  EE Enrollment ............................................................... 12
  EE Student Wins First Prize in IEEE Conference .................. 12
  EE Graduate Assistant Selected in Top 22 .......................... 12
  EE Research Team Wins Best Student Paper Award in France .... 12
  Graduate fellowships in Electrical Engineering ..................... 13
  EE Alumnus Wins Intel Achievement Award ....................... 13
  Alumni News .................................................................... 13

FEATURE STORY

WiNtech: Wireless Integration Nano Technology Center
  Connection One: Communication Circuits and System Research Center .... 14 - 17

RESEARCH CENTERS

SenSIP: Sensor, Signal and Information Processing Center ................. 18
PSERC: The Power Systems Energy Research Center ..................... 19
Center for Solid State Electronics Research ................................ 20
Arizona Institute for Nano-Electronics ...................................... 21

FACULTY LISTINGS

Faculty Bios ....................................................................... 22 - 41
Letter From the Chair

The past academic and fiscal year has proven to be yet another period of extraordinary growth and achievement for the department. The department’s academic and research programs have been noted for their excellence and the accomplishments of its faculty, staff and students continue to garner national recognition.

Our efforts to grow both the size and quality of our research program has been through increased faculty focus on Ph.D. students and external funding. Coupled with this has been a successful effort to identify a significantly larger number of fellowships for our Ph.D. students. We have leveraged these initiatives to sustain Ph.D. student enrollment of more than 200 students for each of the past five years. We have also seen extraordinary growth in external research funding with more than $20,000,000 in expenditures and nearly $30,000,000 in new awards during FY 2008, the fiscal year ending June 30, 2008. This is especially impressive given that it represents a doubling of the expenditures of FY 2005 in a period of only three years. Our graduate program has also benefitted from an increase in our non-thesis MSE student enrollment, allowing cost effective delivery of a broad spectrum of graduate courses.

Once again our faculty have been recognized nationally for their work. Professor Jennie Si has been elected Fellow of the IEEE and Professor Dieter Schroder received the IEEE van der Ziel award in recognition of his distinguished career achievements in semiconductor research and teaching. Professor Stephen Goodnick won the Robert Janowiak outstanding leadership and service award from the Electrical and Computer Engineering Heads Association. We have hired five new faculty this year: Assistant Professors Jennifer Blain Christian, Bingsen Wang, Hongyu Yu (joint with the School of Earth and Space Exploration) and David Frakes (joint with the Harrington Department of Bioengineering) as well as Professor Marco Saraniti.

We have implemented programs to address undergraduate student retention and reduce the overall time to graduation. Our Electrical Engineering student honor’s society, the Epsilon Beta chapter of the Eta Kappa Nu has won an outstanding chapter award from the national organization. Professor Goodnick is the chapter advisor. Our BS program remains effective as evidenced by all graduating seniors with either employment placement or graduate or professional school admission.
Four ASU research organizations have the primary focus on Electrical Engineering and they are highlighted in this report. The Arizona Institute for Nanoelectronics (AINE); The Sensors, Signal and Information Processing Center (SenSIP); the Power Systems Engineering Research Center (PSerc) and the Wireless Integrated Nanotechnology Center (WINtech). AINE includes several centers led by EE faculty including the Center for Applied Nanoionics led by Michael Kozicki, the Center for Nanophotonics led by Yong-Hang Zhang and the Center Biomolecular Integrated Circuits led by Trevor Thornton. Also integral to AINE’s activity with Center for Solid State Electronics Research with its multiuser clean room. WINtech is the feature story for this year's report and includes a description of its affiliated NSF funded Industry-University Collaborative Research Center.

These research centers represent the primary areas of the department’s research growth and they reflect our implementation of the strategic plan focus areas of the Ira A. Fulton School of Engineering. These activities involve much more than Electrical Engineering, bridging to other departments at ASU, and companies and universities around the world. These research efforts are aligned with national and international efforts to address worldwide challenges in energy production and distribution, healthcare technology and delivery, sustainable development and economic growth, communications technology and information management, and global security.

Stephen M. Phillips, PhD, PE
Professor and Chair

FACULTY HONORS

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<td>IEEE or APS Fellows</td>
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<td>NSF or NIH CAREER awardees</td>
<td>10</td>
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<td>NSF or ONR Young Investigators</td>
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FINANCIAL SUMMARY

Department of Electrical Engineering
Sponsored Research Expenditures

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<tr>
<td>2006</td>
<td>13.5 Million</td>
</tr>
<tr>
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<td>15.6 Million</td>
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<tr>
<td>2008</td>
<td>20.1 Million</td>
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Professor Ning Wins Three Awards

In his first year in the Department of Electrical Engineering, Professor Cun-Zheng Ning earned three distinguished awards. The Institute of Electrical and Electronics Engineers’ (IEEE) Laser Electro-Optional Society (LEOS) presented him a distinguished lecturer award, which came with travel funds to a minimum of six LEOS chapters to deliver lectures on his area of expertise. Ning also has been granted a four-year, $800,000 research award by the Defense Advanced Research Projects Agency to develop nanoscale lasers under the department’s Nanoscale Architectures for Coherent Hyper-Optical Sources program. Lastly, Ning was awarded a $50,000 Science Foundation of Arizona “Strategic Planning” grant to strengthen the existing collaboration between ASU and the University of Arizona to establish a federally funded nanophotonics research center.

Professor Si Elected IEEE Fellow

Department of Electrical Engineering professor Jennie Si was elected to IEEE Fellow, effective in January 2008, for her contributions to approximate dynamic programming and to the analysis and synthesis of neural networks.

Professor Tao Leads $2.3 Million NIH Grant

The National Institutes of Health (NIH) has awarded Professor Nongjian Tao a four-year, $2.3 million grant as part of its Genes, Environment and Health Initiative. The grant will enable Tao and his co-principal investigator Erica Forzani, an assistant professor of research in the department, to develop a wearable wireless system for real-time monitoring of chemical toxicants. The project aims to develop new genomic tools and instruments that will measure environmental factors to determine how various factors affect risk for a number of human health problems.
**Professor Kozicki on Eight’s Horizon**

With his revolutionary new memory devices, professor Michael Kozicki was invited by KAET Channel Eight’s Horizon Program to give a talk, which aired on November 8, 2007. In his talk, Dr. Kozicki discussed the new devices using nano wires and a new method of storage to greatly expand flash memory and reduce the heat it produces. Dr. Kozicki is currently working on this project in collaboration with researchers in Germany.

**NSF Grant Goes to EE Research Team**

The National Science Foundation (NSF) awarded the Department of Electrical Engineering research team led by Professor Andreas Spanias a three-year, $400,000 grant. The grant will support the team’s signal processing research on ion-channel sensors for use in detecting harmful substances, such as the anthrax virus. The grant is entitled “Explosives and Related Threats: Frontiers in Prediction and Detection.” Dr. Spanias’ research partners include Professors Stephen Goodnick, ASU’s vice president of research; Stephen Phillips, the department chair; and Trevor Thornton, director of the Center for Solid State Electronics Research.

**Professor Zhang Earns Discovery Award**

The Science Foundation Arizona’s Strategic Research Group Program granted Professor Yong-Hang Zhang and his research team at the Center for Nanophotonics (CNP) a $500,000 Discovery Award. The award will help the CNP develop novel solar cells using semiconductor heterostructures and nanowires. Dr. Zhang’s proposal was chosen as one of eight out of 28 submissions.
Two EE Faculty Win Best Teacher Awards

Electrical Engineering professors **David Allee** and **Dieter Schroder** won the best Engineering Teaching Award which acknowledges their contributions to the school of engineering’s mission of providing rich educational experiences for students. Allee and Schroder were among four ASU engineering professors who received this distinguished award. The award recipients were nominated by their students, peers, and school administrators.

Professor Palais Receives First Daniel Jankowski Legacy Award

Professor **Joseph Palais** was honored as the first recipient of the Daniel Jankowski Legacy Award which recognizes ASU’s engineering school faculty whose contributions in teaching, research, and public service are deemed meritorious and considered significant in advancing the mission of the school. Palais, who received a $2,000 prize, has been at ASU since 1964. He teaches and conducts research in the area of fiber optic communications components and systems, as well as in holography. In addition to the EE director of graduate studies, Palais also holds a position of academic director of the online and professional programs for the engineering school’s Global Outreach and Extended Education office. He is a Life Fellow of the Institute for Electrical and Electronics Engineers and has won major awards from the organization for educational and research contributions. Established in 2001, the Daniel Jankowski Award honors the distinguished academic career of Jankowski, who was a professor in the College of Engineering and Applied Sciences (now the IRA Fulton School of Engineering) for 40 years until his retirement in 2004.

Professor Schroder Receives Distinguished van der Ziel Award

Professor **Dieter Schroder** received the Institute of Electrical and Electronics Engineers van der Ziel Award in recognition of his distinguished career in education and research. This award, previously given to National Academy of Engineering members and a Noble Prize winner, is named after Aldert van der Ziel, the well-known semiconductor expert who was active in the area of semiconductor research for many years.
The American Physical Society (APS) recognized Professors David Ferry and Ying-Cheng Lai as among its inaugural year’s Outstanding Referees. Ferry and Lai were the honorees chosen among 534 out of APS 42,000 active referees. The award recognizes their contributions to the physics community by their hard work and careful attention to the peer review process for publication in APS journals. The honorees come from 33 different countries, with large contingents from the US, Germany, UK, Canada, and France. The selection of the award was made based on two decades of database records on over 50,000 referees who have been called upon to review manuscripts, of which 33,000 were submitted in 2007.

Faculty Books


Professor Goodnick Receives Outstanding Leadership and Service Award

The Electrical and Computer Engineering Department Heads Association (ECEDHA) awarded Professor Stephen Goodnick the 2008 Robert M. Janowiak Outstanding Leadership and Service Award. The award honors his commitment and dedication to electrical and computer engineering education, his leadership and extensive contributions to ECEDHA, and his outstanding service to the profession throughout his career.

ASU’s Epsilon Beta Wins Outstanding Chapter Award

The ASU (Epsilon Beta) chapter of the Eta Kappa Nu won the Outstanding Chapter Award by the Electrical and Computer Engineering Department Heads Association (ECEDHA) for its 2006-2007 activities. The award was presented on March 17, 2008 in San Diego. Professor Stephen Goodnick is the chapter advisor.

Professor Heydt Obtains Distinguished Overseas Scientist Award

The Cyprus Research Promotion Foundation in Nicosia honored ASU’s Electrical Engineering professor Gerald T. Heydt with the Distinguished Overseas Scientist Award. This award, which was presented on November 14, 2007, was made by Director General A. Patzinakos on behalf of the foundation.

Professor Bakkaloglu Selected WINTech Associate Director

WINTech Center recently appointed Professor Bertan Bakkaloglu as its Associate Director. Dr. Bakkaloglu, who joined ASU in August 2004, began his new position in October 2007. He has been involved in several WINTech and Connection One initiatives and has been funded by Connection One for the past few years.
Affiliate Professors provide additional support to the Department of Electrical Engineering:

Several professors from other departments are formally affiliated with the Department of Electrical Engineering. Their duties are primarily in research, advising and student mentoring.

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

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

Dey, Sandwip, PhD, Alfred University: MOCVD and chemical processing science of electroceramics and contact metals.

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

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

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

Morrell, Darryl, PhD, Brigham Young University: Probability theory, decision theory, attentive sensors, target tracking, engineering pedagogy as a scholarly discipline.

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

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

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

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

New Hires

Jennifer M. Blain Christen, Assistant Professor, PhD, Johns Hopkins University:
Research interests include: Bio-compatible integration techniques for CMOS electronics; microfluidics and soft lithography; 3D and non-traditional microfabrication techniques and devices; MEMS devices with emphasis on bio-MEMS; analog and mixed-mode VLSI for bio-medical/analytical instrumentation including SOS/SOI technologies.

David H. Frakes, Assistant Professor, PhD, Georgia Institute of Technology:
Research interests include: Vascular flow imaging and associated fluid dynamic applications, suppression of optical turbulence distortion in video, machine vision for industrial control systems.

Marco Saraniti, Professor, PhD, Technische Universitaet, Muenchen, Germany:
Research interests include: Computational electronics and biophysics.

Bingsen Wang, Assistant Professor, PhD, University of Wisconsin-Madison:
Research interests include: Power converter topologies, in particular, multilevel converters and matrix converters; modulation and control of power electronic systems; application of power electronics to renewable energy systems, power conditioning, FACTS, and electric drives.

Hongyu Yu, Assistant Professor, PhD, University of Southern California:
Research interests include: Wireless sensing and communication, microfluidic analysis systems, acoustic transducers, micro fuel cells, accelerometer, and mass spectrometer.
# Electrical Engineering

## Doctoral Graduates

### Summer 2007

**Essam Al-Ammar**, “Development of a Novel Method for Transformer Failures Detection Caused by Transportation or Short Circuit,” G. Karady, chair

**Sayeed Ahmed Badrudduza**, “Low Power Robust Memory Circuit Design,” L. Clark, chair


**Bashir Uddin Mahmud**, “Vertical MOSFET Design,” D. Schroder, chair

**Michael P. McGarry**, “Multi-Channel Ethernet Passive Optical Networks,” M. Reisslein, chair

**Balasubramanian Pinnangudi**, “A New Approach to Assess Remaining Life of Non-Ceramic Insulators,” R. Gorur, chair

**Sameer M. Venugopal**, “Flexible Active Matrix Displays and Integrated Amorphous Silicon Source Drivers,” D. Allee, chair

**Xuejin Wang**, “Systematic Design of Supply Regulated LC Tank Voltage Controlled Oscillators,” B. Bakkaloglu, chair

### Fall 2007

**Mehmet Argin**, “Polyurethane Foam Application for High Voltage Insulation,” G. Karady, chair

**Asha Balijepalli**, “Compact Modeling and Applications of a PD Soi Mesfet,” T. Thornton, chair

**Visar Berisha**, “Bandwidth Extension of Speech Using Perceptual Criteria,” A. Spanias, chair

**Tai-Hua Chen**, “Ultra-Low Power Radiation Hardened Integrated Circuits,” L. Clark, chair

**Xiaomin Chen**, “Design and Analysis of a Low-power Low-complexity Ultra Wideband Impulse Radio Transmitter,” S. Kiaei, chair

**Joseph E. Ervin**, “Fabrication and Characterization of Soi Mesfets,” T. Thornton, chair

**Rony Ferzli**, “Perceptual Based Image Quality Assessment and Enhancement,” L. Karam, chair

**Feng Guo**, “Robust Visual Tracking of Articulated Human Motion,” G. Qian, chair

**Jun Hu**, “Iterative Decoding and Detection for Wireless and Storage Systems,” T. Duman, chair

**Hasanur Rahman Khan**, “Quantum Transport Simulation of Nano-scale FinFET Devices,” D. Vasileska, D. Mamaluy, co-chairs


**Weimin Wu**, “Advanced Compact Modeling of Silicon-On-Insulator MOSFETs for VLSI Applications,” G. Gildenblat, chair

**Dong Zheng**, “Physical-layer Aware Control and Optimization in Stochastic Wireless Networks,” J. Zhang, chair


### Spring 2008

**Ishfaq Ahsan**, “Challenges of Accurate Gate Length Characterization with Emphasis on the Effects of Intra-Die Thermal Variation,” D. Schroder, chair

**Jason S. Ayubi-Moak**, “Global Modeling of Microwave Transistors using a Full-Band Cellular Monte Carlo/Full-Wave Maxwell Simulator,” S. Goodnick, chair

**Stanislav Ogurtsov**, “Unconditionally Stable and Wavelet Based Finite-Difference Time-Domain Methods for Electromagnetic Simulations,” G. Pan, chair

**Peter J. Bevelacqua**, “Antenna Arrays: Performance Limits and Geometry Optimization,” C. Balanis, chair
Vijay N. Choudhary, “Fault-tolerant Circuit Topologies and Digital Control Methods for Modular DC-DC Converters,” R. Ayyanar, chair

James Dankert, “Approaches to Asynchronous Control of Motor Cortical Neural Prosthetics,” J. Si, K. Tsakalis, co-chairs

Joshua Hihath, “Methods and Applications in Single Molecule Electronics,” N. Tao, chair

Beshan Kulapala, “Discrete and Continuous-Time Collaborative Prefetching of Continuous Media,” M. Reisslein, chair

Matthew J. Marinella, “Characterization of 4H-SiC MOS Capacitors,” D. Schroder, chair

Dongwon Park, “Wide Dynamic Range and High SNR CMOS Image Sensor,” Y. Joo, chair


Shivkumar Sabesan, “Spatiotemporal Brain Dynamics in Epilepsy: Application to Seizure Prediction and Focus Localization,” K. Tsakalis, L. Jassemidis, co-chairs

Giby Samson, “Robust Dynamic Circuits with Low Power and High Performance for Nanometer CMOS Technologies,” L. Clark, chair

Lei Yang, “Understanding and Analyzing Direct Heuristic Dynamic Programming,” J. Si, chair

Palais Award

Dr. Visar Berisha was the recipient of the Palais Doctoral Outstanding Student Award for 2007-2008. Berisha’s dissertation was titled “Bandwidth Extension of Speech Using Perceptual Criteria,” and he was advised by Professor Andreas Spanias. Berisha is presently working at MIT Lincoln Labs.

Undergraduate Electrical Engineering Students Honors and Scholarships

Merit Scholars: 14
Honors Students: 39
Scholarships (private/corporate): $70,732
Per student average: $3,368
EE Student Wins First Prize in IEEE Conference

Yan Ma, a PhD student in electrical engineering, was the winner of the student paper completion in the IEEE Transmission and Distribution Conference and Exhibition recently taking place in Chicago. Ma’s paper was entitled “A New Method Based on Current Injection for Investigating Grounding Grid Integrity.” Ma works under the guidance of Professor George Karady.

EE Graduate Assistant Selected in Top 22

Shankar Thirunakkarasu was selected as one of the top 22 teaching assistants by ASU’s Graduate Student Professional Association.

EE Research Team Wins Best Student Paper Award in France

The Department of Electrical Engineering’s graduate students Gordon Wichern, Brandon Mechtley, Alex Fink, and Kai Tu won the Best Student Paper Award in the 2007 International Workshop on Content-Based Multimedia Indexing taking place in June in Bordeaux, France. Their paper, under the supervision of Professors Harvey Thornburg and Andreas Spanias, was titled “Robust Multi-Feature Segmentation and Indexing for Natural Sound Environments.”
Graduate Fellowships in Electrical Engineering

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<tr>
<td>ARCS—Achievement Rewards for College Scientists:</td>
<td>Joshua Hihath, Mathew Marinella, and Bradley Oraw</td>
</tr>
<tr>
<td>Fulton Fellowship:</td>
<td>Peter Knee, Mark Reese, Donna Simon, and Elizabeth Steenbergen</td>
</tr>
<tr>
<td>NASA Graduate Student Researchers Program (GSPR):</td>
<td>Jeffrey Dickeson</td>
</tr>
<tr>
<td>IGERT—Integrative Graduate Education and Research Training Awards:</td>
<td>Alex Fink and Gordon Wichern</td>
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<tr>
<td>UGF—University Graduate Fellowship:</td>
<td>Oluwaseun Amoda, Wenjian Chen, Chih-Chieh Cheng, Aron Cummings, Tim Day,</td>
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<td>Ameya Galinde, Qinghai Gao, Weiyan Ge, Peter Knee, Jingjing Li, Jinane</td>
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<td>Mounsef, Leo Petrossian, Hang Song, Srenivas Varadarajan, Le Wang, and Jun</td>
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<td>Zhang</td>
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<td>UGS—University Graduate Scholarship:</td>
<td>Jeremy Lambert and Aaron Williams</td>
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<tr>
<td>UGS plus IGERT—University Graduate Scholarship and Integrative Graduate Education and Research Training Awards:</td>
<td>James Bridgewater and Ben Green</td>
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<tr>
<td>SFAz—Science Foundation Arizona:</td>
<td>Debin Li, Mark Reese, Donna Simon, Elizabeth Steenbergen, and Shanshan Wang</td>
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Alumni News

Find out about your classmates in the EE alumni newsletter. The Department of Electrical Engineering has developed a conduit to connect with their alumni—the EE Connections newsletter.

The alumni newsletter, which is published semiannually, features profiles of EE graduates, department news, and research and faculty updates.

For our next newsletter we would like to hear your story. Please send any career updates, favorite ASU memories, and address changes to the department, so we can keep your information up to date and ensure that you receive a copy of the alumni newsletter.

To sign up for the newsletter, please fill out the form at http://ee.fulton.asu.edu/files/shared/alumni/Alumni_Update.doc and email it to askee@asu.edu.

Also, to read previous editions of the newsletter, visit http://ee.fulton.asu.edu/alumni/.

EE Alumnus Wins Intel Achievement Award

EE Alumna Chetan Prasad received this year’s Intel Achievement Award (IAA), which recognizes Intel Corporation employees for achieving exceptional results in a major research program. Prasad, who earned his PhD in electrical engineering under the guidance of Professor David Ferry in 2003, and his team won the award in recognition of their successful research on high-K/metal gate transistor technology. This significant advance allows implementation of this technology into its HVM (high volume manufacturing) production line for its 45nm process generation. The award decision was made by the company’s executive panel, including the CEO.
WINTech:
Wireless Integration Nano Technology Center

Connection One:
Communication Circuits and System Research Center

It has been five years since the Connection One NSF Center was established at ASU, and we are pleased to share the accomplishments of the center. The center’s focus is on the development of the next generation of integrated circuits, radio frequency IC’s, Mixed-Signal Analog/Digital Electronics, advanced transistor models and cutting-edge system on a chip for applications ranging from bio-sensors, wireless system, nano-circuits, bio-electronics, environmental and defense applications.

The center started in 2003 at ASU with 4 faculty and six industrial members. Currently, the center is a partnership of five universities with ASU as the lead institution. In addition to Arizona State University (the lead university), the center includes the University of Arizona, the University of Hawaii, Rensselaer Polytechnic University and The Ohio State University. The center has over 25 industrial members collaborating with the center researchers in the development of integrated system on a chip.

The center has grown tremendously over the past five years. New labs and research facilities have been built at ASU in the following areas: RF IC design, mixed-signal analog/digital IC testing, VLSI design and system testing, MEMS system fabrication, electromagnetic and Antennas anechoic chamber, and RF screen room testing facilities. There are over 25 projects funded by the center, with 75 full time Research Assistants being supported by the center. The Integrated Systems fabricated in the center use TSMC, IBM, Honeywell, Freescale, SPAWAR, Peregrine, and DARPA Trusted Foundry group. Connection One currently has over 20 faculty within the five universities with several Post Docs, and over 75 PhD/ Master students. We hope to continue to grow over the next year, by partnering with new Universities and Industry members. Thank you to all our faculty, staff, students, and friends for making this center grow and prosper.

Sincerely,

Dr. Sayfe Kiaei
Director
Connection One/WINTech

Additional information on Connection One is available at:
http://www.connectionone.org
WINTech’s Mission Statement

The goal of WINTech is to improve the current standard of living through the design and advancement of small, highly integrated electrical and electro-mechanical systems.

Introduction to WINTech

Wireless systems are a budding technology that will go beyond the current cellular telephone application. This young technology will play a dominant role in a variety of fields, including information processing, remote sensing, autonomous monitoring, homeland security, bio-medical sensors, and bio-telemetry.

Recognizing this, Arizona State University established the Wireless Integrated Nano Technology (WINTech) program within the Ira A. Fulton School of Engineering. Over 20 faculty and 100 graduate research assistants from Bio-Engineering, Electrical Engineering, Computer Science and Engineering, and Chemical and Materials Engineering help comprise this multi-disciplinary, comprehensive research program. In addition, WINTech works closely with other ASU centers such as the Center for Solid State Electronics Research (CSSER), Embedded Systems, the Institute for Bio-Inspired Nanosystems, and the existing National Science Foundation Industry/University Cooperative Research Center (NSF I/UCRC) at ASU, Connection One.

Target Technologies

RFIC & Wireless Transceivers on a Chip
RF Identification & Sensor Circuits
Millimeter & Microwave Systems Antennas
MEMS & Integrated Sensors
Bio-Electronics, Bio-telemetry, Digital Hearing Aid on a Chip
Radiation Hard Electronics & Harsh Environment Electronics
Circuit and Device Modeling & CAD tools
New Faculty

WINTech would like to welcome two new faculty members, Hongyu Yu and Jennifer Blain Christen. Hongyu Yu works on developing MicroElectroMechanical System (MEMS) for Earth and Space applications and holds the joint position between the School of Earth and Space Exploration and Electrical Engineering Department.

Jennifer Blain Christen’s research focuses on using engineering principles to design and fabricate innovative systems for biological and life science research. She uses analytical (circuit design, FEA, theoretical biology and chemistry) and empirical (microfabrication, bioassays, soft lithography/microfluidics) techniques in creating these systems. These two bring innovative new research to the center, and we are excited to see where their research goes this year.

Faculty and Areas of Expertise

Abbas Abbaspour-Tamijani
Assistant Professor
Microwave & Antennas

James Aberle
Associate Professor
Microwave & Antennas

Bertan Bakkaloglu
Associate Director
Analog & Mixed-Signal IC

Hugh Barnaby
Assistant Professor
Devices, Passives, & Energy Systems

Jennifer Blain Christen
Assistant Professor
Bio-MEMS

Yu (Kevin) Cao
Assistant Professor
VLSI

Junseok Chae
Assistant Professor
Analog & Mixed-Signal IC

Lawrence Clark
Associate Professor
ASUVLSI

Rodolfo Diaz
Associate Professor
Microwave & Antennas

Gennady Gildenblat
Professor
PSP Modeling

Bahar Jalali-Farahani
Assistant Professor
Analog & Mixed-Signal IC

Sayfe Kiaei
Director
Analog & Mixed-Signal IC

George Pan
Professor
Analog & Mixed-Signal IC

Bert Vermeire
Assistant Professor, Research Devices, Passives, & Energy Systems

Hongyu Yu
Assistant Professor
MEMS
Prosthetic Hand

Professor Ranu Jung in collaboration with Professor James Abbas, Electrical Engineering Professors Bertan Bakkaloglu, Sayfe Kiaei, and Stephen Phillips and partners from Mayo Clinic, Motion Control Inc, Cochlear Ltd. and Artificial Limb Specialists were awarded a five year Bioengineering Research Partnership award from the National Institutes of Health (NIH).

Though there have been many advances in prosthetic technologies, existing systems are significantly limited in their ability to fully restore function after limb loss. These limitations are manifest in the types of activities that can be achieved, the ease with which the tasks can be performed and the richness of the experience. Truly advanced prosthetic systems will require seamless integration of the intact sensory-motor living system with advanced highly capable artificial limbs.

This Bioengineering and Electrical Engineering research partnership proposes to develop an advanced prosthetic system that uses electrodes implanted within the fascicles of peripheral nerves to provide upper extremity amputees with sensory feedback and active volitional control of the prosthesis.

The proposed work will bring together a multidisciplinary team with expertise in rehabilitation, biomedical engineering, wireless and sensor technology development, kinesiology and neurophysiology from Arizona State University, hand surgery and occupational therapy practice at Mayo Clinic Arizona in Scottsdale, AZ, a prosthetic practice in Phoenix, AZ, a leading international medical neural implant device company, and a leading U.S. manufacturer of myoelectric and externally powered prosthetic arm systems.
The SenSIP Center was originated in 2004 as an Ira A. Fulton School of Engineering research cluster. It consists of faculty from signal processing and communications concentrating on state-of-the-art research on integrated sensing and processing and wireless sensor networks. Since then, the center expanded to integrate multidisciplinary research on biosensing, applied mathematics, and mechanical engineering, and collaborated with Arts, Media and Engineering (AME) and the Biodesign Institute. SenSIP has been approved as an ABOR Center in 2008.

The SenSIP Center established an industry consortium that held its first industry meeting and open house in February 2007. The SenSIP Consortium has paid industry members; the first three members are Acoustic Technologies Inc, National Instruments (NI) Corporation, and Raytheon Missile Systems. These industry projects are focused on nonlinear echo cancellation, sensor software modeling, and radar signal processing.

New collaborative funded projects have been established by SenSIP: NSF EXP project on ion channel sensors with CSSER; NSF project on MRI with mathematics faculty and BNI scientists; two chemical sensor projects with the Biodesign Institute; NSF Earth Systems project with Johns Hopkins University; NASA project with mechanical engineering faculty; and a large education project with the University of New Mexico. These new projects add to large ongoing programs with top-rated institutions including Princeton, Purdue, UC San Diego, and Harvard. In 2007-2008, the center’s work garnered multiple grants and contracts from DARPA, AFOSR, ONR and NSF, including three DoD Multiuniversity Research Initiatives (MURIs). Industry sponsors include Intel Corporation, Sun Microsystems, Motorola, and Raytheon Missile Systems.

SenSIP held its first workshop (http://www.asu.edu/sensip/) on May 11-14, 2008 in Sedona, AZ. The workshop program focused on state-of-the-art research areas: agile and adaptive sensing, compressive sensing, biosensing, wireless sensor networks, and defense and industry sensing applications. The workshop featured a keynote presentation by E. Perez (National Instruments), and six plenary speakers: R. Baraniuk (Rice), R. Bonneau (AFOSR), J. Cozzens (NSF), E. R. Dougherty (Texas A&M), P. R. Kumar (Univ. of Illinois), and M. Wicks (AFRL).
PSERC is a National Science Foundation Industry/University Cooperative Research Center that is addressing challenges in the new electric power industry as it evolves from its historical business structure. Challenges for success in this demanding business environment are being raised by new market structures and ways of doing business, new technologies, the demands of customers for customized services, strategic choices between centralized and decentralized technologies, institutional changes creating mega-RTOs, a graying industry that needs well-trained power engineers, and new environmental priorities. Yet the basic function of the industry—to produce and to deliver power, safely and reliably—has not changed. The challenges call for new strategies, technologies, analytical capabilities and tools, and operating practices, along with sound public policy guidance.

Under the banner of PSERC, multiple U.S. universities are working collaboratively with the industry to:

- engage in forward-thinking about future scenarios for the industry and the challenges that might arise from them
- conduct research for innovative solutions to these challenges using multidisciplinary research expertise in a unique multi-campus work environment
- facilitate interchange of ideas and collaboration among academia, industry and government on critical industry issues
- educate the next generation of power industry engineers.

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 RESEARCH

PSERC’s comprehensive research program spans markets, T&D technologies and systems to find opportunities for advancing high performance electric power systems through better ideas.

Research Stem 1: Markets

Market research focuses on market design, verification and validation within the context of electricity market restructuring. Representative research topics are active load participation, auction policies and strategies, market mechanisms, restructured market assessment and transmission asset valuation.

Research Stem 2: Transmission and Distribution

This research improves performance of T&D systems by finding new applications for innovative technologies. Representative research topics are automation, intelligent devices and control concepts, management of an aging infrastructure, protection systems, stability and dynamic limits, substation data integration and functionality, and state estimation.

Research Stem 3: Systems

Systems research seeks ways to increase use, efficiency and reliability of increasingly complex and dynamic power systems. Representative research topics are cascading events, complex systems, computational methods for large systems, control schemes, distribution system reliability, risk assessment, security assessment, transfer limits and visualization.

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

Below: A collection of power converters
The center’s mission is to conduct research, to develop technology and to provide educational programs that will engender international leadership in solid-state electronics. This mission is accomplished in several ways:

- the provision of critical resources and infrastructure
- the support and education of quality students
- the support of renowned and high-promise research faculty and staff in multidisciplinary environments
- the maintenance of significant levels of research funding from government and industry sources
- the publication and presentation of work in top journals and at leading conferences
- the transfer of technology to the commercial sector

Additional information on CSSER facilities is available at: http://www.fulton.asu.edu/nanofab
The Arizona Institute for Nano-Electronics (AINE) seeks to make a mark as a source of pioneering innovation in the nascent field. Headed by Dr. Stephen Goodnick, 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 research centers involved are the Center for Nanophotonics, the Center for Applied Nanoionics, the Center for Biomolecular Integrated Circuits, and the Center for Computational Nanosciences.

The main focus of AINE is in 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: Dr. Trevor Thornton  

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

**Center for Applied Nanoionics**  
Director: Dr. Michael N. Kozicki  

The CANi lies at the cutting edge of worldwide research into the materials and devices that rely on ion transport and chemical change at the nanoscale. 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.

**Center for Computational Nanoscience**  
Director: Dr. 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 in 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.

**Center for Nanophotonics**  
Director: Dr. Yong-Hang Zhang  

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

Additional information about AINE and its constituent research centers can be found at the following websites:

**AINE**: [http://www.asu.edu/aine/](http://www.asu.edu/aine/)  
**Center for Biomolecular Integrated Circuits**: [http://www.asu.edu/aine/cbic/cbic_main.html](http://www.asu.edu/aine/cbic/cbic_main.html)  
**Center for Applied Nanoionics**: [http://www.asu.edu/aine/cani/cani_main.html](http://www.asu.edu/aine/cani/cani_main.html)  
**Center for Computational Nanoscience**: [http://www.asu.edu/aine/ccn/ccn_main.html](http://www.asu.edu/aine/ccn/ccn_main.html)  
**Center for Nanophotonics**: [http://www.asu.edu/aine/nanop/nanop_main.html](http://www.asu.edu/aine/nanop/nanop_main.html)
Abbas Abbaspour-Tamijani
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Office: GWC 320
Assistant Professor, PhD, University of Michigan, Ann Arbor

Dr. Abbas Abbaspour-Tamijani joined ASU in the fall of 2004. He received a PhD in electrical engineering from the University of Michigan, Ann Arbor, in 2003, and his BS and MS degrees from the University of Tehran, Iran, in 1994 and 1997, respectively. From 1997 to 2000, he worked as a consulting RF engineer. In 2004, he was a senior Antenna RF Engineer with Mollia Inc., Pasadena, California.

His research focuses on novel components and architectures for reconfigurable RF front-end systems, including beam-steerable and reconfigurable antennas, ultrawideband tunable filters, vibrating and non-vibrating RF MEMS devices, and multi-functional millimeter-wave modules. His research interests also include development of implantable microwave devices for sensing and telemetry of biological events.

Dr. Abbaspour-Tamijani is a member of the IEEE Microwave Theory and Techniques, Antennas and Propagation, and Engineering in Medicine and Biology societies. He is a recipient of DARPA’s Microsystems Technology Office Young Investigator Award.

Research Interests: RF MEMS technology and its applications to reconfigurable and beam-steerable antennas and tunable and programmable filters, integrated and multi-functional front-end modules, microwave technology for neural interfacing and biotelemetry.

Selected Publications:

James T. Aberle
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Office: GWC 326
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, M (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:

Personal Web site:
http://www.fulton.asu.edu/~aberle

David R. Allee
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Associate 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 60 archival scientific publications.

Selected Publications:
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 50 journal and conference papers in the area of switch mode power electronics and holds two U.S. patents. Dr. Ayyanar was awarded the ONR Young Investigator Award in 2005.

Research Interests: Topologies and control techniques for switch-mode power conversion, especially DC-DC converters, modular, fault-tolerant power conversion architecture, power conversion and control for renewable energy interface, digital PWM techniques for motor drives, voltage regulators, digital control, power management, power systems applications of power electronics.

Selected Publications:

Bertan Bakkaloglu joined the ASU faculty in August 2004. He received a PhD in electrical and computer engineering in 1995 from Oregon State University and an MSC in 1992 from the University of Houston, Texas. 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 wireless communication transceivers. He is a technical committee member for IEEE Radio Frequency Integrated Circuits Conference and founding chair of the IEEE Solid State Circuits Society Phoenix Chapter.

Research Interests: RF and mixed-signal IC design, wireless and wireline communication circuits and systems, broadband communication ICs and systems, integrated power management for digital communication transceivers.

Selected Publications:

Constantine A. Balanis joined the ASU faculty in 1983 and is now a Regents' Professor of electrical engineering. He has published over 128 journal papers, 215 conference papers, 12 books, 8 magazine/newsletter papers, and numerous scientific reports. He has also published two textbooks: Antenna Theory: Analysis and Design and Advanced Engineering Electromagnetics and one book 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), smart/adaptive antennas for wireless communications, and electromagnetic wave multipath propagation.

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 Award, IEEE Phoenix Section Special Proficiency Award.

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~balanis/
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.


Selected Publications:

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. Her dissertation focused on hybrid systems for life science applications exemplified through a micro-incubator for cell culture and incubation. She conducted her post-doctoral research at the Immunogenetics Department of the Johns Hopkins Medical School. Her post-doctoral research focused on clinical implementation, in both fabrication and use, of PDMS microfluidic devices. Through this work, she fabricated a microfluidic platform for homogeneous (single-strand) HLA (human leukocyte antigen) allele detection.

Research Interests: Bio-compatible integration techniques for CMOS electronics; microfluidics and soft lithography; 3D and non-traditional microfabrication techniques and devices; MEMS devices with emphasis on bio-MEMS; analog and mixed-mode VLSI for bio-medical/analytical instrumentation including SOS/SOI technologies.

Honors and Distinctions: National Science Foundation Graduate Teaching Fellow in K-12 Education (2005-2006), National Science Foundation Graduate Research Fellowship (2001-2005), General Electric Faculty for the Future Undergraduate Engineering Research Opportunities Grant (1998), Maryland Scholars Award (1997).

Selected Publications:

Kevin Cao joined the ASU faculty in 2004. He received a PhD in electrical engineering in 2002 and an MA in biophysics in 1999 from the University of California, Berkeley, and conducted his post-doctoral research at the Berkeley Wireless Research Center. He has published more than 80 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: 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:
Junseok Chae joined the ASU faculty in 2005. He received his MS and PhD in electrical engineering in 2006 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, mixed-signal interface electronics, MEMS packaging, ultra-fast pulse (femto-second) lasers for micro-/nano-structures and Cell-on-a-Chip Bio-MEMS. He has published over 30 conference/journal articles and book chapters. He holds a couple of U.S. patents and was invited to talk at Microsoft Inc. regarding “MEMS Technology for Consumer Electronic Applications.”


Selected Publications:

Personal Web site:
http://www.public.asu.edu/~jchae2

Chaitali Chakrabarti received her B. Tech. 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, algorithm/architecture co-design of signal processing systems and CAD tools for VLSI.


Selected Publications:


Lawrence T. Clark worked at Intel Corporation after receiving his BS in computer science in 1983. Later, Dr. Clark worked at VLSI Technology Inc. and 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 approximately 55 patents, and has about 15 pending. He has published over 60 peer reviewed technical papers. He has about 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 and Distinctions: Senior member of IEEE; associate editor of IEEE Transactions on Circuits and Systems II; recipient of the Intel Achievement Award and multiple Intel Divisional Recognition Awards; member of the IEEE Custom Integrated Circuits Conference Technical Committee.

Selected Publications:
Douglas Cochran
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Office: BY 666
Assistant Dean for Research, Associate Professor, PhD, Harvard University

Douglas Cochran joined the ASU faculty in 1989 and now serves as assistant dean for research in the Ira A. Fulton School of Engineering. He holds PhD and SM degrees in applied mathematics from Harvard University and degrees in mathematics from UCSD and MIT. Before coming to ASU, he was a senior scientist at BBN Laboratories. Professor Cochran has served as program manager for mathematics in the U.S. Defense Advanced Research Projects Agency, as a consultant for the Australian Defense Science and Technology Organisation, as associate editor of the IEEE International Conference on Acoustics, Speech, and Signal Processing and in the 1997 U.S.-Australia Workshop on Defense Signal Processing.

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; IEEE Senior Member.

Selected Publications:

Rodolfo Diaz
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Associate Professor, PhD, UCLA

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 through 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 is an associate professor in electrical engineering, former associate director of the Consortium for Metrology of Semiconductor Nanodefects, and holds 20 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:


Tolga M. Duman
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Office: GWC 411B
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 Department of Electrical Engineering since August 1998.

Research Interests: Digital communications, wireless and mobile communications, channel coding, turbo codes and turbo-coded modulation systems, sensor and ad-hoc networks, coding for magnetic recording channels, underwater acoustic communications, and coding for wireless communications.


Selected Publications:


Personal Web site: http://www.fulton.asu.edu/~duman
Richard Farmer
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Office: ERC 585
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 1986. 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.

Selected Publications:

David K. Ferry
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Phone: (480) 965-2570
Office: ERC 187
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 and IEEE, 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:


David H. Frakes
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Phone: (480)727-9284
Office: ISTB1 281F
Assistant Professor, PhD, Georgia Institute of Technology

David Frakes joined ASU in the spring of 2008. He received 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. His research focuses on imaging problems in a variety of different fields.

Research Interests: Vascular flow imaging and associated fluid dynamic applications, suppression of optical turbulence distortion in video, machine vision for industrial control systems.


Selected Publications:


Research Interests:

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 130 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 he joined Arizona State University. He has developed the advanced surface-potential-based SP and PSP compact MOSFET models. The PSP model (joint development with Philips) has been 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.

Selected Publications:


Stephen Goodnick

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Office: ERC 493
Professor, PhD, Colorado State University

Stephen Goodnick is presently Associate Vice President for Research, and Director of the Arizona Institute for Nanoelectronics. 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 from 1986 to 1996. 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 (ECDEHA), and as program chair of the Fourth IEEE Conference on Nanotechnology. Dr. Goodnick has published over 165 refereed journal articles, books and book chapters.

Research Interests: Transport in semiconductor devices, computational electronics, quantum and nanostructured devices and device technology, high-frequency and optical 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:


Ravi Gorur

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Phone: (480) 965-4894
Office: ERC 515
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. Since 1995, he has held the position of professor, and presently he is the director of undergraduate programs in the department.

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, 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, 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:


Michael Goryll
E-mail: Michael.Goryll@asu.edu
Phone: (480) 965-9517
Assistant Professor, PhD, RWTH Aachen University, Germany

Michael Goryll joined the faculty in 2007. He received a PhD in physics in 2000 and a Diploma 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: Si and SiGe Chemical Vapor Deposition, self-organization phenomena during semiconductor growth, surface and interface physics, strain in semiconductors, new materials in CMOS processing, fabrication of nanoscale semiconductor devices, biosensors based on silicon, biological signal transduction phenomena, electronic properties of cell membrane ion channels.

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

Selected Publications:


Gerald T. Heydt
E-mail: heydt@asu.edu
Phone: (480) 965-8307
Office: ERC 507
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.


Selected Publications:


Keith Holbert
E-mail: holbert@asu.edu
Phone: (480) 965-8594
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 85 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:


Personal Web site: http://ee.fulton.asu.edu/faculty/heydt.php
Joseph Hui
E-mail: jhui@asu.edu
Phone: (480) 965-5188
Office: GWC 411
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 and the Chinese University of Hong Kong before joining ASU. He is the founder of IXTech and IXSoft, Inc.

Research Interests: Wireless networks, gigabit wireless communications, ATM switching and routing, teletraffic analysis, coding and information theory, space-time communications.


Selected Publications:

Bahar Jalali-Farahani
E-mail: Bahar.Jalali@asu.edu
Phone: (480) 727-7191
Office: GWC 340
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 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:

George G. Karady
E-mail: karady@asu.edu
Phone: (480) 965-6569
Office: ERC 589
Professor, PhD, University of Technical Sciences, Budapest

George G. Karady received his BSEE 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 electrical task supervisor for the Tokomak Fusion Test reactor project in Princeton. He graduated 19 PhD and more than 35 MS students. Dr Karady is an IEEE fellow and he published a book and has more than 120 journal and 180 conference publications. He also received an honorary doctorate from the Technical University of Budapest in 1996.

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

Honors and Distinctions: Fellow of IEEE, chair of IEEE PES 10 Power Electronics Subcommittee. He chaired the Award Committee of the IEEE PES Chapters and Membership Division from 2000-2005 and was the president of the IEEE Phoenix Section in 2004. In 1996, Dr. Karady received an Honorary Doctoral Degree from the Technical University of Budapest, in 1999 the IEEE Third Millennium Medal, and in 2002 the IEEE Power Engineering Society Working Group Recognition Award as the chair of WG that prepared IEEE Standard 1313-2.

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~karady
Lina Karam
E-mail: karam@asu.edu
Phone: (480) 965-3694
Office: GWC 430
Associate 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 an associate 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. Karam is the recipient of a National Science Foundation CAREER Award. She is the technical program chair of the 2009 IEEE International Conference on Image Processing, an associate editor of the IEEE Transactions on Image Processing, and the lead guest editor for the special issue on "Visual Quality Assessment" of the IEEE Journal on Selected Topics in Signal Processing. She serves on the technical committees of main IEEE conferences, including ICASSP, ICIP, ISCAS, and Asilomar.

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

Honors and Distinctions: 2009 IEEE International Conference on Image Processing; IEEE Signal Processing and Communications Chapter, IEEE Phoenix Section, 2005; NSF CAREER Award, 1998; Georgia Tech Graduate Student Senate Presidential Citation Award, 1994; Society of Women Engineers Outstanding Graduate Student Award, 1994.

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~karam

Sayfe Kiaei
E-mail: sayfe@asu.edu
Phone: (480) 727-8044
Office: ERC 302D
Connection One Research Center; Professor, PhD, Washington State University

Dr. Kiaei is a professor in the Ira A. Fulton School of Engineering and the director of the National Science Foundation IUCRC Connection One. He joined the Department of Electrical Engineering at Arizona State University in January 2001. Prior to joining ASU, he was with Motorola, Inc. Dr. Kiaei is involved with research and teaching classes in wireless transceiver design, communication circuits and analog circuits. His research team includes more than 12 research associates and graduate students at ASU. Dr. Kiaei is also an IEEE Fellow.

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

Honors and Distinctions: Carter Best Teacher Award, IEEE Darlington Best Paper Award, IEEE Fellow, and the Motorola 10X Design Award.

Selected Publications:

Michael N. Kozicki
E-mail: michael.kozicki@asu.edu
Phone: (480) 965-2572
Office: ERC 107
Professor, PhD, University of Edinburgh; Director, Center for Applied Nanoionics

Michael Kozicki joined ASU in 1985 from Hughes Microelectronics. He develops new materials, processes and device structures for next generation integrated circuits and systems. He 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 on solid-state electronics and has developed undergraduate and graduate courses in this area. He is also a founder of Axon Technologies, an ASU spin-off company involved in the development and licensing of solid-state ionic technologies, and a Visiting Professor at the University of Edinburgh in the United Kingdom.

Research Interests: Silicon integrated-circuit processing, integrated/solid-state ionics, low-energy non-volatile memories, interconnect systems, optical switches, tunable nanomechanical resonators, and microfluidics.

Honors and Distinctions: Founder, Axon Technologies Corporation; Visiting Professor, College of Science and Engineering, University of Edinburgh; 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; College of Extended Education Outstanding Faculty Award, 1995; Lemelson-MIT Prize for Invention and Innovation Nominee, 1994; Golden Key Outstanding Professor Award, 1991

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~mkozicki
Ying-Cheng Lai
E-mail: Ying-Cheng.Lai@asu.edu
Phone: (480) 965-6668
Office: GWC 610
Professor, PhD, University of Maryland at College Park

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 250 papers, including about 220 published in refereed journals. In the past five years, he gave about 50 invited seminars and colloquia worldwide.

Research Interests: Nonlinear dynamics, solid-state electronics, complex networks, signal processing, and computational biology. Honors and Distinctions: 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, 1992; Ralph D. Myers Award for Outstanding Academic Achievement, University of Maryland College Park, 1988.

Selected Publications:


Personal Web site: http://chaos1.la.asu.edu/~yclai

Deirdre R. Meldrum
E-mail: deirdre.meldrum@asu.edu
Phone: (480) 965-9235
Office: BY 652
Dean, Ira A. Fulton School 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 Engineering Education and Diversity, 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 in August 2001 – July 2011. She is Editor for the IEEE Transactions on Automation Science & Engineering, General Chair for the IEEE Conference on Automation Science & Engineering 2007, and General Chair of the IEEE BioRobotics Conference 2008.

Research Interests: Automation in Life Sciences, Automation, Micro- and Nano Technologies, microscale systems, lab-on-a-chip, single cell, genomics, robotics, control systems.

Honors and Distinctions: Distinguished Lecturer IEEE Robotics & Automation Society 2006-2008; 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 Institute of Electrical and Electronics Engineers, 2004; Elected Fellow of the American Association for the Advancement of Science, 2003; Presidential Early Career Award for Scientists and Engineers 1996-2001.

Selected Publications:


Cun-Zheng Ning
E-mail: cning@asu.edu
Phone: (480) 956-7421
Office: ERC 157
Professor, PhD, University of Stuttgart

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 120 papers and given over 50 invited/plenary/colloquium talks. He was Associate Editor of IEEE J. Quantum Electronics (2001-2003) and editor of several special issues of IEEE and OSA journals

Research Interests: Nanophotonics and semiconductor nanowires; optical properties of semiconductor nanostructures including many-body effects; modeling and simulation of semiconductor optoelectronic devices; laser physics, quantum optics, and two-photon lasers; geometric phases; stochastic resonances.


Selected Publications:


Personal Web site: http://www.public.asu.edu/~cning/
Joseph Palais
E-mail: joseph.palais@asu.edu
Phone: (480) 965-3757
Office: GWC 212
Professor, PhD, University of Michigan

Joseph Palais joined the faculty in 1964 and is the Electrical Engineering Director of Graduate Studies. He is also Academic Director, Online and Professional Programs for Global Outreach and Extended Education of the Ira A. Fulton School of Engineering. He has published a textbook on fiber optics. The book has been translated into Japanese, Chinese, Korean and Persian. 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 EAB Achievement Award, IEEE Phoenix Achievement Award, University Continuing Education Association Conferences and Professional Programs Faculty Service Award.

Selected Publications:


Personal Web site: http://www.fulton.asu.edu/~palais

George Pan
E-mail: george.pan@asu.edu
Phone: (480) 965-1732
Office: GWC 318
Professor, PhD, University of Kansas

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 59 research articles in refereed journals and presented 91 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 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.

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

Selected Publications:


Antonia Papandreou-Suppappola
E-mail: papandreou@asu.edu
Phone: (480) 965-7881
Office: GWC 420
Professor, PhD, University of Rhode Island

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 is currently the co-director of the Sensor, Signal and Information Processing (SenSIP) Center and the assistant director of the Adaptive Intelligent Materials and Systems (AIMS) Center.


Honors and Distinctions: NSF CAREER Award, 2002; IEEE Phoenix Section Outstanding Faculty for Research Award, 2003; Fulton School of Engineering Teaching Excellence Award, 2005; IEEE Phoenix Section Society Research Award for the SenSIP Center, 2008.

Selected Publications:


Personal Web site: http://www.fulton.asu.edu/~apapand/
Stephen M. Phillips
E-mail: stephen.phillips@asu.edu
Phone: (480) 965-6410
Office: ERC 552
Professor and Chair, PhD, Stanford University

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 where he held appointments in the Departments of Electrical Engineering and Applied Physics; Systems, Control and Industrial Engineering; and subsequently Electrical Engineering and Computer Science. 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. He has held visiting positions at the NASA Lewis (now 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), microfluidics, microactuators, biological Microsystems, 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:

Gang Qian
E-mail: Gang.Qian@asu.edu
Phone: (480) 965-3704
Office: GWC 454 / Matthews Center, 240B
Assistant Professor, PhD, University of Maryland

Gang Qian joined the ASU faculty in 2003 as an assistant professor jointly with the Arts, Media and Engineering Program and the Department of Electrical Engineering. Previously, he worked as a faculty research assistant and a research associate for the Center for Automation Research at the University of Maryland Institute for Advance Computer Studies. Qian has published over fifty refereed journal articles and conference papers. He is a member of IEEE.

Research Interests: Computer vision; Multimodal sensing and analysis of human movement and activities with applications in gestural communication, embodied learning, and rehabilitation; Robust visual tracking; Video-based motion capture and activity recognition

Honors and Distinctions: University Guo-Mo-Ruo Golden Medal, USTC, 1994; Educational Institution Award for Outstanding Research Faculty, IEEE Phoenix Section 2005.

Selected Publications:

Personal Web site: http://www.public.asu.edu/~gqian/

Martin Reisslein
E-mail: reisslein@asu.edu
Phone: (480) 965-8593
Office: GWC 411A
Associate Professor, PhD, University of Pennsylvania

Martin Reisslein joined the ASU faculty as an assistant professor in 2000. He received a Dipl.-Ing. in electrical engineering from FH D" sseldorf, 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 70 journal articles and over 50 conference papers. He served as editor-in-chief of the IEEE Communications Surveys and Tutorials from 2002 through 2007.

Research Interests: Multimedia streaming in wireless environments, traffic characteristics of encoded video, metro WDM networks, and engineering education.


Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~mre
Armando A. Rodriguez  
E-mail: aar@asu.edu  
Phone: (480) 965-3712  
Office: GWC 352  
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 180 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 real-time 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:


Ronald Roedel  
E-mail: r.roedel@asu.edu  
Phone: (480) 965-9261  
Office: ECG 102  
Professor, PhD, UCLA

Ronald Roedel joined the faculty in 1981 and was associate dean of the Ira A. Fulton School 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:


Personal Web site: http://www.fulton.asu.edu/~roedel/

Marco Saraniti  
Email: marco.saraniti@asu.edu  
Phone: (480) 965-2650  
Office: ERC 105  
Professor, Technische Universitaet Muenchen

From 1996 to 1998, Marco Saraniti was a Faculty Research Associate with the Electrical Engineering Department of 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. 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:


Dieter K. Schroder
E-mail: schroder@asu.edu
Phone: (480) 965-6821
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, 165 journal articles, nine book chapters, and 151 conference presentations, edited 11 books, holds five patents and has graduated 61 MS students and 34 PhD students.

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


Selected Publications:


Personal Web site: http://www.fulton.asu.edu/~schroder

Jennie Si
E-mail: si@asu.edu
Phone: (480) 965-6133
Office: WGC 618
Professor, PhD, University of Notre Dame
Jennie Si received her BS and MS degrees from Tsinghua University, Beijing, China, and her PhD from the University of Notre Dame in 1991 where she is currently a professor.

Research Interests: Learning and adaptive systems, approximate dynamic programming for nonlinear dynamic system optimization, cortical information processing and modeling in animal brains, motor cortical brain-machine interface, pattern analysis and machine intelligence.

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

Selected Publications:


Personal Web site: http://www.fulton.asu.edu/~jenniesi/

Brian Skromme
E-mail: skromme@asu.edu
Phone: (480) 965-8592
Office: ERC 155
Professor, PhD, University of Illinois
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 Who’s Who in Science and Engineering and Who’s Who in Engineering Education.

Selected Publications:


Andreas Spanias
E-mail: spanias@asu.edu
Phone:  (480) 965-3424
Office:  GWC 440
Professor, PhD, West Virginia University

Andreas Spanias joined the ASU faculty in 1988. He is currently associate director of the ASU Arts, Media and Engineering program, Co-director of the IAFSE ABOR SenSip Center, PI of a multi-university NSF program, and Co-PI on a major NSF IGERT program. He has served as associate editor of IEEE Transactions on Signal Processing and vice-president of the IEEE Signal Processing Society. He has published more than 50 journal and 140 conference papers and contributed several book chapters. He authored two text books in DSP and Speech and Audio Coding. He was the recipient of the 2005 IEEE Signal Processing Society Mentorious Service Award. He was IEEE Distinguished Lecturer in 2004. He and former PhD student Ted Painter received the 2002 IEEE Donald G. Fink Prize Paper Award for their IEEE Proceedings paper entitled “Perceptual Coding of Digital Audio.”

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: Author of J-DSP software (http://jdsp.asu.edu) ranked in the top three educational resources in 2003 by the UC-Berkeley NEEDS panel; Intel Advanced Personal Communications Division-Central Logic Engineering Award, 1997; Intel Research Council: Natural Data Types Committee Award, 1996; Intel Corporation Award for Leadership and Contributions to the 60172 Processor Architecture, 1993.

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~spanias/

Nongjian Tao
E-mail: nongjian.tao@asu.edu
Phone:  (480) 965-4456
Office:  ERC 105
Professor, PhD, Arizona State University

Nongjian 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 holds five U.S. patents, has published 160 refereed journal articles and book chapters and has given over 150 invited talks and seminars worldwide.

Research Interests: Molecular electronics, nanostructured materials and devices, chemical and biological sensors, interfaces between biological molecules and solid materials, and electrochemical nanofabrications.


Selected Publications:

Personal Web site: http://www.public.asu.edu/~ntao1

Cihan Tepedelenlioglu
E-mail: cihan@asu.edu
Phone:  (480) 965-6623
Office:  GWC 434
Assistant professor, PhD, University of Minnesota

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

Research Interests: Wireless communications, statistical signal processing, estimation and equalization algorithms for wireless systems, filterbanks and multirate systems, carrier synchronization for OFDM systems, power estimation and handoff algorithms, space-time coding, ultrawideband communications.

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

Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~cihan

FACULTY LISTINGS
Selected Publications:


Selected Publications:

- Trevor Thornton joined the faculty in 1998 after having spent eight years at Imperial College London and two years as a member of the technical staff at Bell Communications Research, New Jersey. He invented the split-gate 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.

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


- Selected Publications:

Personal Web site: http://www.fulton.asu.edu/~thornton
Daniel Tylavsky
E-mail: tylavsky@asu.edu
Phone: (480) 965-3460
Office: ERC 517
Associate Professor, PhD, Pennsylvania State University

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:


Dragica Vasileska
E-mail: vasilesk@imap2.asu.edu
Phone: (480) 965-6651
Office: ERC 565
Professor, PhD, Arizona State University

Dragica Vasileska joined the ASU faculty in August 1997. She has published over 120 journal articles in prestigious refereed journals, 15 book chapters and 60 articles in conference proceedings in the areas of solid-state electronics, transport in semiconductors, and semiconductor device modeling. Together with Prof. Goodnick, she has co-authored a book entitled Computational electronics. 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.

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:


Personal Web site: http://www.eas.asu.edu/~vasilesk

Vijay Vittal
E-mail: Vijay.Vittal@asu.edu
Phone: (480) 965-1879
Office: ERC 513
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, Electrical and Computer Engineering Department. In addition, Dr. Vittal was a Murray and Ruth Harpole Professor and director of the university’s Electric Power Research Center and site director of the National Science Foundation IUCRC Power System Engineering Research Center. He also served as the program director of power systems for the National Science Foundation Division of Electrical and Communication Systems in Washington, D.C., from 1993 to 1994. He currently is the director of the National Science Foundation IUCRC Power System Engineering Research Center. He is the editor-in-chief of the IEEE Transactions on Power Systems. He has published 100 articles in refereed journals, 91 refereed conference proceeding articles, six 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 College of Engineering Anson Marston Distinguished Professor, 2004; Iowa State University Foundation Award for Outstanding Achievement in Research, 2003; Institute of Electrical and Electronics Engineers, Power Engineering Society Technical Council Committee of the Year Award, 2000-2001.

Selected Publications:


Personal Web site: http://enpub.fulton.asu.edu/vvittal
Bingsen Wang joined the ASU faculty in January 2008. Prior to joining ASU, Dr. Wang worked with General Electric Global Research Center, where he actively conducted research in various aspects of power electronics, mainly focused on ac power conversion in the high-power area. He currently works in the area of power electronics and its application to renewable energy, utility and electric drives.

**Research Interests:**
Power converter topologies, in particular, multilevel converters and matrix converters; modulation and control of power electronic systems; application of power electronics to renewable energy systems, power conditioning, FACTS, and electric drives.

**Honors and Distinctions:**
Senior Member of IEEE; Member of Sigma Xi; Prize Paper Award, IEEE IAS Industrial Power Converter Committee, 2006; Session Chair of IEEE IAS Annual Meeting, 2008.

**Selected Publications:**

**Personal Web site:**
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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 from Peking University, P.R. China, and conducted his post-doctoral research at California Institute and Technology and University of California at Los Angeles.

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

**Honors and Distinctions:**

**Selected Publications:**

**Research Interests:** Wireless sensing and communication, microfluidic analysis systems, acoustic transducers, micro fuel cells, accelerometer, and mass spectrometer.

**Selected Publications:**
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Frederic Zenhausern has a joint faculty appointment as full professor with the Department of Electrical Engineering and the School of Materials. He is the founder, director and professor at the Center for Applied Nanobioscience at the Biosign Institute. He is a co-investigator at the Center for Flexible Display. Zenhausern received his BS in biochemistry from the University of Geneva, his MBA in finance from Rutgers University and his PhD in applied physics from the Department of Condensed Matter at the University of Geneva. He has co-authored over 70 scientific publications and has published more than a dozen US patents. Dr. Zenhausern is Senior Investigator & Associate Director Molecular Diagnostics & Target Validation Division at the Translational Genomics Research Institute (TGen) and co-founded Nanobiomics Inc., a merger company with the Molecular Profiling Institute, acquired by Caris Diagnostics in December 2007. He also has an adjunct appointment with the Mayo Cancer Center and the Arizona Cancer Center. He co-founded the MAC5 joint laboratory between ASU and Mayo Clinic Scottsdale.

Honors and Distinctions: Patent Committee, Solid State Res. Ctr., Motorola Labs, 1999-2002; Received 3 Patent Silver Quill Awards from Motorola Labs, Scientific Advisor Molecular Profiling Institute; Recipient of the Award of the Life Sciences Startup of the Year 2005 from the Arizona Bioindustry Association, Finalist of the 2004 Governor’s Celebration of Innovation Award (Innovator of the Year: Academia), received 3 IBM Patent Awards, 1 Outstanding Achievement Award.

Selected Publications:

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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 was chair of the IEEE Communications and Signal Processing Phoenix Chapter from 2001 to 2003. He has been on the technical program committees of INFOCOM, SECON, GLOBECOM, ICC, and MOBIHOC, and served as TPC co-chair for IPCII 2006 and TPC vice chair for ICCCN 2006. He was general chair for IEEE Communication Theory Workshop 2007. He is now a TPC co-chair for WICON 2008. He is an associate editor for IEEE Transactions on Wireless Communications and an editor for Computer Networks Journal.

Research Interests: Wireless networks, information theory, cross-layer optimization of wireless networks, ad-hoc/sensor networks, stochastic modeling and analysis.

Honors and Distinctions: Member of IEEE and ASEE, 2003 NSF CAREER award, 2005 ONR YIP award.

Selected Publications:


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Yong-Hang Zhang joined the faculty in 1996 from Hughes Research Laboratories. He has published more than 140 research articles in journals and conference proceedings, a book chapter, 3 issued U.S. patents and has edited several conference proceedings. He has presented more than 140 invited and contributed papers at various international scientific conferences.

Research Interests: Molecular beam epitaxy (MBE), high efficiency solar cells and other optoelectronic materials, devices and their applications.

Honors and Distinctions: IEEE Senior Member, Innovation and Excellence in Laser Technology and Applications Award from Hughes Research Labs, listed in Who’s Who in Science and Engineering, Who’s Who in the World, chair and co-chair of numerous international conferences and workshops.

Selected Publications:


Personal Web site: http://asumbe.eas.asu.edu/yhzhang/index.htm
