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IRA A. FULTON GIVES $50 MILLION TO COLLEGE ................. 37
One of the most exciting events was a $50 million gift presented by Ira A. Fulton to the ASU Foundation for the benefit of the College of Engineering and Applied Sciences.

The 2002-2003 year has been one of significant change at ASU under the leadership of Michael Crow, ASU’s 16th president. One of the most exciting events was a $50 million dollar gift presented by Ira A. Fulton to the ASU Foundation for the benefit of the College of Engineering and Applied Sciences. As a result, the college was renamed and is now the Ira A. Fulton School of Engineering. The gift is expected to help the school and the Electrical Engineering Department become among the best in the world. More about this generous gift is on the inside back cover of this report.

Another milestone event was the ground breaking for the first phase of the Arizona Biodesign Institute, a research institute dedicated to bio-nanosciences and engineering. Electrical engineering faculty will play a strong role in the success of this center with respect to ongoing research in the department related to biocompatible electronics, biosensors, nanotechnology, and neurological system modeling. ASU’s new administration is also changing how the university conducts business, particularly in terms of a strong focus on technology transfer through intellectual property and entrepreneurship where electrical engineering plays a key role. At the same time, it has been a year that has witnessed the end of several existing structures within the college and department, including the System...
Science and Telecommunications Research Centers, which will be phased out in 2003.

Research activity continues to enjoy unprecedented historical levels. In particular, the National Science Foundation Industry University Cooperative Research Center (IUCRC) Connection One was successfully inaugurated in summer 2002 with full NSF funding. The C1 center, whose focus is on wireless communication circuits and systems, has grown to include 13 industrial partners, and three partner universities including the University of Arizona, the University of Hawaii, and North Carolina A&T. Other thrusts in nanoelectronics, embedded systems, power systems engineering, and electromagnetics continue to enjoy strong support as well.

This year we have chosen to highlight another interdisciplinary thrust in our annual report, this time among the Electrical Engineering Department, the Computer Science and Engineering Department, and the Institute for Studies in the Arts in the Herberger College of Fine Arts through the newly established Arts, Media, and Engineering Center (AME), which focuses on media hardware, software, content, and theory. This ambitious project will be an important new dimension to our educational and research programs in electrical engineering, highlighting the important social impacts of electrical engineering and computer science and attracting students to our profession.

We are looking forward to the coming year with the completion of our ABET report and subsequent visit in Fall 2003 for the first time under the new EC2000 criteria. Many changes are occurring at ASU, and electrical engineering will play a lead role in many new initiatives occurring on campus. I hope you enjoy this year’s snapshot of the ongoing activities in our department.

Sincerely,

Stephen M. Goodnick
Chair, Electrical Engineering

2002-2003 Financial Summary

Department of Electrical Engineering
Fiscal Year Sponsored Expenditures

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Palais Establishes Outstanding Doctoral Student Award

Joseph Palais, professor and associate chair of graduate studies, and his wife Sandra established the Outstanding Doctoral Student Award. The award is presented annually to a graduating doctoral student with a minimum 3.75 GPA and at least one journal or conference publication. Faculty members nominate students within the department each year. The recipient receives $500 and a commemorative plaque.

Phillips Joins Solid-State Faculty

Stephen M. Phillips joined the solid-state electronics faculty as a professor. Phillips, who completed his Ph.D. in electrical engineering at Stanford University, came to ASU from Case Western Reserve University where he held appointments in the departments of electrical engineering and applied physics; systems, control and industrial engineering; and electrical engineering and computer science.

His research interests include applications and integration of microsystems and microelectromechanical systems (MEMS), microfluidics, microactuators, and biological microsystems; applications of systems and control including adaptive control, instrumentation and control of gas-turbine engines, control of microsystems, and feedback control over nondeterministic networks.

Thornton Named New CSSER Director

The Ira A. Fulton School of Engineering named Professor Trevor Thornton director of the Center for Solid-State Electroncs Research (CSSER). Thornton succeeds Michael Kozicki who vacated the position to return to teaching and to allow more time for his entrepreneurial activities.
Reisslein and Zhang Receive CAREER Awards

Martin Reisslein and Junshan Zhang received prestigious CAREER awards from the National Science Foundation.

Reisslein will receive $359,477 over the next four years for his proposal titled “Streaming Prerecorded Continuous Media in Wireless Environments.” Although Reisslein plans to “focus on the unique challenges of the wireless medium,” he said the award would also enable him to pursue a number of educational and outreach initiatives. By developing educational applets that illustrate the underlying mechanisms of the Internet to K-12 students, he hopes to foster the students’ interest in engineering.


Zhang said the award will help him “build a strong program on integrating research and education in wireless network design; it will be one of the most important milestones in my career.”

Reisslein and Zhang join a host of recent CAREER recipients within the Department of Electrical Engineering, including Antonia Papandreou-Suppappola, 2002; Cihan Tepedelenlioglu, 2002; Tolga Duman, 2000; Dragica Vasileska, 1999; Lina Karam, 1999; Jeffrey Capone, 1999; and Bruce Kim, 1997.

Aberle Wins Teaching Award

Associate Professor James Aberle won the 2003 IEEE Student Branch Teaching Award. The ASU IEEE Student Branch presents the award to an outstanding electrical engineering faculty member each year.
Rodriguez Recognized for Mentoring

Armando Rodriguez’s 1998 Presidential Award for Excellence in Science, Math, and Engineering is paying off. The national recognition has helped him draw minority students to the Department of Electrical Engineering through Modeling, Simulation, Animation and Real-Time control of Flexible Autonomous Machines Operating in an Uncertain Environment (MoSART FAME). Rodriguez’s mentoring program provides scholarships to underrepresented minority graduate students who pursue multidisciplinary electromechanical research in his lab.

To date, the program, which receives funding from the National Science Foundation and industrial sponsors such as Intel, Motorola, Microsoft, Honeywell, IBM, Lockheed Martin, ON Semiconductor, and Altera, has awarded $1,000 grants to 130 minority and women students. Rodriguez was recently featured in the EE Times.

Spanias Named IEEE Fellow

Andreas Spanias, professor, was named a 2003 IEEE Fellow for his contributions to speech processing and its industrial applications. Spanias is the fourth ASU professor to become an IEEE Fellow in the last three years. He joins 2002 IEEE Fellow Sayfe Kiaei and 2001 IEEE Fellows Samir El-Ghazaly and Sethuraman Panchanathan.
Chakrabarti, Tsakalis, and Vasileska Promoted

Chaitali Chakrabarti, Kontantinos Tsakalis, and Drajica Vasileska were promoted during the 2002-2003 academic year. Chakrabarti and Tsakalis became full professors and Vasileska was promoted from assistant to associate professor with tenure.

Morrell and Papandreou-Suppappola Win Outstanding Faculty Awards

Darryl Morrell and Antonia Papandreou-Suppappola won the 2003 IEEE Phoenix Section Outstanding Faculty for Research Award for research contributions in sensor signal processing.

Hoppensteadt Elected AAAS Fellow

Frank Hoppensteadt, professor of electrical engineering and mathematics, was elected a Fellow of the American Association for the Advancement of Science for distinguished contributions to the field of mathematical biology, specifically to the mathematics of neurons and neural networks. The award was presented at the AAAS Fellows Forum in February 2003.
Tyldesley Receives Distinguished Achievement Award

Katherine Tyldesley received the 2003 ASU Faculty Women’s Association Distinguished Achievement Award for Master’s Candidates. The award is presented to female graduate students who demonstrate the qualities of an exceptional scholar, researcher, and leader through exemplary performance and noteworthy contributions to the academic community. The award provides a $500 stipend.

Shifren Receives Palais Award

Lucien Shifren received the Palais Outstanding Doctoral Student Award. The award, established through an endowed gift from Joseph and Sandra Palais, provides $500 and a commemorative plaque to the best graduating electrical engineering doctoral student each year. Lucien is the inaugural recipient of the award which will be presented annually.

Farahani, Lin, and Suryanarayanan Enroll in PFF

Three electrical engineering graduate students, Shahin Farahani, Jie-Feng Lin, and Siddharth Suryanarayanan, participated in the Graduate College’s Preparing Future Faculty program. The two-year program prepares doctoral graduates for academic careers. PFF participants attend a series of seminars, reading groups, and professional development workshops focusing on topics such as faculty roles at different types of institutions, teaching strategies, diversity in the academy, securing research funding, and trends and issues in higher education. Later they engage in teaching, research, and service activities, observing and interacting with faculty members.

Figiel, Desai, and Darbanian Win Texas Instruments Scholarships

Marnie Figiel, Jennifer Desai, and Nazanin Darbanian each won Texas Instruments Outstanding Female Diversity Scholarship Awards. The recipients each received a $15,000 scholarship and a plaque at a ceremony in November 2002.
Fulbright Scholar Chooses ASU

Panayiotos Ioannides came to the department on a Fulbright Scholarship. He completed receiving a Diploma in Electrical and Computer Engineering from the National Technical University of Athens, Greece. Ioannides says that he chose ASU because he is “particularly interested in studying antenna systems and especially smart antenna configurations” and wanted to work with Regents’ Professor Constantine Balanis. Ioannides says he hopes to use his graduate degree “to find an interesting and self-satisfying job either in academia or industry.”

Ayubi-Moak Named ARCS Scholar

Doctoral student Jason Ayubi-Moak was named a 2003 ARCS Scholar by the Phoenix chapter of the Achievement Rewards for College Scientists Foundation, which awards $6,000 scholarships to assist graduate research in the sciences. Deana Delp, Stephen Ramey, and Richard Metzger were ARCS Scholars in 2002.

University Graduate Scholarships Awarded

Tito Dardon, Joshua Hihath, and Enrique Ledezma each won a three-year merit package through the University Graduate Scholars Program. In addition to a research or teaching assistantship provided by the department, the scholarship includes a stipend enhancement of $3,250 plus a tuition waiver each year. Matthew Gilbert, James Dankert, and Win Ly continue their UGS graduate assistantships awarded in 2001-2002.

Gurumohan Wins Entrepreneur Competition

Doctoral student Prabhanjan Gurumohan’s proposal entitled “LightWave Network” won the first prize of $8,000 in the Second Annual Entrepreneur Competition. The competition provides mentoring and rewards students whose ideas have the most potential for commercialization.
Connection One is a National Science Foundation Industry/University Cooperative Research Center focused on communication circuits and systems. The center researches all aspects of educational and research programs entailing wireless and wireline communications, radio frequency, integrated circuit design, and mixed-signal analog/digital integrated circuits for communications and related areas.

Connection One’s name reflects its vision, which is to simplify and enable small, portable, all-in-one communication devices. The center pursues research projects that enable integration of many communication devices into one small package by combining innovative systems and integrated-circuitry techniques. This exclusive industry/university partnership encompasses a new educational program, state-of-the-art research initiatives, and development of new devices that will handle multiple communication protocols on one small system using new transceiver System-on-a-Chip technology.

Connection One’s mission contains both an educational and a research component. With the support of industry, this new center is establishing a state-of-the-art educational program in telecommunication mixed-signal integrated circuit design. Because the center is a cooperative research program where each project is sponsored and supported by an industrial member, there is a one-to-one link between the faculty, the students, and the industrial member. The center sponsors fellowship program to allow students to perform research at ASU for nine months followed by an internship program for three to six months at an industrial site to facilitate technology transfer and to allow students to gain practical experience.

Connection One’s is currently involved with a number of research projects:

- 1.2V, 10-Bit Cyclic A/D Converter Incorporating an Active Feedback Frequency Compensation Op-Amp in 0.18 mm CMOS
- Low-Temperature/High-Energy Density/Micro-Fluidic Fuel Cell System for Portable Communication Applications
- Determination of Cost Saving and Improved Reliability in Scaled Circuits and Devices
- Optimization of SiGe HBT Designs for High-Speed RF Applications
- RF Front End Architectures for Software Defined Radios
- Switchable Dual Band Quadrature Voltage Controlled Oscillator
- Task Scheduling for Battery Powered Systems
- PAR Reduction for Single and Multi-Antenna OFDM Systems
- On-Chip Active Antennas for UWB
- Use of Novel Materials and Integration Methods to Develop On-Chip Band Reject Filters
- Automatic RF Match Control Circuit for Broadband Wireless Devices
- The Use of Optical Processing Techniques for the Design of High-Speed Scalable IP Routers
- Monolithic Power Management for Mixed-Signal Integrated Circuit

Connection One derives its funding from the National Science Foundation, the State of Arizona Proposition 301 Research and Development funds, and industrial members, including Cisco, General Dynamics Decision Systems, Intel, Motorola, National Science Foundation, Philips, Proposition 301 Information Technology, Raytheon, Silicon Laboratories, SiRF Technologies, Skyworks Solutions, STMicroelectronics, Texas Instruments

More information about Connection One is available online at www.connectionone.org.
Center Highlights and Major Accomplishments
The center is organized into four main areas: materials and device modeling, low-power analog circuit design, low-power digital circuits and systems design, and physical design of low-power circuits and systems.

The center’s research ranges from semiconductor material and basic device issues to device/circuit design and modeling; data-dependent algorithm design; energy-efficient code generation; memory design; dynamically reconfigurable, mixed-signal, lower-power systems; substrate noise coupling; hot carriers, MOSFET noise; and dynamic power management techniques. Analog-to-digital converters, incorporating correlated double sampling and swing reduction to improve performance and reduce power consumption at low-power supply voltages typical of deep sub-micron CMOS processes, have been designed and fabricated. The development of high-level transformations includes those at the algorithm level and system level (memory, bus interface, etc.). Three faculty members at ASU and three faculty members from the University of Arizona together with 12 graduate students carry out this research.
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 15 people. The center has about 60 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 centers 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; materials and process fundamentals; molecular beam epitaxy and optoelectronics; and nanostructures. Beyond these formal groupings, CSSER supports the research of faculty from the College of Engineering and Applied Sciences, the College of Liberal Arts and Sciences, and AZBio in the areas of MEMS and nanofluidics, wide band gap semiconductors, high-k dielectrics, and nanomagnetics. In recent years, CSSER researchers have developed a number of significant technologies, such as RF magnetic latching switches, programmable metallization cell (PMC) memory devices, resonant cavity light emitting diodes, and nano-based gas sensors.
PSERC is a National Science Foundation Industry/University Cooperative Research Center that is addressing challenges in the new electric power industry as it restructures to a competitive business environment. Finding innovative and efficient solutions to those challenges requires an unprecedented level of expertise, communication, and cooperation between the university and industry. Through collaboration, PSERC

■ seeks innovative solutions to challenges in creating a power system with decentralized, market-based decision-making
■ stimulates productive interchange of ideas among university and industry professionals
■ leverages research funding from universities and industrial members
■ facilitates access to highly experienced faculty and superior quality students
■ prepares current and future professionals for the new power industry.

PSERC academic researchers at multiple universities across the U.S. specialize in power systems, applied mathematics, nonlinear systems, power electronics, control theory, computing, operations research, economics, industrial organization, and public policy. They provide research services and products that add value to industry and that support efficient and effective provision of electricity services while meeting environmental requirements.

PSERC Research
Industry restructuring and technology change is creating new challenges for the operations, security and reliability of the power system, for the physical and institutional structures, and for delivery of economical and environmentally acceptable electricity services. PSERC’s research program focus is on helping the next generation electric power system evolve into a competitive, high-performance component of the nation’s infrastructure. Its research program is divided into three research stems.

Research Stem 1: Markets
■ The electric power industry is in transition toward a market-oriented structure with decentralized decision-making by a wide-ranging group of market participants. The research under this stem emphasizes the design and analysis of market mechanisms, computational tools and institutions that facilitate efficient coordination, investment, and operations while recognizing the economic and technical characteristics of power systems.

Research Stem 2: Transmission and Distribution
■ The power delivery infrastructure is critical to achieving efficiency, safety, security, and reliability in electricity supply. Improvements in this infrastructure could be achieved through innovations in software, hardware, materials, sensors, communications, and operating strategies. Therefore, a central goal of this research stem is the improvement of transmission and distribution systems through the application of technological advances.

Research Stem 3: Systems
■ Restructuring is leading to large and complex operational entities (such as Independent System Operators or Regional Transmission Organizations) while small-scale, dispersed generation technologies are increasing their penetration in power systems. The challenge is to develop new operations frameworks and approaches that will effectively cope with the growing complexity of a restructured industry. Systems research concentrates on operation of such complex, dynamic systems in general and power systems in particular.

Additional information on PSERC is available at http://www.pserc.wisc.edu/index_about.html
The Arts, Media and Engineering Center (AME) represents an ambitious interdisciplinary research community at ASU that focuses on the parallel development of media hardware, software, content, and theory. Designed as a joint effort between the Katherine K. Herberger College of Fine Arts (HCFA) and the Ira A. Fulton School of Engineering, the AME Center addresses the discontinuum that exists between media content and media technologies through a shift in media and arts training.

By bringing artists and content creators together with engineers who have expertise in digital signal processing, wireless network communications, audio and image processing, controls, and sensor signal processing, the AME Center trains students to integrate principles of computing and communication with artistic ideas and objectives. This synthesis will enable new paradigms of human-machine experience that directly address societal needs and facilitate knowledge.

“We learn through experience, and experience is interactive,” says AME Director Thanassis Rikakis. “Students are looking for this kind of synthesis between the arts and technology.”
The AME Center’s commitment to cross-disciplinary research is evident through its structure. Rikakis, a professor of music, comes from the College of Fine Arts. Associate Directors Andreas Spanias from the Department of Electrical Engineering and Forouzan Golshani from the Department of Computer Science and Engineering represent the Ira A. Fulton School of Engineering. In addition to its partnership with the departments of electrical engineering and computer science and engineering, the AME Center involves the departments of art, dance, music, and theater. The center is also recruiting participation from anthropology, bioengineering, communications, design and architecture, psychology, and sociology faculty.

Although the MIT Media Lab, founded in 1985, and the Carnegie Mellon Entertainment Technology Center, founded in 1998, have similar interdisciplinary programs, Rikakis sees the AME Center as the next step in bridging the gap between medium and message. “The fact that conservatives on both are sides are saying this is going to be all about art or all about engineering tells us that we’re right in the middle where we want to be;” he says. “We try to make sure everything we do has commercial applications.”

Above: Motion capture on the Intelligent Stage facilitates the study of interactive performance technologies.

Left: This production studio supports analog and digital video production, 3-D animation and 2-D graphics, interactive media development and programming for CD-ROM and DVD, and Web development for telematic, database, and other research.
Golshani concurs: “Clearly the major impact will be in various arts fields, such as dance, theatre, and music, but several other areas can benefit substantially from the AME work. Representative areas include rehabilitation, security, and sports. As you can see, these fields are very diverse and each may use our work in a different way.”

“The objective is to produce new, hybrid graduate students who draw their creativity from the arts and their methodology from engineering sciences,” says Spanias.

The center’s current projects include body sensing, electronic motion capture, microphone arrays, data fusion, networking and transmission, and digital signal processing for the arts. The center is also in the process of hiring several new faculty members who will hold joint positions with the Ira A. Fulton School of Engineering and HCFA.

Hari Sundaram joined the Department of Computer Science and Engineering and AME in fall 2002. “At the present moment,” Sundaram says, “I am conducting research on developing computational models in a new area of multimedia called ‘experiential computing.’ AME, along with the center of experiential computing at Georgia Tech, is among the few centers performing research in this area.”

Sundaram expects his research to impact a number of areas, including new computational models for representation and communication of experiences, creation of new forms of interactive, goal driven experiences to facilitate learning, creation of new multimodal experiential sites, and development of tools that utilize new methods of content creation.

Gang Qian, who begins a joint position with the Department of Electrical Engineering and the AME Center in fall 2003, will join the signal processing group in the Department of Electrical Engineering while leading research on motion analysis at the AME Center.

Motion analysis allows extraction of 3-D measurement of movements and structures of joints, body parts, and whole human bodies from videos. It is crucial for numerous theoretical and practical research problems in performance arts, rehabilitation, and human behaviors that require quantitative measures of human movements.

“I strongly believe that the research of the Center will impact society in a number of areas such as arts, rehabilitation, and education,” said Qian. “By
successfully creating computational models for experiential elements and mediated arts, not only can existing forms of arts and experiences such as dance, and music be represented and archived more conveniently, novel forms of arts communicating experiences will be created by playing with these computational models.”

Rehabilitation will benefit because the center will develop low-cost human movement analysis algorithms. Computational models of human behaviors to be rehabilitated such as walking can then be built using real data and the models can be customized for individuals.

The AME Center is a result of more than five years collaboration between the Ira A. Fulton School of Engineering and the Institute for Studies in the Arts (http://isa.asu.edu/), following the joint development of the Technology Development Studio at the Institute. The center launches graduate concentrations in art, computer science and engineering, dance, electrical engineering, music, and theater in fall 2003. The Department of Electrical Engineering will offer both M.S. and Ph.D. concentrations in Arts, Media and Engineering.

More information about the AME Center is available online at http://ame.asu.edu.

Additional AME Faculty and Staff

Loren Olsen, lecturer, digital animation/digital graphics/motion rendering

David Birchfield, senior lecturer, performance technologies development and theory

Todd Ingalls, lecturer, interactive arts/motion capturing

Gene Cooper, lecturer, Web technologies

Additional faculty members from the Department of Electrical Engineering serving as principal and co-investigators of AME research projects:

Lina Karam
Darryl Morrell
Antonia Papandreou-Suppappola
Martin Reisslein
Armando Rodriguez
Junshan Zhang
INDUSTRY ADVISORY COUNCIL

Current Members:

- AG Communication Systems
- AMD
- IBM
- MOTOROLA
- Sandia National Laboratories
- Texas Instruments
- THREE-FIVE SYSTEMS, INC.

ELECTRICAL ENGINEERING

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Advanced Micro Devices

Ron Jost  
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Office Secretary of Defense  
Department of Defense

Eric C. Maas  
Director, Technology Strategy & Strategic Alliances  
Wireless Systems Subscriber Group  
Motorola

Wally Meinel  
Group Manager  
Texas Instruments

Robert Melcher  
CEO  
Three-Five Systems

Gopal Nair  
Gemtech Systems LLC

Paul Narula  
Vice President Corporate Relations  
AG Communication Systems

Kent L. Olsen  
Manager  
Instruments Business Unit  
Tektronix

Mark Phelps  
Director, Test Development  
Medtronics

Kevin Stoddard  
Control Systems Division Manager  
Brooks Automation

Bill Twardy  
Research Programs Manager  
Salt River Project

Sam Werner  
IBM

John Wood  
Hardware Design Engineer  
Agilent

Peter Zdebel  
Vice President and Chief Technical Officer  
ON Semiconductor

Thomas Zipperian  
Unit Director, Mesa Microfabrication  
Sandia National Laboratories
James T. Aberle received the B.S. and M.S. degrees in electrical engineering from Polytechnic Institute of New York (now Polytechnic University) in 1982 and 1985, respectively, and the Ph.D. in electrical engineering from the University of Massachusetts in 1989. From 1982 to 1985, he worked on the development of wide-band, phased-array antennas at Hazeltine Corporation, Greenlawn, New York. He joined the ASU faculty in 1989 and is currently an associate professor.

Research Interests: Computational electromagnetics, smart and advanced antennas, electromagnetic properties of natural and artificial materials, microwave circuits, and radar cross-section analysis and control.

Honors and Distinctions: IEEE Senior Member; NASA-ASEE Summer Faculty Fellow, 1993.

Selected Publications:


Professor Allee conducts research in ultra-small device fabrication and in low-voltage, low-power analog CMOS circuit design for analog-to-digital conversion and telemetry. The targeted applications are medical electronics and portable communication products where it is often desirable to place the entire mixed-signal system on a single chip. Current projects include cyclic, pipelined, and delta-sigma converters, along with low-power, low-noise, voltage-controlled oscillators using chip transformers. He is a founding member of the Center for Low Power Electronics (funded by the NSF, industry, and the state of Arizona), the Whitaker Center for Neuromechanical Control, and is the manager of the Focused Ion Beam User Facility. He has published over 35 refereed journal articles and publications at technical conferences and has conducted three invited talks at international conferences.

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

Honors and Distinctions: Young Faculty Teaching Excellence Award, 1994-1995; two patent applications filed; AEA Faculty Development Fellowship, Stanford University, 1984-1989; Voorheis Honor Scholarship, University of Cincinnati, 1979-1984.

Selected Publications:


Rajapandian Ayyanar joined the ASU faculty as an assistant professor in August 2000. He received the B.E. in electrical engineering from P.S.G. College of Technology, India, in 1989; the M.S. in power electronics from the Indian Institute of Science in 1995; and the Ph.D. in power electronics from the University of Minnesota in 2000. He has published 20 journal and conference papers, is a member of IEEE, and is the co-author of one patent.

Research Interests: Topologies and new control techniques for switch-mode power conversion, especially DC-DC converters, digital PWM techniques for motor drives, power systems applications of power electronics.

Selected Publications:


Constantine A. Balanis
Office: GWC 452
E-mail: balanis@asu.edu
Phone: 480-965-3909
Ph.D.: Ohio State University, 1969

Constantine Balanis joined the ASU faculty in 1983 and is now a Regents’ Professor of electrical engineering. He has published nearly 100 journal papers, 150 conference papers, and numerous scientific reports. He has also published two textbooks: one on antennas and the other on advanced engineering electromagnetics.

Research Interests: Computational electromagnetic methods (FDTD, FEM, MoM, GO/GTD/UDT, PO/PTD) for antennas, scattering, lightning, and high-intensity radiated fields (HIRF); smart/adaptive antennas for wireless communications; and electromagnetic wave multipath propagation.

Honors and Distinctions: Regents’ Professor, IEEE Fellow, IEEE Third Millennium Medal, 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:


Jonathan Bird
Office: ERC 187A
E-mail: bird@asu.edu
Phone: 480-965-7421
Ph.D.: University of Sussex, 1990

After obtaining his Ph.D. in 1990, Jonathan Bird spent five years at RIKEN, a Japanese government laboratory before joining the ASU faculty in 1997. Professor Bird has co-authored more than 150 refereed publications in international journals, is co-author of the undergraduate textbook Electronic Materials and Devices (with D. K. Ferry, Academic Press, 2001), and editor of the research text Electron Transport in Quantum Dots (Kluwer Academic, 2003).

Research Interests: Fabrication and characterization of semiconductor nanostructures with emphasis on studies of their quantum-transport characteristics.

Honors and Distinctions: Fellow, Institute of Physics; Senior Member, IEEE; visiting research fellow of the Japan Society for the Promotion of Science, University of Tsukuba, Japan.

Selected Publications:


Chaitali Chakrabarti received her B.Tech. in electronics and electrical communication engineering from the Indian Institute of Technology, Kharagpur, India, and her M.S. and Ph.D. degrees in electrical engineering from the University of Maryland, College Park. She has been at ASU since 1990 where she is now a full professor. She is a member of the Center for Low Power Electronics, Consortium of Embedded and Inter-Networking Technologies, and Connection One and conducts research in various aspects of low-power system design.

**Research Interests:** VLSI architectures and algorithms for media processing and communications; low-power system design, including memory design and compilation; CAD tools for VLSI.

**Honors and Distinctions:** Outstanding Educator Award, IEEE Phoenix section, 2001; CEAS Teaching Award, 1993-1994; associate editor of the IEEE Transactions on Signal Processing and the Journal of VLSI Signal Processing.

**Selected Publications:**


Douglas Cochran joined the ASU faculty in 1989. He holds Ph.D. and S.M. 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, served as a consultant to Motorola and the Australian Defense, Science, and Technology organization. He is associate editor of IEEE Transactions on Signal Processing and was general co-chair of the 1999 IEEE International Conference on Acoustics, Speech, and Signal Processing. Professor Cochran is currently on leave working as a program manager for the Applied and Computational Mathematics Program, a division of the DARPA Defense Sciences Office.

**Research Interests:** Signal processing, harmonic analysis, detection theory.

**Honors and Distinctions:** CEAS Teaching Excellence Award, 1996-1997; IEEE Senior Member.

**Selected Publications:**


ELECTRICAL ENGINEERING

Rodolfo E. Diaz
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Phone: 480-965-4281
Ph.D.: UCLA, 1992

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, the associate director of the Consortium for Meteorology of Semiconductor Nanodefects, and holds ten 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, combined computational mechanics and electromagnetics.

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

Selected Publications:

Tolga M. Duman
Office: GWC 412
E-mail: duman@asu.edu
Phone: 480-965-7886
Ph.D.: Northeastern University, 1998

Tolga Duman received the B.S. from Bilkent University, Turkey, in 1993 and the M.S. and Ph.D. degrees from Northeastern University in 1995 and 1998, respectively, all in electrical engineering. He has been with the Department of Electrical Engineering of ASU since August 1998 as an assistant professor.

Research Interests: Digital communications, wireless and mobile communications, channel coding, turbo codes and turbo-coded modulation systems, coding for magnetic recording channels, and coding for wireless communications.


Selected Publications:

Elbadawy Elsharawy
Office: GWC 424
E-mail: elsharawy@asu.edu
Phone: 480-965-8591
Ph.D.: University of Massachusetts, Amherst, 1989

Elbadawy Elsharawy joined ASU in 1989 where he is currently an associate professor. Dr. Elsharawy also has two important patents in his portfolio: “Stacked Microstrip Antenna for Wireless Communications,” U.S. patent 5,945,950, and “Heterojunction Bipolar Transistor Having Wide-Band Gap,” U.S. patent 5,912, 481.

Research Interests: Microwave circuits, applied electromagnetics, anistropic devices, electronic packaging, and cellular phone antennas.

Honors and Distinctions: Senior Member of IEEE, MTT-13 Technical Committee member, and an elected member of Commissions A and D, National URSI.

Selected Publications:
Richard G. Farmer
Office: ERC 513
E-mail: aargf@asu.edu
Phone: 480-965-4953
MS EE: Arizona State University, 1964

Richard Farmer has over 48 years of electric power industry experience. He has been an adjunct professor at Arizona State University since 1966. He has co-authored a book on the application of series capacitors in power systems and has written over 35 industry papers.

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


Selected Publications:


David K. Ferry
Office: ERC 187
E-mail: ferry@asu.edu
Phone: 480-965-2570
Ph.D.: University of Texas, Austin, 1966

David Ferry joined ASU in 1983, following stints at Texas Tech University, the Office of Naval Research, and Colorado State University. He has published more than 500 articles, books, and chapters and has organized many conferences.


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

Selected Publications:


Stephen Goodnick
Office: ERC 552
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Phone: 480-965-3837
Ph.D.: Colorado State University, 1983

Stephen Goodnick 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 is currently Vice President (2002-2003) and President (2003-2004) of the Electrical and Computer Engineering Department Heads Association (ECEDSHIA). Dr. Goodnick has published over 140 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: Alexander von Humboldt Research Fellow, Germany, 1986; Senior Member, IEEE, 1990; 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:


Gerald Thomas Heydt is from Las Vegas, Nevada. He holds the B.E.E.E. degree from the Cooper Union in New York and the M.S.E.E. and Ph.D. degrees from Purdue University. He spent approximately 25 years as a faculty member at Purdue, and in 1994, he took the position of Director of the NSF Center for the Advanced Control of Energy and Power Systems at ASU. He has industrial experience with the Commonwealth Edison Company, Chicago; E.G. & G. in Mercury, Nevada; 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 also vice-chair of the IEEE Power Engineering Society—Power Engineering Education Committee.

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


Selected Publications:
Walter T. Higgins

Walter Higgins joined the faculty in 1967. His primary background was in the area of control systems with experience in the aerospace industry, i.e., guidance, control, and navigation systems. He teaches in the areas of controls, circuits, microprocessors, and digital design.

Research Interests: Digital control and simulation, computer-aided control systems design, microprocessor applications, and real-time computing with graphical programming languages such as LabVIEW, computers in education.

Honors and Distinctions:Eta Kappa Nu, AIAA Senior Member.

Selected Publications:

Keith E. Holbert

Keith Holbert joined the faculty in 1989 and is presently the Associate Chair for Undergraduate Studies. He is a registered professional engineer and has published over 40 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.

Selected Publications:
**Frank Hoppensteadt**  
Office: GWC 610  
E-mail: fchoppen@asu.edu  
Phone: 480-965-8002  
Ph.D.: Mathematics, University of Wisconsin, 1965

Frank Hoppensteadt joined the faculty at ASU in 1995 as director of the System Sciences and Engineering Research Center. He is professor of mathematics and of electrical engineering. His general areas of specialization are in mathematical neuroscience and stochastic perturbation methods.

**Research Interests:** Modeling brain structures using electronic circuits, stochastic dynamical systems.

**Honors and Distinctions:** Christensen Award, 2002; IEEE; ASU Alumni Association Faculty Advancement of Science; Senior Member, Fellow, American Association for the Advancement of Science, Fellow, St. Catherine’s College, Oxford; Honors and Distinctions: Christensen dynamical systems.

**Selected Publications:**

**Joseph Y. Hui**  
Office: GWC 411  
E-mail: jhui@asu.edu  
Phone: 480-965-5188  
Ph.D.: Massachusetts Institute of Technology, 1983

Joseph Y. Hui joined ASU as ISS Chair Professor in 1999. He received his B.S., M.S., and Ph.D. degrees from MIT and has 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.

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

**Selected Publications:**

**Youngjoong Joo**  
Office: GWC 458  
E-mail: yjoo@asu.edu  
Phone: 480-965-2030  
Ph.D.: Georgia Institute of Technology, 1999

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 B.S. and M.S. in electrical engineering from Korea University in 1988 and 1990, respectively, and the Ph.D. 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 Karady

George Karady received his B.S.E.E. and Ph.D. degrees in electrical engineering from 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.

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

Honors and Distinctions: Fellow of IEEE, chairman of IEEE WG on Non-Ceramic Insulators, WG on Power Electronic Equipment. He also chairs the Award Committee of the IEEE PES Chapters and Membership Division and is serving as a secretary of the IEEE Phoenix Section. In 1996, Dr. Karady received an Honorary Doctoral Degree from Technical University of Budapest, in 1999 the IEEE Third Millennium Medal, and in 2002 IEEE Power Engineering Society Working Group Recognition Award as the chair of WG that prepared IEEE Standard 1313-2.

Selected Publications:

Lina Karam

Lina Karam received the B.E. in electrical engineering from the American University of Beirut in 1989 and the M.S. and Ph.D. degrees in electrical engineering from the Georgia Institute of Technology in 1992 and 1995, respectively. She is currently an associate professor in the Department of Electrical Engineering at ASU. She worked at Schlumberger Well Services and in the Signal Processing Department of AT&T Bell Labs during 1992 and 1994, respectively.

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

Honors and Distinctions: Society of Women Engineers Outstanding Graduate Student Award, 1994; Georgia Tech Graduate Student Senate Presidential Citation Award, 1994; NSF CAREER Award, 1998. She is an associate editor of the IEEE Transactions on Image Processing and an elected member of the IEEE Circuits and Systems Society's Technical Committee.

Selected Publications:

Sayfe Kiaei

Dr. Kiaei is a professor and the director of Connection One, a new National Science Foundation research center that focuses on communication circuits and systems. Before joining the ASU faculty in January 2001, he was a senior member of technical staff with the Wireless Technology Center and the Broadband Operations at Motorola. He was also an associate professor at Oregon State University where he helped establish the industry-university Center for Design of Analog/Digital ICs (CDADIC) and served as its co-director for ten years. He has published over 100 journal and conference papers and holds several patents. He is a member of the IEEE Circuits and Systems Society, the IEEE Solid State Circuits Society, and the IEEE Communication Society. Dr. Kiaei currently has over 10 Ph.D. and M.S. students researching RF and mixed-signal ICs and has funding from DARPA, JPL, Motorola, Texas Instruments, Intel, and Phillips.

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:
Bruce Kim
Office: ERC 563
E-mail: bkim@asu.edu
Phone: 480-965-3749
Ph.D.: Georgia Institute of Technology, 1996

Bruce Kim joined the ASU faculty as an associate professor in August 2000 after teaching at Michigan State and Tufts Universities. He received the B.S. from the University of California-Irvine in 1981 and the M.S. from the University of Arizona in 1985, both in electrical engineering. He completed the Ph.D. in electrical and computer engineering at the Georgia Institute of Technology in 1996. He has published 37 journal and conference papers and holds one patent.

Research Interests: MCM substrate testing, defect simulation of analog circuits, and microsystem development.

Honors and Distinctions: Professor of the Year, Corporate Leaders Program, ASU, 2001; IEEE Computer Society Certificate of Appreciation, 1999; NSF/IEEE Award for educational Internet-based modules, 1999; Best paper of the session, IEEE Multi-Chip Module Conference, 1998; NSF CAREER Award, 1997; Best Paper Candidate, IEEE 46th ECTC Conference, 1996; Outstanding Poster Award for NSF/PRC First Annual Review, 1995; Outstanding Poster Award for IAB Meeting at Georgia Tech, 1995.

Selected Publications:


Michael N. Kozicki
Office: ERC 107
E-mail: michael.kozicki@asu.edu
Phone: 480-965-2572
Ph.D.: University of Edinburgh, UK, 1985

Professor 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 key patents in the emerging field of integrated ions, in which solid-state ionic devices are used in conjunction with other integrated components to create systems for the storage and control of information in electronic and optical form and for the manipulation of mass on the nanoscale. He researches quantum and molecular devices as well as biomimetic materials in electronics. 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.

Research Interests: Silicon integrated-circuit processing, integrated-solid-state ionic, low-energy non-volatile memories, interconnect systems, optical switches, microfluidics, molecular and nano-electronic integrated systems.

Honors and Distinctions: Founder, Axon Technologies Corporation; Founding Member, Globalscot Network; Honorary Fellow, Faculty of Science and Engineering, University of Edinburgh. Entrepreneur-in-Residence, St. Margaret’s Academy, Livingston, Scotland; Member of the Governor’s Council on Innovation and Technology, Technology Development, and Transfer; Charter member of the ASU Academic Council; Chartered Engineer (UK/EC Professional Engineer); ASU Commission on the Status of Women Award; Last Lecture Series Nominee; IEEE Phoenix Section Outstanding Educator, Research Award, 2001; College of Extended Education Outstanding Faculty Award, 1995; Lemelson-MIT Prize for Invention and Innovation Nominee, 1994.

Selected Publications:


Ying-Cheng Lai
Office: GWC 668
E-mail: yclai@chaos1.la.asu.edu
Phone: 480-965-6668
Ph.D.: University of Maryland, College Park, 1992

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 approximately 185 papers, including over 150 published in refereed journals. In the past five years, he has given about 50 invited seminars and colloquia worldwide.

Research Interests: Applied chaotic dynamics, quantum chaos, nonlinear optics, 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:


Darryl Morrell joined the ASU faculty in 1988. His research centers on applications of stochastic decision and estimation theory to engineering problems. He is currently investigating target detection, localization, and identification using configurable sensors. Other areas of interest include information theory, communication system analysis and simulation, signal and data compression, and the epistemic foundations of decision theory. At a graduate level, he has taught courses in information theory, estimation and detection, stochastic filtering, probability and stochastic processes, and error correcting codes. At the undergraduate level, he has taught courses in circuit analysis, probability theory, communication systems, signals and systems, and technical design and communication. He has also been actively involved in the implementation of ABET's EC2000 at the college and department level.

Research Interests: Stochastic decision theory, sensor scheduling, particle filtering, target tracking.

Honors and Distinctions: Phi Kappa Phi, Tau Beta Pi, Sigma Xi.

Selected Publications:

Joseph Palais joined the faculty in 1964 and is now the Associate Chair for Graduate Studies. He has published a book on fiber optics, contributed chapters to numerous books, written over 40 research articles in refereed journals, and presented more than 35 papers at scientific meetings. He has presented over 150 short courses on fiber optics.

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

Honors and Distinctions: IEEE Life Fellow, IEEE EAB Achievement Award, IEEE Phoenix Achievement Award, University Continuing Education Association Conferences and Professional Programs Faculty Service Award.

Selected Publications:

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 over 36 research articles in refereed journals, and presented 62 papers at 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 '96, Beijing University, and the Chinese Aerospace Institute.

Research Interests: Computational electromagnetics, high-speed electronics packaging, cardiac output instrumentation, rough surface scattering.

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

Selected Publications:
Antonia Papandreou-Suppappola
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Phone: (480) 965-7881
Ph.D.: University of Rhode Island, 1995

Antonia Papandreou-Suppappola joined the ASU faculty as an assistant professor in August 1999. 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 has published over 55 refereed journal papers, book chapters, and conference papers.

Research Interests: Signal processing for wireless communications, integrated sensing and processing, time-frequency signal and system processing, and detection and estimation theory.

Honors and Distinctions: NSF CAREER Award, 2002; IEEE Phoenix Section Outstanding Faculty for Research award, 2003.

Selected Publications:


Stephen M. Phillips
Office: ERC 181
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Phone: (480) 965-6622
Ph.D.: Stanford University, 1988

Stephen M. Phillips received the B.S. degree in electrical engineering from Cornell University in 1984 and the M.S. and Ph.D. degrees in electrical engineering from Stanford University in 1985 and 1988, respectively. From 1988-2002 he served on the faculty of Case Western Reserve University where he held appointments in the Departments of Electrical Engineering and Applied Physics; Control and Industrial Engineering; and subsequently Electrical Engineering and Computer Science. From 1995-2002 he also served as director of the Center for Automation and Intelligent System Research. In 2002 he joined the faculty of Arizona State University as Professor of Electrical Engineering. He has held visiting positions at the NASA Lewis (now Glen) research center and at the University of Washington and is a Professional Engineer registered in Ohio.

Research Interests: Applications and integration of microsystems including microelectromechanical systems (MEMS), microfluidics, microactuators, biological microsystems; applications of systems and control including adaptive control, control of microsystems, feedback control over nondeterministic networks.


Selected Publications:


Martin Reisslein
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E-mail: reisslein@asu.edu
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Martin Reisslein joined the ASU faculty as an assistant professor in 2000. He received the Dipl.-Ing. in electrical engineering from FH Dieburg, Germany, in 1994; the M.S. in electrical engineering from the University of Pennsylvania in 1996; and the Ph.D. in systems engineering from the University of Pennsylvania in 1998. He has published 25 journal and conference papers.

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


Selected Publications:


Armando Antonio Rodriguez
Office: GWC 612
E-mail: aar@asu.edu
Phone: 480-965-3712
Ph.D.: Massachusetts Institute of Technology, 1990

Prior to joining the faculty in 1990, Armando Rodriguez worked at MIT, IBM, AT&T Bell Laboratories, and Raytheon Missile Systems. He has also worked at Elgin Air Force Base and Boeing Defense and Space Systems. He has published more than 100 technical papers in refereed journals and at conferences. Dr. Rodriguez has given over 35 invited presentations at international and national forums, conferences, and corporations. He currently serves as an associate editor on the IEEE Control Systems Society Conference Editorial Board.

Research Interests: Control of nonlinear distributed parameter systems; approximation theory; sampled data control; modeling, simulation, animation, and real-time control (MoSART); control of dynamical systems; control of flexible autonomous machines operating in an uncertain environment (FAME); and control of semiconductor, aerospace, and robotic systems.

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

Selected Publications:


Ronald J. Roedel
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Ph.D.: UCLA, 1976

Professor Roedel joined the faculty in 1981 and is now Associate Dean of the Ira A. Fulton School of Engineering. He has always striven for balance between research and teaching activities. Recently, he has become involved in curriculum reform issues, active-learning strategies, and technology-enhanced education. On the research side, he has been involved in semiconductor research for more than 25 years, first with silicon, then with compound semiconductor materials, and now with silicon again. He is the author or co-author of 35 publications and has roughly 50 presentations, two book chapters, and two patents in the fields of semiconductor characterization and engineering education. He is a member of ASEE, IEEE, and the Electrochemical Society.

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

Honors and Distinctions: ASU College of Engineering Teaching Excellence Award, 1989, 1998, 2001; National Technical University Outstanding Instructor, 1991-2000; University Continuing Education Association Faculty Service Award, 1997; ASU College of Extended Education Distance Learning Faculty Award, 1998; IEEE Meritorious Achievement Award in Continuing Education Activities, 1998; IEEE Phoenix Section: Outstanding Faculty Member, 2000.

Selected Publications:


Dieter K. Schroder
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Phone: 480-965-6621
Ph.D.: University of Illinois, 1968

Dieter Schroder joined the ASU faculty in 1981 after 13 years at the Westinghouse Research Labs. He has published two books, 143 journal articles, eight book chapters, 134 conference presentations, edited nine books, holds five patents, and has graduated 58 M.S. students and 26 Ph.D. 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:


Jun Shen joined the faculty in 1996 after six years of experience with Motorola’s Phoenix Corporate Research Labs. He is the author or co-author of over 50 refereed articles and many other conference publications. He is also the inventor or co-inventor of 28 issued U.S. patents.

Research Interests: MEMS, physics of organic LEDs, and novel logic and memory devices and circuits.

Honors and Distinctions: Motorola Distinguished Innovator Award, Motorola SPS Technical Achievement Award, IEEE Senior Member.

Selected Publications:

Jenni Si received her B.S. and M.S. degrees from Tsinghua University, Beijing, China, and her Ph.D. 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 algorithms and adaptive systems; management and optimization of semiconductor manufacturing processes; cortical information processing and modeling in animal brains, brain-machine interface.

Selected Publications:

Brian Skromme joined the ASU faculty in 1989, where he is presently an associate professor in solid-state electronics. From 1985 to 1989, he was a member of the technical staff at Bellcore. He has written over 98 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.

Selected Publications:
Andreas Spanias joined the ASU faculty in 1988. He has published 40 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 and as the general co-chair of the 1999 International Conference on Acoustics, Speech, and Signal Processing (ICASSP-99) and as vice-president for the IEEE Signal Processing Society. He and former Ph.D. 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 recently elected IEEE Fellow and appointed IEEE Distinguished Lecturer.

Research Interests: Digital signal processing, multimedia signal processing, speech and audio coding, adaptive filters, 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.

Selected Publications:

Nongjian Tao joined the ASU faculty as a professor of electrical engineering and an affiliated professor of chemistry and biochemistry in August 2001. Before that, he worked as an assistant and associate professor at Florida International University. He received the B.S. in physics from Anhui University in 1984 and the Ph.D. in condensed matter physics from Arizona State University in 1988. He holds two patents, has published over 90 refereed journal articles and book chapters, and given over 50 invited talks at international conferences and universities.

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

Honors and Distinctions: Member of the American Chemical Society, the American Physical Society, and the Electrochemical Society; Excellence in Research Award, Florida International University, 2000; Excellence in Research Award, Florida International University, 1996.

Selected Publications:

Cihan Tepedelenlioglu joined the ASU faculty as an assistant professor in July 2001. He received the B.S. from the Florida Institute of Technology in 1995, the M.S. from the University of Virginia in 1998, and the Ph.D. from the University of Minnesota in 2001, all in electrical engineering. He has published a number of journal and conference papers and works as a part of the Telecommunications Research Center to establish collaborative projects between the signal processing faculty and the communication faculty.

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

Honors and Distinctions: NSF CAREER Award, 2001.

Selected Publications:
Research Interests: Nanostructures, resistance. Demonstrates the quantization of the ballistic gate transistor, which was used to demonstrate the quantization of the ballistic resistance.

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

Selected Publications:
- Konstantinos Tsakalis joined the ASU faculty in 1988 and is now a professor. He received the M.S. in chemical engineering in 1984, the Ph.D. in electrical engineering in 1988, and holds several patents and has published over 80 journal and conference papers.

Selected Publications:

Konstantinos Tsakalis is internationally known for applying computation technology to the analysis and simulation of the large-scale power-system generation/transmission problems. He is also 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 dollars 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.

Selected Publications:
Dragica Vasileska
Office: ERC 565
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Phone: 480-965-6651
Ph.D.: Arizona State University, 1995

Junshan Zhang
Office: GWC 426
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Phone: 480-727-7389
Ph.D.: Purdue University, 2000

Yong-Hang Zhang
Office: ERC 161
E-mail: yhzhang@asu.edu
Phone: 480-965-2562
Ph.D.: Max-Planck Institute for Solid State and Stuttgart University, Germany 1991

Dragica Vasileska joined the ASU faculty in August 1997. She has published 56 articles in refereed journals (nine more in press), six book chapters, and 25 articles in conference proceedings in the areas of solid-state electronics, 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.

Honors and Distinctions: NSF CAREER Award, 1999; 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 in 1990.

Selected Publications:


Junshan Zhang joined the ASU faculty as an assistant professor in August 2000. He received the B.S. in electrical engineering from HUST, China, in July 1993; the M.S. in statistics from the University of Georgia in Dec. 1996; and the Ph.D. in electrical engineering from Purdue University in 2000. He is the receipt of a 2003 NSF CAREER Award. He has been chair of the IEEE Communications and Signal Processing Phoenix Chapter since January 2001.

Research Interests: Wireless communications and networking, including cross-layer design of wireless networks, CDMA, ad-hoc networking, wireless communication theory, radio resource allocation, and information theory.

Honors and Distinctions: Member of IEEE and ASEE.

Selected Publications:


Yong-Hang Zhang joined the faculty in 1996 from Hughes Research Laboratories. He has published over 70 research articles and a book chapter, secured two U.S. patents, and edited several conference proceedings. He has presented more than 70 invited papers at various international scientific conferences. The total research expenditure of his group is over $5 million in the past six years. Four Ph.D. and three M.S. students have graduated under his supervision between 1996 and 2001. He has also supervised more than 10 postdocs and faculty research associates.

Research Interests: Molecular beam epitaxy (MBE), optoelectronic devices and their applications.


Selected Publications:


S.R. Johnson, S. Chaparro, J. Wang, N.
Alumni News

Ram Designs IPOD Codec

Rangachar Ram recently designed the AAC codec for the new IPOD. Ram completed his master’s thesis “Analysis and Improvement of the MPEG-1 Audio Layer III Algorithm at Low Bit-Rates” under the guidance of ASU professor Andreas Spanias in December 2001.

India Honors Puthuff

Indian Deputy Prime Minister Shri L.K. Advani presented Steven Puthuff, chairman, president, and CEO of SyberSay Communications, with the Priyadarshni Global Award for developing an Information Kiosk to bring Internet educational content to villages. Puthuff graduated from the Department of Electrical Engineering in 1963.