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<tr>
<th>Name</th>
<th>Position</th>
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<tr>
<td>Ben Adamo</td>
<td>CEO</td>
<td>Phoenix Analog</td>
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<tr>
<td>Rick Anderson</td>
<td>Senior Software Engineering Manager</td>
<td>Tektronix</td>
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<td>Tom Butler</td>
<td>Engr. Section Mgr., Space &amp; National Systems Div.</td>
<td>General Dynamics C4 Systems</td>
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<td>Bernadette Buddington</td>
<td>Manager</td>
<td>Lockheed Martin</td>
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<td>Jeff Capone</td>
<td>CEO and VP of Engineering</td>
<td>Aligo, Inc.</td>
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<td>Jack Davis</td>
<td>President</td>
<td>APS</td>
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<td>Neil E. Hejny</td>
<td>Director, Electronics Center</td>
<td>Raytheon Missle Systems</td>
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<td>Joseph W. Jackson</td>
<td>Manager, Flight Controls</td>
<td>Honeywell</td>
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<td>Tadija Janjic</td>
<td>Strategic Development Engineer</td>
<td>Texas Instruments</td>
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<td>Karl Johnson</td>
<td>Director of Microwave and Mixed Signal Technologies</td>
<td>Freescale</td>
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<td>Mike Johnson</td>
<td>Vice President</td>
<td>Advanced Micro Devices</td>
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<tr>
<td>David G. Leeper</td>
<td>Sr. Principal Engineer</td>
<td>Ultrawideband Networking Operations</td>
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<tr>
<td>Eric C. Maas</td>
<td>Director</td>
<td>Technology Strategy &amp; Strategic Alliances</td>
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<td>Robert L. Melcher</td>
<td>CTO</td>
<td>Syntax-Brillian Corp.</td>
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<td>Mark Phelps</td>
<td>Sr. Director</td>
<td>Electronic Systems Technology</td>
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<td>Kevin Stoddard</td>
<td>Control Systems Division Manager</td>
<td>Brooks-PRI</td>
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<td>Bill Twardy</td>
<td>Manager, Research for SRP</td>
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<td>Sam Werner</td>
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<td>Peter Zdebel</td>
<td>CTO</td>
<td>ON Semiconductor</td>
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<td>Thomas Zipperian</td>
<td>Unit Director, MESA Fabrication</td>
<td>Sandia National Laboratories</td>
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**EE External Advisory Council**

**CURRENT MEMBERS**
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## YEAR IN REVIEW

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- Colorado State University Distinguishes Professor Farmer
- Dean Meldrum Joins Elite Group to Benefit the Environment
- Professor Holbert Receives Outstanding Faculty Award
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- Alumni News

### FEATURE STORY

Arizona Institute for Nano-Electronics

### RESEARCH CENTERS

- Center for Solid State Electronics Research
- PSERC: Power Systems Engineering Research Center
- WINTech/Connection One
- SenSIP: Sensor Signal and Information Processing Center

### FACULTY LISTINGS AND SIDEBAR STORIES

- Faculty Bios
- Faculty Books
- Affiliate Professors
- EE Enrollment
Letter From the Chair

We are pleased to share the accomplishments of the Department of Electrical Engineering over the past academic and fiscal year in this annual report. Our faculty, staff and students continue to advance their national and international recognition as evidenced by our improvement in the US News and World Report rankings. Our graduate program has been ranked 26th in the nation, up from 29th last year. While small changes in these rankings are common, EE has moved from 37th to 26th in the past 3 years, indicating consistent progress.

Once again, our faculty members have led continued growth in research with more than $15.5 million in research expenditures in fiscal year 2006-2007, a 15 percent increase over last year. As an indication of the sustained growth, EE research expenditures have tripled since 2000. Of the top five faculty members in terms of research expenditures in the Ira A. Fulton School of Engineering, three are in EE. Accompanying this funding growth is the growth in the number of graduate students who contribute heavily to our research program. For this past academic year we have graduated 41 Ph.D. students and enrolled more than 575 master’s and doctoral students.
There is a new research center in the sensors and signal processing area which is co-directed by two EE faculty members. Our feature story is on the recently established Arizona Institute for Nanoelectronics, which builds on the EE research strength in solid state materials and devices. This institute broadens the scope of this group to include several aspects of nanoscale modeling, simulation and device design. EE faculty members lead three of the institute’s centers: Nanophotonics, Applied Nanoionics and Biomolecular Integrated Circuits. This past year we welcomed two new faculty members. Cun-Zheng Ning joins EE from NASA and is working in the area of nanophotonics. Michael Goryll was most recently a researcher at Julich, Germany and is working in bioelectronics.

Included in the report are more than a dozen stories about specific recognition of EE faculty and students for their research and teaching excellence. You will also find a brief description of research centers with significant EE involvement along with profiles of the EE faculty. Thanks in large part to the investment in our programs by alumni, friends, students, funding agencies and the people of Arizona, EE is looking forward to continuing its growth and record of academic accomplishments.

Stephen M. Phillips, PhD, PE
Professor and Chair
Colorado State University Distinguishes Professor Farmer

For outstanding career achievements, Electrical Engineering professor Richard Farmer received the Distinguished Alumni Award from the Colorado State University Department of Electrical and Computer Engineering at the college’s annual Alumni and Friends Awards Dinner. Farmer earned his bachelor’s degree in electrical engineering from Colorado State in 1952 and a master’s in electrical engineering from Arizona State University in 1964. He has more than 50 years of industry experience in electric power, having held engineering positions with MIT Digital Computer Laboratory, Miner & Miner Consulting Engineers, and Arizona Public Service, where he retired in 1994 as a principal engineer.

Dean Meldrum Joins Elite Group to Benefit the Environment

Dean Meldrum has been named to the Climos Scientific Advisory Board. A company statement describes Climos as a “climate company dedicated to leveraging natural processes to remove carbon from the atmosphere, (that) supports aggressive emissions reductions and is participating in the emerging carbon market as a way to help companies reduce their carbon footprints and become carbon neutral.” The company was founded in California’s Silicon Valley. Its recently formed science advisory board includes some of the world’s leaders in ocean, earth and climate sciences.

Dean Meldrum Receives $18 Million Grant for Microscale Life Sciences Center

The Microscale Life Sciences Center (MLSC), led by Ira A. Fulton School Dean Deirdre Meldrum, was awarded a five-year $18 million grant—one of the highest individual grant amounts in the university’s history—to continue its role as one of the national Centers for Excellence in Genomic Science (CEGS). The grant is from the National Human Genome Research Institute (NHGRI), a part of the National Institutes of Health (NIH).

The Microscale Life Sciences Center’s focus is on the use of microscale technology innovation to solve mysteries about cell growth and death. These answers will reveal crucial knowledge about cancer, heart disease and strokes, which are the leading fatal diseases in the United States.

“Our vision is to examine the genesis of diseases directly at the individual cell level, at increasing levels of complexity that progressively move toward an understanding of disease in living organisms,” Meldrum says.

The MLSC was established in 2001 as one of the first members of the CEGS and funded with an initial five-year $15 million grant.
MURI Program Funds Underwater Acoustic Communication Project

An Electrical Engineering faculty member is involved in a research project that will receive funding from the U.S. Department of Defense Multidisciplinary University Research Initiative (MURI) program. Professor Tolga Duman is participating in an underwater acoustic communications project aimed at providing the U.S. Navy with improved oceanographic mobile sensing systems for environmental data collection, surveillance capabilities and communications. The Scripps Institution of Oceanography at the University of California, San Diego, is the lead institution for the project. ASU is a partner, along with the University of Washington and the University of Delaware. ASU is to receive $425,000 over five years for its part in the research. A second project will develop and implement new computational mechanisms to enable efficient human-robot interactions using natural language. The project is expected to have numerous impacts on defense capabilities, which are increasingly incorporating unmanned and mechanical systems across many types of missions, as well as significant potential for future civilian applications.

Professor Holbert Receives Outstanding Faculty Award

The Phoenix chapter of the Institute of Electrical and Electronics Engineers (IEEE) chose professor Keith Holbert to be the recipient of its Outstanding Faculty Award. The award recognizes faculty members for specific contributions, achievements, programs and efforts for promoting technical literacy, or promoting the technical or professional goals of the IEEE local section or IEEE-USA. This year’s award was presented to Holbert for “exemplifying the true meaning of the phrase ‘educator and scholar.’” Holbert is the sole recipient of the award for 2007. He teaches courses in electrical power generation and is involved in researching radiation affects and instrumentation related to process diagnostics and system health monitoring.

Professor Gildenblat Wins Two Awards

In his first year at the Department of Electrical Engineering, Professor Gennady Gildenblat won two awards. The Semiconductor Research Corporation (SRC) chose Professor Gildenblat and his student Weimin Wu to receive the 2006 SRC Technical Excellence Award for their work entitled “Next Generation Surface-Potential-based Compact MOSFET Model.” Gildenblat also earned the department a gift of $30,000 by winning the 2007 IBM Faculty award.
Professor Reisslein Receives NSF Grant

The National Science Foundation awarded a $1.2 million grant for an educational project to be led in part by EE Professor Martin Reisslein. The project addresses the need to educate middle school and high school students in the fundamentals of engineering. It will involve research examining the effects of pre-college engineering instruction methods, with the aim of providing empirically-based instructional techniques that effectively foster engineering problem-solving skills and cognitive flexibility in pre-college students. The research will be conducted through educational outreach programs in Arizona and New Mexico that target young women and minorities – underrepresented groups in the engineering professions. The Ira A. Fulton School of Engineering MESA program (mathematics, engineering and science achievement), part of Student Outreach and Retention Programs coordinated by David Hammond, will be one of the key outreach programs involved. Reisslein’s partner in leading the project is Roxana Moreno, an associate professor in the Educational Psychology Program at the University of New Mexico.

Professor Cao Receives National Science Foundation Career Award

Yu (Kevin) Cao received a National Science Foundation Career Award, which recognizes young scientists and engineers showing potential for leadership in significant research areas. The award comes with a grant of $404,000 over five years for Cao’s efforts to advance knowledge in nanoscale electronics design. Cao says he wants to help bridge the knowledge gap between nanometer technology and integrated circuit design. He plans to do research in the use of nanoscale silicon transistors and components from other emerging technologies, such as the carbon nanotube, to devise more reliable nanoelectronics systems.

Center for Nanophotonics Kickoff

Under the leadership of Director Yong-Hang Zhang, the Center for Nanophotonics kicked off on February 24, 2007 with a day of presentations and discussion. The Center for Nanophotonics, a research center of the Arizona Institute of Nano-Electronics, integrates a broad spectrum of research topics ranging from fundamental study of photon-matter interactions to practical optical sensors for medical and biological applications. The Center gathers faculty members from various disciplines to foster new ideas and carry out collaborative research with enhanced inspiration. It also offers numerous opportunities for both graduate and undergraduate students to do their thesis research, senior design projects and other research and educational activities.
Professor Cochran in $1 Million MRI Research Project

The Electrical Engineering Department’s Professor Douglas Cochran has joined faculty members from ASU’s Mathematics and Statistics Department on a project that seeks to improve Magnetic Resonance Imaging (MRI) by acquiring a better understanding of the mathematics involved in this tool. The project entitled “Mathematical Foundations of Magnetic Resonance Imaging” has been given a $1 million grant from the National Science Foundation (NSF) over the next three years and is being conducted in association with the Barrow Neurological Institute in Phoenix. The sum represents the largest amount of funding for mathematics research at ASU. By increasing the clarity of images and the speed with which they are produced, the project aims to improve the diagnostic capabilities of this imaging technique.

NASA-Funded Project on Air and Space Transport Safety

Professor Antonia Pandreou-Suppappola, in collaboration with Professors Aditi Chattopadhyay and John Rajadas from the Department of Mechanical and Aerospace Engineering, is conducting research in a NASA-funded project titled “An Integrated Vehicle Health Management Approach to Heterogeneous Structural Systems.” The three-year, $670,000 project seeks to meet the challenges in improving the safety of current and next generation air and space transportation systems by reducing system or component failures, decreasing operational costs and increasing operational readiness. Further, Papandreou says, the project gives the department the chance “to train our students to advance knowledge in the fundamental disciplines of aeronautics, and develop technologies for safer aircraft and airspace systems.”

Electrical Engineering Professors in Top 5% of Fulton School

Four of the eight Fulton School engineering teachers honored for their dedication to providing enriching educational experiences to students were from the Electrical Engineering Department. These eight teachers represent the top 5% of Fulton School teachers as acknowledged by their students, peers and school administrators. Douglas Cochran, Tolga Duman, Dieter Schroder and Daniel Tylavsky were honored for their contribution.
Award Winning Invention by Professor Michael Kozicki

Professor Michael Kozicki was one of the 19 awardees of this year’s newly instituted Faculty Achievement Award. Professor Kozicki was presented the award for “Most Significant Invention” in recognition of his nanoscale Programmable Metallization Cell. The invention landed the ASU spinoff technology company Axon Technologies Corp. a licensing deal with industry giant Infeon Technologies. PMCs promise to provide the stability, small size and low power consumption that will be demanded of next-generation memory devices.

Java-DSP Laboratory Receives IEEE Award

In February 2007, the Java-DSP laboratory was presented a team award by the IEEE Phoenix section “for developing the outstanding non-commercial software J-DSP for education and research.” The J-DSP software enables on-line, interactive DSP laboratories and it supports the computer portion of a senior-level DSP course taught in the Department of Electrical Engineering. J-DSP development team members include professors Andreas Spanias, Tolga Duman, Lina Karam, Antonia Papandreou-Suppappola, Cihan Tepedelenlioglu, Konstantinos Tsakalis and Junshan Zhang.
EE Professors to Improve Hearing Aid Technology

Electrical engineering researchers Sayfe Kiaei, Bertan Bakkaloglu and Junseok Chae are developing a miniaturized, low-power hearing aid using micro-electro-mechanical-systems (MEMS) technology. Over 29 million people in the U.S. suffer from hearing impairment. According to recent statistics, more than 75% of them do not wear hearing aids due to societal stigma and poor performance. The professors, who conduct their research under the Connection One research center, aim to overcome the drawbacks of existing hearing aids like large size, poor sound quality and short battery life. The NSF-funded hearing aid project aims to understand the fundamental limit of the power and size of hearing aids. The interface circuitry implements adaptive electronics which adjusts circuitry parameters while minimizing power consumption depending upon the acoustic environment, thus providing users with a custom-fit design.

Professor Spanias Publishes Audio Signal Processing Text

A book entitled “Audio Signal Processing and Coding,” written by EE faculty member Andreas Spanias and two former ASU doctoral students Ted Painter and Venkatraman Atti, was published by Wiley in February, 2006. It is a textbook with exercises and computer labs that will be used as the main textbook in the speech/audio coding (EEE607) and multimedia (EEE 510) classes, as well as in part of the undergraduate DSP class as a reference. The book covers audio coding algorithms and standards such as MP3 technology. Further, it has sections that dissect successful audio products such as the i-Pod and many of the smart phones that support music loads.

EE Ranking Jumps

EE continues to improve its ranking in the annual survey conducted by US News. This year, the graduate program moved up to 26th place. It was ranked 29th in 2006. This new ranking ties ASU with Columbia, John Hopkins, Ohio State and North Carolina State.
ELECTRICAL ENGINEERING

Year in Review

New Hires

Michael Goryll, Assistant Professor, PhD, RWTH Aachen University, Germany
Research interests include: 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.

Cun-Zheng Ning, Professor, PhD, University of Stuttgart, Germany
Research interests include: theoretical physics, computational optoelectronics, nanophotonics, laser dynamics, optical instabilities, self-organizations, stochastic systems, geometric phases in dissipative systems.

State-of-the-Art Oscilloscopes Installed in EE Labs

The EEE 202 and EEE 334 laboratories have replaced their old oscilloscopes with 32 new oscilloscopes from Tektronix. The new scopes were purchased from Tektronix at a significant discount of 67% off the retail price, and they have a number of superior features including wave display, wave data calculations, convenient internet access, and data storage capabilities. They afford an in-depth view of data on C-MOS integrated circuits used in the EEE 334 lab. The EEE 202 Circuit I lab will have 13 of the new Tektronix DPO 4032 Digital Phosphor Oscilloscopes, and the EEE 334 Circuit II lab will house 17 of them. They will be used by around 450 students every semester.

Noble Library Exhibit Celebrates EE Golden Jubilee

The Ira A. Fulton School of Engineering and the Electrical Engineering Department celebrate their Golden Jubilee this year. As part of the celebrations, an exhibition was put up at the Noble Science Library charting the growth of the department from its inception in 1956, the significant progress made in the decades since, and the changes it has seen in ASU and the wider community. Along with similar displays from the Industrial Engineering and Mechanical & Aerospace Engineering departments, the Electrical Engineering Department’s exhibit contained samples of old technologies as well as textbooks published by department professors, including their translations to Russian and Korean.
Doctoral Graduates

Summer 2006

Lida Jauregui-Rivera, “Reliability Assessment of Transformer Thermal Models,” D. Tylavsky, chair

Madhusudhana Gargesha, “Content-based Image Analysis Techniques and Biological Validation Schemes for Images Depicting Spatial Gene Expression Patterns in Developing Embryos,” S. Panchanathan, S. Kumar, co-chairs

Haixin Zhu, “Dry-Etch Benzocyclobutene (BCB) Based Neutral-Electronic Interface, J. He, B. Kim, co-chairs

Tansal Gucloglu, “Reduced Complexity Receivers for Space-Time coded Systems Over Frequency Selective Fading Channels,” T. Duman, chair

Fall 2006


Di Zhao, “Space Vector Methods for AC Drives to Achieve High Efficiency and Superior Waveform Quality, R. Ayyanan, chair


Aly Aly, “Filter Integration for RF and Wireless Applications, E. Elsharawy, chair


Xu Jin, “Resonant-Cavity Light-Emitting Diodes for Optical Interconnects,” Y. Zhang, chair

Arunkumar Ramamoorthy, “Evaluation of Split-Gate Based Coupled-Electron-Waveguides as an Approach to Qubit Realization,” S. Goodnic, J. Bird, co-chairs

Youngwook Ko, “Adaptive Modulation and Coding Techniques for MIMO Wireless Communications,” C. Tepedelenlioglu, chair

Spring 2007

Mark Rice, “Condition Indicator Analysis for the Enhancement of Power System State Estimators,” G. Heydt, chair

Bo Yan, “Slow Coherency Based Graph Theoretic Islanding Strategy,” V. Vittal, chair


Venkatraman Atti, “Embedding Perceptual Linear Prediction Models in Speech and Audio Coding,” A. Spanias, chair

Hyunseok Kim, “CMOS UWB Transmitter Design,” Y. Joo, chair


Ping Gao, “Parameter Estimation and Signal Detection over Wireless Channels,” C. Tepedelenlioglu, chair


Bo Wang, “Capacity Bounds and Scaling Laws of Wireless Relay Networks,” J. Zhang, chair


Venkatraman Atti, “Embedding Perceptual Linear Prediction Models in Speech and Audio Coding,” A. Spanias, chair

Hyunseok Kim, “CMOS UWB Transmitter Design,” Y. Joo, chair


Ping Gao, “Parameter Estimation and Signal Detection over Wireless Channels,” C. Tepedelenlioglu, chair


Bo Wang, “Capacity Bounds and Scaling Laws of Wireless Relay Networks,” J. Zhang, chair
Spring 2007 Doctoral Graduates cont.

Weiqing Jiang, “Distributed State Estimation,”
V. Vittal, chair

Bo Yang, “Nonstandard Finite-Difference Methods for Electromagnetics,”
C. Balanis, chair

Jinhui Chen, “Robust Ultra-Low Power Subthreshold Digital Circuit Design,”
L. Clark, chair

Nguyen Ly, “Protein Separation and Detection with Microfabricated Devices,”
N. Tao, chair

Anastasios Panaretos, “A Discrete Time-Domain Electromagnetics Formulation with Minimized Numerical Artifacts,”
J. Aberle, R. Diaz, co-chairs

Donald Hall, “MOSFET Subthreshold Region Modeling for Ultra-Low Power Circuit Design Using BSIM3V3”
D. Schroder, chair

Niranjan Chakravarthy, “A Feedback Systems Perspective for Modeling and Controlling Epileptic Seizures”
K. Tsakalis, chair

Jeffery Foutz, “Adaptive Low Rank Bemforming for Linear, Planar, and Semispherical Arrays,”
A. Spanias, chair

S. Vrudhula, chair

Larry Reed Larson, “Corrosion of Silicon Devices for Medical Applications,”
D. Schroder, chair

Orguzhan Cifdaloz, “H-Infinity Mixed-Sensitivity Optimization for Infinite Dimensional Plants Subject to Convex Constraints”
A. Rodriguez, chair

Sandeep Prasad Sira, “Waveform-Agile Sensing for Target Tracking and Detection in Clutter,”
A. Papandreou-Suppappola, chair

Vadim Kushner, “Low Frequency Noise Spectroscopy of SOI Wafers,”
T. Thornton, chair

B. Skromme, chair

Jae-Young Kim, “Development of MEMS Device for Biological Analysis,”
S. Phillips, chair

Xiulan Li, “Charge Transport in Single Molecules,”
N. Tao, chair

Undergraduate Electrical Engineering Students Honors and Scholarships

Merit Scholars: 10
Honors Students: 35
Scholarships (private/corporate): $60,750
Per student average: $2,641

Palais Award

Dr. Xiulan Li was the recipient of the Palais Doctoral Outstanding Student Award for 2006-2007. Li’s dissertation was titled “Charged Transport in Single Molecules,” and she was advised by Professor Nongijian Tao. Currently, Li leads research in nano-chemical sensors and biosensors.
Graduate Scholarships in Electrical Engineering

**ARCS-Achievement Rewards for College Scientists:** Visar Berisha, Joseph Ervin and Joushua Hihath

**DOE-Department of Energy Computational Science Fellowship:** Aaron Cummings

**Fulton Fellowship:** William Lepowski, Michael McLain and Ryan Robison

**IGERT-Integrative Graduate Education and Research Training Awards:** James Bridgewater, Alez Fink, Kyle Foley, Ben Green, Leo Petrossian, Tsing Tsow and Gordon Wichern

**Intel Fellowship:** Tim Day

**NSF-National Science Foundation Graduate Fellowship:** Visar Berisha and Jennifer Desai

**Reach for the Stars Graduate Fellowship:** Shirley Chen

**UGS-University Graduate Scholars Program Awards:** Visar Berisha, James Bridgewater, Joseph Ervin, Aaron Fullerton, Ben Green, Jeremy Lambert, Jonathan Stahlhut and Aaron Williams

**UGF-University Graduate Fellowship:** Niranjan Chakravarthy, Varsha Chatlani, Hasanur Khan, Vadim Kushner, Jeremy Lambert, William Lepowski, Win Ly, Marc Tiu, Stanislav Ogurtsov, Bishnu Sapkota, Aaron Williams, Dong Zheng

**WASEO:** Jerrald Willis

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**EE Student Selected to Participate in Elite Seminar**

Jonathan Stahlhut, a PhD candidate in electrical engineering, recently attended the Next Generation Seminar at the University of Manchester in England. He was the only U.S. citizen selected to participate in this inaugural event, which brings together some of the most promising young students in the field of power systems engineering.

Stahlhut was recommended for the seminar by EE professors Gerald Heydt and Vijay Vittal. Vittal cited Stahlhut’s “tremendous potential and his future goal to be a faculty member in power engineering. I felt he would be an excellent ambassador for ASU and bring to focus the best that the group has to offer in an international setting of peers.”

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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 departmet, 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://fulton.asu.edu/ee/alumni/documents/Alumni_Update.doc](http://fulton.asu.edu/ee/alumni/documents/Alumni_Update.doc) and email it to eeinfo@asu.edu.

Also, to read previous editions of the newsletter, visit [http://fulton.asu.edu/ee/alumni/](http://fulton.asu.edu/ee/alumni/).
The emerging field of nanoelectronics is one that promises a great deal to the world of technological research and application, stretching in utility from areas like defense and communications, to robotics and bioengineering. With the Arizona Institute for Nano-Electronics (AINE), Arizona State University seeks to make a mark as a source of pioneering innovation in this nascent field.

Headed by director 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 (headed by Dr. Yong-Hang Zhang), the Center for Applied Nanoionics (headed by Dr. Michael Kozicki), the Center for Biomolecular Integrated Circuits (headed by Dr. Trevor Thornton), and the Center for Computational Nanoscience (headed by Dr. Mark Van Schilfgaarde). AINE also has strong ties to the Biodesign Institute, WINTech, and the semiconductor industry, which has an especially significant presence in the Phoenix metropolitan area.

The Promise of Nanoelectronics:
Electronic devices and circuits at the nanoscale have two important traits that lie at the root of their demonstrated and potential application: ultra-low power and ultra-high speed operation. The ultra-low power characteristic makes these technologies especially relevant to civilian and military research areas like homeland security, where the need for batteries is greatly reduced by the use of nanoscale technologies. The ultra-high speed of these circuits has many significant applications for the worlds of communication and computer performance.

Exploring these properties of nanoscale technologies opens up a world of possibilities in areas like quantum computing, supercomputers on a chip, instant-on computers, implanted medical monitoring devices, neural prostheses, self-aware
and adaptive robots, and autonomous surveillance systems. It is to harness this potential that AINE conducts its work.

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 strives to garner federal funding for its work as well. AINE partners with emerging companies in the fields of nanotechnology and biotechnology. It also creates an environment where multidisciplinary interaction and training for new scientists occurs.

AINE’s ties to the BioDesign Institute at ASU will create an important liaison between biotechnology research at ASU and the semiconductor industry. The Institute also hopes to foster important intellectual property development and spin-offs from the research it conducts.

These underlying objectives of multidisciplinary research, industry interaction and groundbreaking innovation are exemplified by the work of each of the four research centers.

Center for Biomolecular Integrated Circuits

Director: Dr. Trevor Thornton

The Center for Biomolecular Integrated Circuits (CBIC) aims to combine the realms of electronics and biological functions. By conducting research and coordinating research efforts with the medical community and other research centers at ASU, the Center 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. The Center hopes that these studies will improve the fundamental understanding of cell functions, while promoting applications of technologies in relevant areas.

To these ends, the center works in collaboration with the Dr. Paskar Permana at the Carl T. Hayden V.A. Medical Center in Phoenix for fabrication tests, characterization and measurement facilities. In addition, the facilities at ASU’s Center for Solid State Electronics Research and Microfluidics Laboratory are also used by the CBIC. The Center is currently involved in a DARPA sponsored project to use engineered ion channel proteins interfaced to silicon nanopores for chemical or biological threat detection.

The center’s members include Trevor J. Thornton, Junseok Chae, Hung Chang, Erica Forzani, Stephen Goodnick, Paska Permana, Jonathan Posner, Nongjian Tao and Seth Wilk. All but two of these personnel are from the Department of Electrical Engineering.
The Center for Applied Nanoionics (CANi) at ASU lies at the cutting edge of worldwide research into the materials and devices that rely on ion transport and chemical change at the nanoscale. This field of study has seen great interest in recent times due to demonstrated and potential applications, especially with the growing significance of nanoelectronics. With circuit scaling going from the micrometer to the nanometer levels, associated issues arise, some of which CANi seeks to address. Inefficiencies associated with electronics at this scale include undesirable levels of power dissipation, which CANi approaches with a focus on new material paradigms, specifically, nanoionics.

The wide range of applications presented by nanoionics also lends itself to a multidisciplinary approach, which CANi encourages, envisioning a synergistic coupling with other AINE centers. The low voltage and low current operations of nanoionic technologies allows for considerable interaction with the nanoelectronics research, while optical, MEMS and micro-fluidic applications have relevance to other AINE projects. CANi also works in close association with the Flexible Display Center, WINTEch and the BioDesign Institute.

Outreach into the educational, research and industrial communities is a significant part of CANi’s work. CANi draws on talent from outside ASU, encouraging national and international-level membership. 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. The Center partners with research personnel from various companies and institutions including the University of Cincinnati, University of Edinburgh and Samsung Electronics. To further its outreach to the academic and research community, the Center will provide basic fabrication and consultancy services to those researchers who want to work in nanoionics but lack the necessary infrastructure, as well as a "nanoionics tool kit" for a wide range of uses, from use in high schools to industry laboratories.

Minghan Ren is processing a wafer with electrochemical RF switches for NASA

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

Center for Computational Nanoscience
Director: Dr. Mark Van Schilfgaarde

Bringing together faculty from departments like Electrical Engineering, the Department of Mathematics and Statistics, the School of Materials, and the Department of Chemistry, the Center for Computational Nanoscience (CCN) is a truly diverse research endeavor. The main interest of these faculty members lies in the area of modeling and simulation. The strength of this Center lies in novel devices and the prediction of device performance, which is especially crucial for nanoelectronics technologies. 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.

The study on “Tunneling Anisotropic Magnetoresistance Driven by Resonant Surface States” conducted by members of CCN explores the principle of Tunneling Anisotropic Magnetoresistance (TAMR) which holds relevance in memory storage devices. The Center is also conducting other scientific projects and method development projects that have applications in semiconductor technology, nanoelectronics and nuclear physics.

The center has over twenty faculty members and graduate students from engineering and basic science disciplines, including 6 from the Electrical Engineering Department. CCN is headed by School of Materials professor Mark Van Schilfgaarde.

Mark Van Schilfgaarde

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The Center for Nanophotonics (CNP) has a number of areas of focus which have garnered industry and academic collaborations, as well as multi-million dollar research grants. The Center combines work in a range of theoretical and applied research, from photon-matter interactions to optical sensors for medical and biological use. This creates an environment that combines cutting edge research with the development of commercially viable technologies.

CNP has four main areas of research. They are:

- Optical properties of compound semiconductor nanostructures and devices
- Silicon-based nanophotonic structures and devices
- Energy conversion materials and devices
- Organic and bio-photonics

It is involved in a number of sponsored research projects and is in collaboration with institutions like DARPA, the National Science Foundation, and NASA Ames Research Center, among others. Center members are also involved in international research efforts conducted in places like Singapore, China and Latin America. The Center has been given a substantial part of a $5 million DARPA program led by UC Berkeley, headed at ASU by Dr. C.-Z. Ning. Also, Dr. Yong-Hang Zhang heads one of eight projects funded by Science Foundation Arizona through its Strategic Research Group. The one-year grant of $500,000 goes towards a research collaboration involving CNP members, University of Arizona personnel, and industry partners in the development of ultrahigh efficiency solar cells. In 2006, a team led by Professor Jose Menendez from the Department of Physics provided the Center with its second MURI program. Six of the Center’s 11 members are from the Electrical Engineering Department.

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

AINE: http://www.asu.edu/aine/

Center for Biomolecular Integrated Circuits: http://www.asu.edu/aine/cbic/cbic_main.html

Center for Applied Nanoionics: http://www.asu.edu/aine/cani/cani_main.html

Center for Computational Nanoscience: http://www.asu.edu/aine/ccn/ccn_main.html

Center for Nanophotonics: http://www.asu.edu/aine/nanop/nanop_main.html

Top right: AINE researchers prepare silicon wafers in the ASU NanoFab cleanroom.

Right: A cassette of silicon wafers is ready for high temperature oxidation. The resulting silicon dioxide grown on the wafers is later chemically modified to encourage the growth of cells on the surface.
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

Center Highlights and Major Accomplishments:

The Center provides critical resources and infrastructure for research and education in interdisciplinary solid-state electronics including 30 laboratories covering 30,000 square feet, which are administered and maintained by a staff of 10 people. The Center has about 50 participating faculty, 20 post-doctoral researchers and over 100 graduate students drawn from various disciplines, including electrical engineering, chemistry, chemical engineering, biology, bioengineering, biochemistry, materials science, mechanical engineering, industrial engineering and physics. Since its inception in 1981, CSSER has witnessed phenomenal growth in the functionality and use of integrated circuits, much of it fueled by basic research in solid-state electronics. In addition to solid-state research, CSSER pursues new hybrid systems that combine the hard, dry world of metals and semiconductors with the soft, wet world of biology and biochemistry. Current research within CSSER focuses on research to answer basic questions about how electrons travel in ultra-small transistor structures. At the same time, CSSER is developing new microprocessor and memory chips, advanced lasers for optical communications, ways of processing semiconductor materials and hybrid integrated circuits or biochips.

The Center’s 4,000 square-foot class M3.5 cleanroom and associated facilities contain a wide range of equipment for advanced semiconductor processing and characterization, including electron beam lithography, deep-silicon and III-V ICP etchers, optical direct-wafer writer, molecular beam epitaxy, ultra-low temperature (10 mK) transport measurement, RF and ultra-low noise probe stations, photoluminescence and high-speed optical testing. Our primary research groups include bio- and molecular electronics, low-power electronics, micro-electro-mechanical-systems (MEMS), molecular beam epitaxy and optoelectronics, and nanostructures. Beyond these formal groupings, CSSER supports the research of faculty from the Ira A. Fulton School of Engineering, the College of Liberal Arts and Sciences, and the Biodesign Institute in the areas of MEMS and nanofluidics, wide band gap semiconductors, high-k dielectrics and nanomagnetics. In recent years, CSSER researchers have commercially developed a number of significant technologies including RF magnetic latching switches and programmable metallization cell (PMC) memory devices.

Additional information on CSSER facilities is available at: http://www.fulton.asu.edu/nanofab
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 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
WINTech: Wireless Integration Nano Technology Center

Connection One: Integrated Circuits and Systems Research Center

DIRECTOR, SAYFE KIAEI

Connection One Receive Hearing Aid Research Grant

A grant from the National Science Foundation is helping Connection One professors to develop nano-scale digital hearing aids. Professors Bertan Bakkalogu, Junseok Chae and Sayfe Kiaei are investigating new techniques that will help perfect existing hearing aid devices both electronically and physically. In addition to making hearing aids smaller and more flexible, the professors will also research ways to save battery power.

WINTech and Connection One are Arizona Board of Regents (ABOR) approved centers at ASU. Connection One is a National Science Foundation Industry/University Cooperative Research Center established within the Ira A. Fulton School of Engineering. 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 systems on a chip for application in bio-sensors, wireless system, nano-circuits, bio-electronics, environmental and defense applications.

Connection One center is a partnership of five universities with ASU as the lead institution. The center has over 25 industrial members collaborating with the Center's researchers in the development of integrated system on a chip. In addition to Arizona State University, the Center includes the University of Arizona, the University of Hawaii, Rensselaer Polytechnic University and The Ohio State University.

The Center has grown tremendously over the past five years. New labs and research facilities are 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 facility. 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 Foundary group. Connection One currently has over 20 faculty within the five universities, along with several post doctoral students and over 75 PhD/ Master students. The core research focus of the Center is on the following projects:

- RF Transceiver Integrated Circuit, High-Efficiency Transmitters, Power Amplifiers, Multi-Band Receivers, On-Chip High-Q Filters, Software-Defined and Cognitive Radio, Wideband Sigma-Delta ADC for WiMax, and related areas
- MEMS and Nano Technologies, MEMS Speakers and Microphones, MEMS RF Resonators, MEMS accelerometers, Position Sensors, MEMS Antennas, MEMS Sensors
- Harsh Environment Electronics and RADHARD Electronics
- Terahertz Electronics, Plasma Wave Electronics for Testing Silicon VLSI
- Modeling of Semiconductor Devices for Wireless Applications

Additional information on Connection One is available at: http://www.connectionone.org
The Sensor Signal and Information Processing (SenSIP) Center was founded in 2004 with a view to applying research done by faculty in signal processing to emerging work in the areas of sensing and communications.

It combines the research of numerous faculty members in a wide range of areas including sensors, multimedia, networking, communication and signal processing. Its unique approach to these disciplines takes the work of the Center beyond its specialized research laboratories into realms of multidisciplinary studies that include work with the Arts, Media and Engineering (AME) program, Applied Math and Biomedical Engineering.

The SenSIP center also does work in collaboration with various international companies, agencies and institutions including Raytheon, Texas Instruments, Princeton, Purdue and Harvard. It has founded an industry consortium with research activities in these areas, providing local and national industry members with numerous resources including access to research findings, software and hardware tools and faculty consultation. The center’s work has garnered over a dozen grants and contracts from the DoD, NASA and NSF, including work in two Multidisciplinary University Research Initiatives (MURIs) with the DoD. Industry sponsors include such corporations as Intel Corp., Sun Microsystems, Motorola and Raytheon.

More information can be obtained at http://sensip.asu.edu/
Faculty Books


Abbas Abbaspour-Tamijani E-mail: abbas.a.tamijani@asu.edu Phone: (480)727-0294 Office: GWC 320 Assistant Professor, PhD, University of Michigan, Ann Arbor

Dr. Abbas Abbaspour-Tamijani joined ASU in Fall 2004. He received his PhD in electrical engineering from the University of Michigan, Ann Arbor, in 2003, and his BS and MS degrees from the University of Tehran, Tehran, Iran, in 1994 and 1997, respectively. Prior to joining ASU, he worked as a research fellow in the Radiation Laboratory of the University of Michigan, and as the senior antenna and RF engineer with Motia Inc, Pasadena, Calif. Dr. Abbaspour-Tamijani is a member of the IEEE Microwave Theory and Techniques, Antennas and Propagation and Engineering in Medicine and Biology societies.

Selected Publications:

James T. Aberle E-mail: aberle@asu.edu Phone: (480) 965-8588 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 aculty 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
Dr. David R. Allee (BS in electrical engineering, University of Cincinnati; MS and PhD in electrical engineering, Stanford University) is an associate professor in the Department of Electrical Engineering at Arizona State University. While at Stanford University and as a research associate at Cambridge University, Dr. Allee 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).

Dr. Allee’s current research interests are flexible electronics and mixed signal integrated circuit design. He is currently director of research for backplane electronics for the Flexible Display Center at Arizona State University and 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 50 archival scientific publications and 3 U.S. patents.

Research Interests: Flexible electronics and mixed-signal circuit design.

Selected Publications:


David R. Allee
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Phone: (480) 965-6470
Office: ERC 153
Associate Professor, PhD, Stanford University

Raja Ayyanar
E-mail: rayyanar@asu.edu
Phone: (480) 727-7307
Office: ERC 587
Associate Professor, PhD, University of Minnesota

Rajapandian Ayyanar joined the ASU faculty as an assistant professor in August 2000. He received a BE in electrical engineering from P.S.G. College of Technology, India in 1989; an MS in power electronics from the Indian Institute of Science in 1995; and a PhD in power electronics from the University of Minnesota in 2000. He has published over 40 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:
R. Ayyanar, and N. Mohan, “Zero Voltage Switching DC-DC Converter,” U.S. patents 6,611,444 and 6,310,785.


Bertan Bakkaloglu
E-mail: Bertan.Bakkaloglu@asu.edu
Phone: (480) 727-0293
Office: GWC 311
Associate Professor, PhD, Oregon State University

Bertan Bakkaloglu joined the ASU faculty in August 2004. He received a PhD in electrical and computer engineering in 1995 from Oregon State University 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 wireline 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
E-mail: balanis@asu.edu
Phone: (480) 965-3909
Office: GWC 452
Regents’ Professor, PhD, Ohio State University

Constantine A. Balanis joined the ASU faculty in 1983 and is now a Regents’ Professor of electrical engineering. He has published over 118 journal papers, 202 conference papers, ten book chapters, eight magazine/newsletter papers and numerous scientific reports. He has also published two textbooks: Antenna Theory: Analysis and Design and Advanced Engineering Electromagnetics.

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 Thessaloni (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 Professionalism Award.

Selected Publications:


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

Hugh Barnaby
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Phone: (480) 727-0289
Office: GWC 316
Assistant Professor, PhD, Vanderbilt University

Hugh Barnaby joined the ASU faculty in 2004. He received a PhD in 2001 and an MSc in 1999 both in electrical engineering from Vanderbilt University, Nashville, Tenn. Dr. Barnaby’s current research focuses on the analysis, modeling and experimental characterization of hostile environment (radiation, low and high temperature) effects in semiconductor materials, devices and integrated circuits. His work also focuses on the development of design and processing techniques that enable the reliable operation of electronics in these environments. Dr. Barnaby has served as an active researcher in the microelectronics field for over 13 years in both industry and academics, presenting and publishing more than 60 papers during this time. He recently was an assistant professor at the University of Arizona, focusing on research in microelectronics processing and fabrication, semiconductor devices, analog and mixed signal design and test, reliability and radiation effects and bio-electronic sensors and actuators. Dr. Barnaby, a senior member of IEEE, also worked as a staff scientist for the microelectronics division at Mission Research Corporation in Albuquerque, N.M., where he performed radiation effects and reliability analysis on VLSI digital and analog/mixed-signal circuits.

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


Recent Publications:

Yu (Kevin) Cao
E-mail: ycao@asu.edu
Phone: (480) 965-1472
Office: GWC 336
Assistant Professor, PhD, University of California, Berkeley

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. At the BWRC center, his research focused on circuit techniques and design methodologies to improve the reliability of VLSI systems under increasing parametric variations and ultra-low power design for computation and communication. He has one patent and has published over 60 journal and conference papers and the book Nana-CMOS Circuit and Physical Design.

Research Interests: Compact modeling for nanoscale CMOS and post-silicon technologies, physical-level design and tools for variability and reliability, reliable integration of emerging technologies, low-power design solutions.

Honors and Distinctions: 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  
E-mail:  junseok.chae@asu.edu  
Phone:  (480) 965-2082  
Office:  GWC 312  
Assistant Professor, PhD, University of Michigan, Ann Arbor

Junseok Chae joined the ASU faculty in 2005. He received his MS and PhD in electrical engineering in 2000 and 2003 from the University of Michigan, Ann Arbor, respectively. From 2003 to 2005 he was a postdoctoral research fellow at WIMS (Wireless Integrated MicroSystems) – ERC (Engineering Research Center), University of Michigan. He joined the faculty of Arizona State University in August 2005, where he is currently an assistant professor in electrical engineering. 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 20 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:  

Chaitali Chakrabarti  
E-mail:  chaitali@asu.edu  
Phone:  (480) 965-9516  
Office:  GWC 418  
Professor, PhD, University of Maryland

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. She serves as the Chair of the Technical Committee on Design and Implementation of Signal Processing Systems, IEEE Signal Processing Society.

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:  


Personal Web site: http://enws155.eas.asu.edu:8001/

Lawrence T. Clark  
E-mail:  Lawrence.Clark@asu.edu  
Phone:  (480) 727-0295  
Office:  GWC 334  
Associate Professor, PhD, Arizona State University

Lawrence T. Clark worked at Intel Corporation after receiving his BS in computer science in 1983. Later, Dr. Clark worked at VLSI Technology Inc and Micro PC chipsets. He received his PhD in 1992 and an MS in 1987 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. Professor Clark has been awarded over 45 patents, and has 15 pending. He has published approximately 30 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: Intel Achievement Award for XScale microprocessor design, senior member of IEEE, Intel Divisional Recognition Awards for cache design tools, drowsy leakage control mode, member of the IEEE Custom Integrated Circuits Conference technical committee, reviewer for IEEE Spectrum, IEEE, JSSC.

Selected Publications:  


Douglas Cochran
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Office: GWC 424

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.


Selected Recent Publications:

Tolga M. Duman
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Phone: (480) 965-7888
Office: GWC 411B

Associate 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. He is currently an associate professor.

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:
T.M. Duman, and A. Ghrayeb, Coding for MIMO Communication Systems, Wiley (scheduled for Fall 2007).

Rodolfo Diaz
E-mail: rudydiaz@asu.edu
Phone: (480) 965-4281
Office: GWC 314

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 17 patents ranging from the design of broadband radomes to the amplification of magnetic fields.

Research Interests: Optical scattering of subwavelength objects in complex environments, 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:


Richard Farmer
E-mail: aargf@asu.edu
Phone: (480) 965-4953
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 1956. 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:

Gennady Gildenblat
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Phone: (480) 965-3749
Motorola Professor, PhD, Rensselaer Polytechnic University

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 has 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. Since 1986 Dr. Gildenblat has been with The Pennsylvania State University. 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 Phillips) has been selected as a new international industry standard by the Compact Model Council (PSPmodel.asu.edu).

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

Selected Publications:


Stephen Goodnick
E-mail: stephen.goodnick@asu.edu
Phone: (480) 965-6798
Office: ERC 187
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 (ECEDHA), 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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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 in 1986. Since 1995, he has held the position of professor, and presently he is the associate chair and 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, electric field calculations, pulsed power, power electronics, dielectric fluids, 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
Office: ERC 109
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 as faculty member, 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 the BSEE degree from the Cooper Union in New York and the 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 Center for the Power Systems Research Center at ASU. He has industrial experience with the Commonwealth Edison Company, 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.


Selected Publications:

Keith Holbert
E-mail: holbert@asu.edu
Phone: (480) 965-3424
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 75 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://www.fulton.asu.edu/~holbert/

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:
Affiliate Professors provide additional support to the department:

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: Electron materials and characterization.

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, interrelationships between nanostructure-nanochemistry-processing-property in 20-5000 angstrom films, interfacial phenomena, dielectric loss and leakage mechanisms, and modeling.

Gupta, Sandeep, PhD, Ohio State University: Loss and leakage mechanisms, and modeling. angstrom films, interfacial phenomena, dielectric loss and leakage mechanisms, and modeling.

He, Jiping, PhD, University of Maryland, College Park: Modeling and analysis of neuromuscular control of posture and movement; fuzzy logic based intelligent and optimal control and sensory fusion for neural prostheses.

Jung, Ranu, PhD, Case Western Reserve University: Bio 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: Growth, characterization and modeling of novel solid-state materials.

Panchanathan, Sethuraman, PhD, University of Ottawa: Ubiquitous multimedia computing; visual computing and communications; media processor designs; face/gait analysis and recognition; genomic signal processing; ubiquitous computing environments for blind persons.

Rivera, Daniel, PhD, California Institute of Technology: Department of Chemical and Materials Engineering.

Vrudhula, Sarma, PhD, University of Southern California: VLSI CAD for low power, embedded systems design and optimization, statistical optimization for VLSI, stochastic methods as they are applied to VLSI design and testing, graph-theoretic techniques for VLSI layout, formal verification, signal integrity analysis and low power design.

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, and analog design for wireless communication systems.

Selected Publications:

Youngjoong Joo E-mail: yjoo@asu.edu Phone: (480) 965-2030 Office: GWC 328 Assistant Professor, PhD, Georgia Institute of Technology

Youngjoong Joo joined the ASU faculty as an assistant professor in January 2001. Before that, he worked as a research engineer at Georgia Institute of Technology. He received the BS and MS degrees in electrical engineering from Korea University in 1988 and 1990, respectively, and the PhD in electrical engineering from the Georgia Institute of Technology in 1999.

Research Interests: Design of sub-micron CMOS analog and mixed-signal circuits, smart camera systems, high-speed optical transceivers, and UWB transceivers.

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 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. Dr. Karady is an IEEE fellow and he has more than 120 journal and 150 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, chairman 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 J. Karam received her bachelor’s degree 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 an associate professor in the Department of Electrical Engineering, and she is also the director of the Image, Video, and Usability (IVU), the Multi-Dimensional DSP and the Real-Time Embedded Signal Processing (RESP) Labs at ASU. Karam is the recipient of a National Science Foundation CAREER Award, and she is currently serving as a member of the organizing committee of the 2008 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP08). She is also the technical program chair of the 2009 IEEE International Conference on Image Processing (ICIP 2009).

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


Selected Publications:  

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

Sayfe Kiaei  
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Phone: (480) 727-8044  
Office: GWC 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 I/UCRC 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:  


Personal Web site: http://www.fulton.asu.edu/~kiaei/
Michael N. Kozicki
E-mail: michael.kozicki@asu.edu
Phone: (480) 965-2572
Office: ERC 107
Director, Center for Applied Nanoionics
Professor, PhD, University of Edinburgh

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 Metalization 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 an Honorary Fellow of the University of Edinburgh.

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; Honorary Fellow, 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 Northern, 1993; Gold Key Outstanding Professor Award, 1991;

Selected Publications:


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

Ying-Cheng Lai
E-mail: yclai@chaos1.la.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
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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 Ecogenomics in the Biodesign Institute, and Professor of Electrical Engineering. She received her PhD in electrical engineering from Stanford University in 1993, her M.S. in electrical engineering from Rensselaer Polytechnic Institute in 1983, and her B.S. in Civil Engineering from University of Washington in 1983. Prior to ASU, she was Professor of Electrical Engineering at the University of Washington, Department of Electrical Engineering, where she founded and directed the UW’s Genomation Laboratory. Dr. Meldrum is PI and Director of the National Institutes of Health, Center for Excellence in Genomic Sciences, Microscale Life Sciences Center, funded for $36 Million from August 2001 – July 2011. She is a member of the National Advisory Council for Human Genome Research, a member of the Advisory Board for External Research & Programs for Microsoft Research, Editor for the IEEE Transactions on Automation Science in Engineering, General Chair for the IEEE Conference on Automation Science and Engineering 2007, and General Chair for 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 2006-2007; Dive in the Alvin submersible off RV 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 Publication:

Personal Web site: http://www.biodesign.asu.edu/centers/eg/
Cun-Zheng Ning

Cun-Zheng Ning joined Arizona State University 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 before joining NASA in 1997. Dr. 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.

Honors and Distinctions: IEEE Senior Member, CSC Civil Group Presidential Award 1999, IEEE/LEOS Technical Achievement Award 2000 NASA Group Technical Excellence 2001, MRJ Award for Professional Programs Faculty Service Award. He is also academic director, Online and Professional Programs for 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.

Joseph Palais

Joseph Palais joined the faculty in 1964 and is the associate chair for Graduate Studies. He is also academic director, Online and Professional Programs for 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.

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 436
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 55 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.


Selected Publications:


Antonia Papandreou-Suppappola
E-mail: papandreou@asu.edu
Phone: (480) 965-7881
Office: GWC 420
Associate 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. Before that, she held a Navy-supported research faculty position at the Department of Electrical and Computer Engineering at the University of Rhode Island. She is the editor of a 2002 CRC book on Applications in Time-Frequency Signal Processing. She is currently serving as an associate editor for the IEEE Transactions on Signal Processing, she is a technical committee member of the IEEE Signal Processing Society on Signal Processing Theory and Methods, and she held the position of Treasurer of the IEEE Signal Processing Society Conference Board from 2004 to 2006.


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

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 the BS degree in electrical engineering from Cornell University in 1984 and the 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 as an assistant professor in August 2003. Previously, he worked as a faculty research assistant in 2001 and a research associate in 2002 for the Center for Automation Research at the University of Maryland Institute for Advanced Computer Studies. He received the BE degree in electrical engineering from the University of Science and Technology of China (USTC) in 1995, and the MS and PhD degrees in electrical engineering from the University of Maryland at College Park in 1999 and 2002, respectively.

Research Interests: Human motion analysis, computer vision, statistical learning and inference.

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


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 Düsseldorf, 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 65 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.


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

Armando Rodriguez

E-mail: aar@asu.edu
Phone: (480) 965-3712
Office: GWC 352
Professor, PhD, Massachusetts Institute of Technology

Prior to joining the faculty in 1990, Armando Rodriguez worked at MIT, IBM, AT&T Bell Laboratories and Raytheon Missile Systems. He held appointments for Elgin Air Force Base, Boeing Defense and Space Systems, Honeywell and NASA. He has published over 120 technical papers in refereed journals and conference proceedings. This includes over 50 invited papers. He has authored three engineering texts. Dr. Rodriguez has given more than 60 invited presentations at international and national forums, conferences and corporations. This includes over 10 plenary talks. He is a Boeing A.D. Welliver Fellow and he received a 1998 Presidential Excellence Award for Excellence in Science, Mathematics and Engineering Mentoring. He is currently the co-director of an NSF-WAESO funded Bridge to the Doctorate Program involving 12 NSF fellows. He also currently serves on the National Academy of Engineering Committee on Engineering Education.

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, Senior Member of IEEE.


Dieter K. Schroder
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Phone: (480) 965-6621
Office: ERC 111
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, 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: GWC 618
Professor, PhD, University of Notre Dame

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

Research Interests: Learning and 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 Faculty Fellow, 1995, Motorola Excellence Award, 1995, NSF Research Institution Award, 1993, 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, 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: GWC 440
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:

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

Andreas Spanias
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Phone: (480) 965-3424
Office: GWC 440
Professor, PhD, West Virginia University

Andreas Spanias joined the ASU faculty in 1988. He has published more than 45 journal and 100 conference papers and contributed three book chapters in speech and audio processing. He has served as associate editor of IEEE Transactions on Signal Processing, as the general co-chair of the 1999 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-99) and as vice-president for the IEEE Signal Processing Society. He and former PhD student Ted Painter received the prestigious 2002 IEEE Donald G. Fink Prize Paper Award for their IEEE Proceedings paper entitled “Perceptual Coding of Digital Audio.” He was also the recipient of the 2005 IEEE Signal Processing Society Meritorious Service Award. In addition, Professor Spanias was appointed IEEE Distinguished Lecturer in 2004 and elected as IEEE Fellow in 2003. He is currently associate director of the ASU Arts, Media and Engineering (AME) program, co-director of the FSE SenSip Cluster, chair of the Systems Area, PI of a multi-university NSF program and co-PI in a major NSF IGERT program. He is an elected member at large of the IEEE Signal Processing society board of governors.

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

Honors and Distinctions: IEEE Fellow, IEEE Distinguished Lecturer, Donald G. Fink Prize for paper titled “Perceptual Coding of Digital Audio,” 2002; 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. Author of J-DSP software (http://jdsp.asu.edu) ISBN 0-9724984-0-0 that ranked in the top three educational resources in 2003 by the UC-Berkeley NEEDS panel.

Selected Publication:

Personal Web site: http://www.fulton.asu.edu/~spanias/
NJ Tao
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Office: ERC 105
Professor, PhD, Arizona State University

NJ Tao joined the ASU faculty as a professor of electrical engineering and an affiliated professor of chemistry and biochemistry in August 2001. Before that, he worked as an assistant and associate professor at Florida International University. He holds five U.S. patents, has published 147 refereed journal articles and book chapters and has given over 140 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
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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 OFDM systems, power estimation and handoff algorithms, space-time coding, ultrawideband communications.

Honors and Distinctions: NSF CAREER Award, 2001.

Selected Publications:


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

Harvey Thornburg
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Office: BYE 394/GWC 456
Assistant Professor, PhD, Stanford University

Harvey Thornburg joined the ASU faculty in 2005 with a joint appointment in Arts, Media and Engineering and electrical engineering. Current research activities involve audio sensing and content analysis, as well as multimodal data fusion. In a broader sense, his research addresses the representation of contextual knowledge emerging from flexible and uncertain structural forms (for instance: those arising from the syntax of music and dance) and the fusion of this knowledge with raw sensory information to improve detection and estimation capabilities.

Research Interests: Audio signal processing and content analysis, music information retrieval, human motion analysis and gesture segmentation, statistical dynamic pattern recognition, distributed networked inference, and asynchronous multimodal data fusion.

Selected Publications:


Trevor Thornton
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Phone: (480) 965-3808
Office: ERC 181
Professor, PhD, Cambridge University

Trevor Thornton joined the faculty in 1998 having spent eight years at Imperial College in London and two years as a member of the technical staff at Bell Communications Research, New Jersey. He invented the 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, short gate length MOSFETs, and the micropower applications of silicon-on-insulator MESFETs.

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

Selected Publications:

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

Konstantinos Tsakalis
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Office: GWC 358
Professor, PhD, University of Southern California

Konstantinos Tsakalis joined the ASU faculty in 1988 and is now a professor. He received an MS in chemical engineering in 1984, an MS in electrical engineering in 1985, and a PhD in electrical engineering in 1988, all from the University of Southern California. He holds several patents and has published over 120 journal and conference papers.

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

Honors and Distinctions: Licensed chemical engineer, Technical Chamber of Greece; member IEEE, Sigma Xi.

Selected Publications:

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

Daniel Tylavsky
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Phone: (480) 965-5460
Office: ERC 517
Associate Professor, PhD, Pennsylvania State University

Daniel Tylavsky is internationally known for applying computation technology to the analysis and simulation of the 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 $2.8 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, 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.

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 100 journal articles in prestigious refereed journals, 10 book chapters and 60 articles in conference proceedings in the areas of solid-state electronic transport in semiconductors, and semiconductor device modeling. She has also given numerous invited talks. She is a 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:
D. Vasileska, C. Prasad, H. H. Wieder, and D. K. Ferry, "Green’s Function Approach for Transport Calculation in a In0.53Ga0.47As/In0.52Al0.48As Modulation-Doped Heterostructure," J. Appl. Phys., Vol. 93, 3359-3363, 2003.

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

Vijay Vittal
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Office: ERC 513
Professor, Ira A. Fulton Chair in Electrical Engineering, PhD, Iowa State University

Vijay Vittal joined the ASU faculty in 2005. He received his PhD in electrical engineering from Iowa State University in 1982 and his MT in electrical engineering from the Indian Institute of Technology, Kanpur in 1979. 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; Outstanding Power Engineering Educator Award, Power Engineering Society, Institute of Electrical and Electronics Engineers, 2000; Warren B. Boast Undergraduate Teaching Award, 2000.

Selected Publication:

Personal Web site: http://enpub.fulton.asu.edu/vvittal

Hongbin Yu
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Office: ERC 159
Assistant Professor, PhD, University of Texas at Austin

Hongbin Yu joined the ASU faculty in 2005. He received a PhD in physics in 2001 from the University of Texas at Austin, and a MS in physics in 1996 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: Graduate Research Award, American Vacuum Society, 2001.

Selected Publications:
Frederic Zenhausern
E-mail: Frederic.Zenhausern@asu.edu
Phone: (480) 727-8187
Office: BDA AL1-30R (The Biodesign Institute); FDC (Flexible Display Center)
Professor, PhD, MBA, University of Geneva, Switzerland

Frederic Zenhausern has a joint faculty appointment as full professor with both 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 Biodesign Institute. He
is investigator and international development director at the Center for Flexible Display and
chief technology officer at MacroTechnology Works. 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 Physics Matter at the University of
Geneva. He has co-authored over 70 scientific publications and has published more than a
dozen U.S. 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. 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,

Selected Publications:
Jian Gu, Ravi Gupta, Chia-Fu Chou, Qihuo Wei, and Frederic Zenhausern, “A Simple Polysilsesquioxane Sealing of
Nano-fluidic Channels Below 10 nm at Room Temperature”, Lab Chip, June 29, 2007

J. Wang, J. Gu, F. Zenhausern, and H. Srinivasan, “Low-cost Fabrication of Submicron all Polymer Field Effect

Junshan Zhang
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Phone: (480) 727-7389
Office: GWC 411D
Associate Professor, PhD, Purdue University

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 IPCCC 2006 and TPC vice chair for ICCCN 2006. He was general chair for IEEE
Communication Theory Workshop 2007. He has served as an associate editor for IEEE
Transactions on Wireless Communications since 2004.

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

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

Selected Publications:
D. Zheng, W. Ge, and J. Zhang, “Distributed Opportunistic Scheduling for Ad-Hoc


B. Wang, J. Zhang, and L. Zheng, “Achievable Rate and Scaling Laws of
Wideband Sensory Relay Networks,” IEEE Transactions on Information Theory, 4084-
4104, Sep. 2006.

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Professor, PhD, Max-Planck-Institute for
Solid States and University Stuttgart, Germany

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), optoelectronic materials and
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:
Recycling on Cooling Efficiency and Cooling Power in Semiconductor Luminescence

Design with Tailored Spatial Current Injection for High-Power Single-Mode Operation,”

J.-B. Wang, S.R. Johnson, S.A. Chaparro, D. Ding, Y. Cao, Yu. G. Sadofyev, Y.-H. Zhang,
J.A. Gupta, and C.Z. Guo, “Band Edge Alignment of Pseudomorphic GaAs/GaAs/
GaAsSb VCSELs on GaAs Substrates for Communications Applications,” Electron.

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