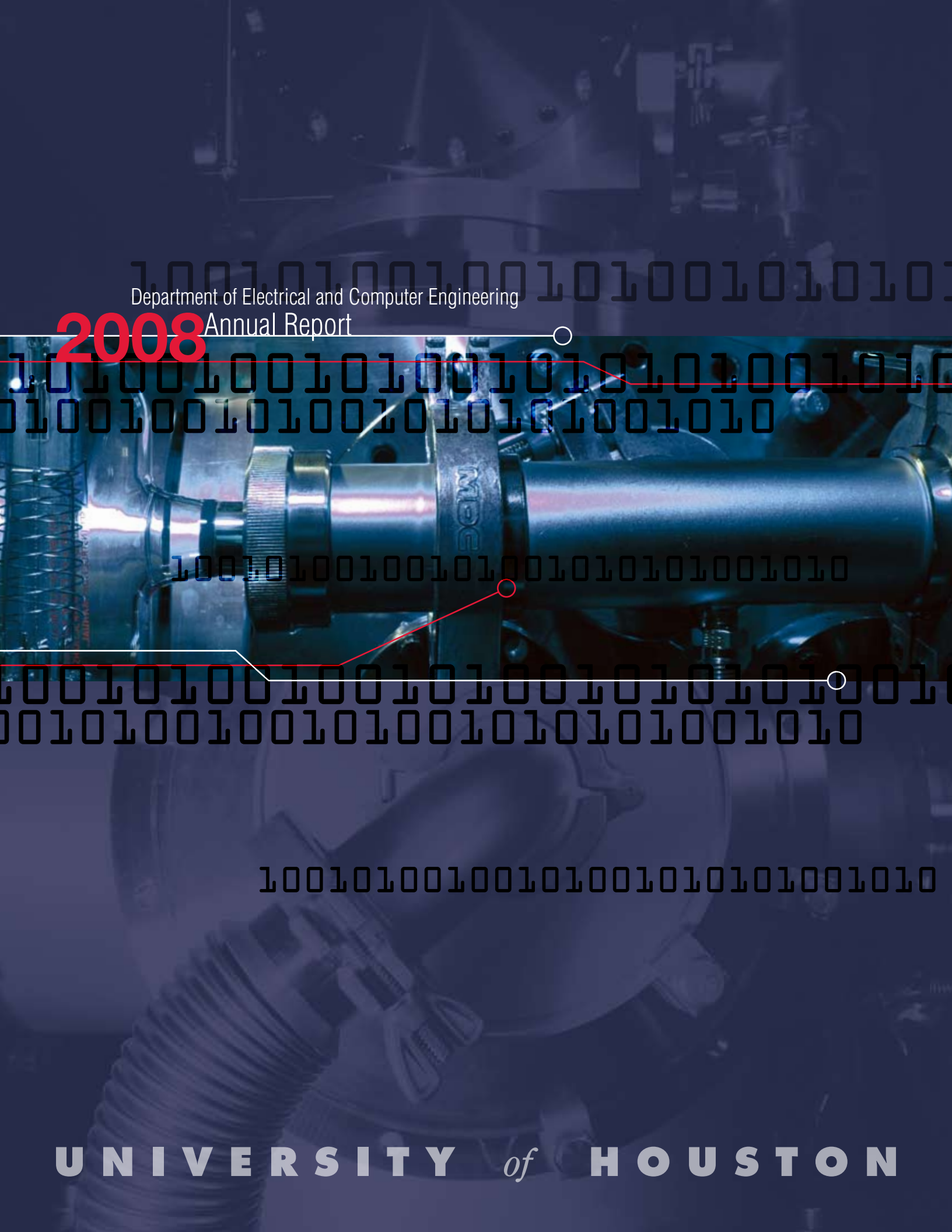

Department of Electrical and Computer Engineering

2008 Annual Report

UNIVERSITY of HOUSTON

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Lindsay Lewis *Publication Director*

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Department of Electrical & Computer Engineering
University of Houston Cullen College of Engineering
N308 Engineering Building 1, Houston, Texas 77204-4005
713-743-4400 | www.egr.uh.edu/ece | ece@egr.uh.edu

Chairman's Message

Haluk Ogmen, P.E., Ph.D.
Professor and Chair

On behalf of the UH Department of Electrical and Computer Engineering, I would like to present this annual report which provides an overview of our activities during the 2008 calendar year.

Our faculty roster continues to change due to retirements and new faculty recruitment. Professor Wally Anderson, who had a 39-year career with the department, retired. The feature on page 17 gives a glimpse of his scholarship and dedicated service to UH and the department.

This same year, we hired two outstanding junior faculty members, Jiming Bao and Zhu Han. Bao came to us from Harvard and has expertise in semiconductor nanowire optoelectronics, silicon photonics and metallic nanostructures for plasmonics. Han came from Boise State University and brings expertise in collaborative transmission networks, cognitive radios, compressed sensing, sensor network design, security, biosignal processing and MIMO wireless communications. These hires are part of continued efforts to implement a newly created strategic plan, which is designed to make the college a top 50 program.

This report also details progress made in our centers. In the coming years, we are planning to grow our well-logging and sensor technology focus into two larger core areas, namely energy and sensors. Following national and international trends, the University of Houston has selected two broad areas of emphasis: health care and energy.

Our department's core areas in neuro-engineering and energy fall under two of the university's strategic research clusters. Our focus areas in nanosystems and sensors provide the state-of-the-art support for these core areas creating multiple opportunities for collaborations; for example, nanosensors are designed to solve biomedical or energy challenges.

In addition, our department also houses the Southwest Public Safety and Technology Center, which was created to respond to national and regional needs in homeland security, public safety and emergency management.

Our faculty members continue to excel in their scholarly activities. The annual report provides a detailed list of the scholarship, educational and service activities of our faculty members. As summarized in the table to the right, the excellence of our faculty members has been recognized by several honors and awards during the year.

As a department, our vision is to contribute, through education and research, to technological changes that will shape society in the coming decades.

I thank you for your interest in our department and would like to encourage you to visit us in person or online at www.egr.uh.edu/ece/.

2008 Faculty Honors and Awards

Ji Chen
Asia-Pacific Microwave Conference (APMC) prize, Asia-Pacific Microwave Conference
Named, in Aug. 2008, as IEEE EMC society Distinguished Lecturer for 2009-2011
Ovidiu Crisan
Life Senior Member, IEEE
John R. Glover
Outstanding Teaching Award, UH Cullen College of Engineering
Ben H. Jansen
Member, Special Emphasis Panel ZAT1 PK 2, Basic Science, National Center for Complementary and Alternative Medicine (NCCAM), June 18-19, 2008, and Oct. 27-28, 2008
Stuart A. Long
Career Teaching Award, UH Cullen College of Engineering
Haluk Ogmen
American Library Association Choice 2008 Outstanding Academic Title award for the book: *Experimental Phenomena of Consciousness: A Brief Dictionary,* T. Bachmann, B. G. Breitmeyer, H. Ogmen, Oxford University Press: New York, N.Y. (2007)
Member, Central Visual Processing Study Section, Center for Scientific Review, National Institutes of Health, 2005–2009
Honorary Visiting Professor of Computational Neuroscience, University of Bradford, Bradford, U.K.
Paul Ruchhoeft
Distinguished Young Engineering Alumni Award, UH Cullen College of Engineering
Len Trombetta
Outstanding Teaching Award, UH Cullen College of Engineering

Mission Statement

At the undergraduate level, the mission of the department of electrical & computer engineering is to ensure our students acquire the necessary knowledge, skills, and abilities to perform successfully in today's world as engineers. This is in addition to instilling in them the ability for lifelong learning and a sense of professional responsibility that will enable them to continue their professional development throughout their careers.

At the graduate level, the mission of our program is to involve our students in advanced education and state-of-the-art research, in order to give them the technical expertise that will enable them to become advanced practicing engineers and productive researchers. To fulfill our mission, we have set the following specific goals for our programs:

Undergraduate Program

1. To ensure that each student acquires a solid knowledgebase in the fundamentals of mathematics and basic science, as well as the basic skills of critical thinking and problem solving.
2. (a) To develop within each student in the Bachelor of Science in electrical engineering program a thorough knowledge of the electrical engineering discipline, including a broad knowledge of the main fields, and an in-depth knowledge in one or more of these fields, chosen by the student.
   (b) To develop within each student in the Bachelor of Science in computer engineering program a thorough knowledge of the computer engineering discipline, including a broad knowledge of the electrical and computer engineering fields and an in-depth knowledge in the computer engineering field.
3. To maintain state-of-the-art laboratories and ensure that students receive a significant and positive laboratory experience as part of their curriculum.
4. To develop in each student the communication and teamwork skills necessary to perform effectively as an engineer and to impart to each student a sense of ethical and professional responsibility.
5. To have each student obtain the type of real-world design experience that is crucial to the education of an engineer, including an appreciation for technical, as well as economic and contemporary social issues.
6. To give each student the ability to achieve lifelong learning and a desire for professional development.
7. To improve retention rates, promote academic success and allow students to get the most from their educational experience by giving all students access to beneficial mentoring and advising.
8. To instill students with an enthusiasm for electrical and computer engineering by offering exciting and interesting freshman engineering courses.
9. To allow all students the opportunity to participate in a beneficial cooperative educational experience with industry during their program, if they choose to do so.
10. To keep a sufficient percentage of the required courses in the program scheduled during the early morning and evening, so part-time students can attend and complete the program.

Graduate Program

1. To offer advanced state-of-the-art courses on topics of modern interest and importance.
2. To provide students in the M.E.E. (non-thesis) programs the opportunity to participate in professional projects, including internships with industry, as preparation for professional careers in industry.
3. To direct students in the M.S. (thesis) programs in significant research, as preparation for continued graduate work or professional/research careers in industry.
4. To direct Ph.D. students in leading-edge research as preparation for academic careers or advanced research-oriented careers in industry.


Bao


Barr


Brankovic


Charlson


J. Chen


Y. Chen

Jiming Bao

Assistant Professor
Ph.D., University of Michigan

Research Interests

Silicon Photonics, Metallic Nanostructures for Plasmonics and Semiconductor Nanowire Optoelectronics

Betty J. Barr

Associate Professor & Director of Undergraduate Studies
Ph.D., University of Houston

Honors & Awards

- Provost Faculty Advising Award, 2007
- Abraham E. Dukler Distinguished Engineering Faculty Award, 2005
- Outstanding Engineering Educator Award, IEEE Region 5, 2005
- Career Teaching Award, UH Cullen College of Engineering, 2003
- Outstanding Teaching Award, UH Cullen College of Engineering, 2001
- George Magner Academic Advising Award, 1993
- Outstanding Faculty Advisor, UH Engineering Student Organizations, 1993
- Commendation, College Effective Instruction Committee, 1992, 1985, 1984, 1983
- W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 1990, 1982

Research Interests

Numerical Analysis

Stanko R. Brankovic

Assistant Professor
Ph.D., Arizona State University

Honors & Awards

- Graduate Academic Scholarship Award, Arizona State University, 1997–1998
- Annual Award "Fond Paja S. Tutundzic" for Outstanding Undergraduate Record, 1992–1993 and 1993–1994
- Annual Award for Outstanding Undergraduate Research, Serbian Academy of Sciences, 1994

Research Interests

Electrochemical Nanofabrication and Nanomaterials Synthesis, Electrocatalysis, Electrochemical Thin Film Growth, Magnetic Materials, Sensors, Corrosion, and Physics and Thermodynamics of Electrified Interfaces

Earl J. Charlson

Professor
Ph.D., Carnegie Mellon

Honors & Awards

- Chairman, Graduate and Professional Studies Council, University of Houston, 2004–2005
- Vice Chairman, Graduate and Professional Studies Council, University of Houston, 2003–2004
- Outstanding Electrical Engineering Professor by Graduating Classes of Dec. 1971, Dec. 1973, May 1975 (UMC)
- Most Admired Professor Award by Eta Kappa Nu (UMC)
- Two Curator Scholarships, Westinghouse Achievement Scholarship, Missouri Power Conference Award, Outstanding AIEE Junior Award, Outstanding AIEE Senior Award, Eta Kappa Nu, Sigma Xi, Tau Beta Pi, Phi Kappa Phi
- TMAC Champion Award (for service to Gulf Coast Texas Manufacturing Assistance Center)
- Lifetime Member, Institute of Electrical and Electronics Engineers

Research Interests

Integrated Circuit Layout Design and Fabrications, Solid State Devices

Ji Chen

Associate Professor
Ph.D., University of Illinois at Urbana-Champaign

Honors & Awards

- ORISE Fellowship, 2006–2007
- IEEE Electromagnetic Compatibility Symposium Best Student Paper Award, Advisor, 2005 (advisor)
- Junior Faculty Research Award, UH Cullen College of Engineering, 2004–2005
- Outstanding Teaching Award, 2003–2004

Research Interests

Computer Engineering, Computational Electromagnetics, Micro- and Nano-Electromagnetics, Biomedical Instruments

Yuhua Chen

Assistant Professor
D.Sc., Washington University in St. Louis

Research Interests

Optical Networks, FPGA-Based Reconfigurable Systems, Intelligent Sensor Networks, Reconfigurable System-on-Chip (SoC), Networks-on-Chip (NoC), Quality-of-Service (QoS), Heterogeneous Networks, High Performance Routers and System Prototyping


Claydon


Crisan


Glover


Han


Hebert


Jackson

Frank J. "Fritz" Claydon

Professor & Associate Dean for Administration and Research
Ph.D., Duke University

Honors & Awards

- EEE/HKN Outstanding Teacher, University of Houston, 2000
- Superior Performance in University Research, University of Memphis, 1991–1995
- Distinguished Research Award: Finalist, University of Memphis, 1994, 1993
- Distinguished Teaching Service Award: Finalist, University of Memphis, 1992
- Tau Beta Pi, Engineering Honor Society
- Eta Kappa Nu, Electrical Engineering Honor Society
- Beta Mu Beta, Biomedical Engineering Honor Society

Research Interests

Cardiac Mapping, Mechanisms of Defibrillation, Undergraduate Education

Ovidiu Crisan

Professor
Ph.D., Polytechnic Institute of Timisoara, Romania

Honors & Awards

- Outstanding Student Branch Counselor Award, IEEE Region 5, 2004, 2003, 1998
- Outstanding Teaching Award, UH Cullen College of Engineering, 2001–2002
- Member of the Editorial Board of *Electric Power Components and Systems,* Taylor & Francis Ltd. Publishing Corporation
- Senior Member of IEEE
- Member of CIGRE
- Life Senior Member of IEEE, 2008

Research Interests

Power Systems Operation Optimization and Control and Available Transfer Capability (ATC) within Deregulated Environment

John R. Glover

Professor
Ph.D., Stanford University

Honors & Awards

- Outstanding Teaching Award, UH Cullen College of Engineering, 2008, 1992
- Professor of the Year Award, IEEE Student Branch, 2003
- Elected to Phi Kappa Phi, March 2003
- Outstanding Engineering Educator Award, IEEE Region 5, 2000
- Outstanding Transactions Paper Award from the IEEE Trans. on Education, 1981

Research Interests

Adaptive Signal Processing, Biomedical Signal Analysis, Intelligent Systems

Zhu Han

Assistant Professor
Ph.D. University of Maryland at College Park

Research Interests

Collaborative Transmission Networks, Cognitive Radios, Compressed Sensing, Sensor Network Design, Security, Bio Signal Processing, MIMO Wireless Communications

Thomas J. Hebert

Associate Professor
Ph.D., University of Southern California

Honors & Awards

- Research Excellence Award, UH Cullen College of Engineering, 1996
- Fellow, American Electronic Association, 1984–1988

Research Interests

3-D Medical Imaging, Video/Image Processing, Bayesian Estimation, Adaptive Optics

David R. Jackson

Professor
Ph.D., UCLA

Honors & Awards

- IEEE Region V Conference Best Educator Award, 2005
- W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 2003–2004
- Best Presentation Award, ION GPS Conference, 2003, 2002
- Outstanding Teaching Award, UH Cullen College of Engineering, 2002–2003, 1999–2000
- Distinguished Lecturer, IEEE Antennas and Propagation Society, 2000–2002
- Fellow of the IEEE, 1999
- Excellence in Research and Scholarship Award at the Associate Professor level, University of Houston, 1997
- Faculty Recognition Award, city of Houston, 1993
- Young Faculty Research Award, UH Cullen College of Engineering, 1991

Research Interests

Microstrip Antennas, Leaky-Wave Antennas, Periodic Structures, High-Frequency Effects in Microwave Integrated Circuits, Electromagnetic Interference and Compatibility


Jansen


Kalatsky


Karayiannis


Kayali


Le


Litvinov

Ben H. Jansen

Professor
Ph.D., Free University, Amsterdam, The Netherlands

Honors & Awards

» Consulting Editor for *Clinical Neurophysiology* (formerly: *Electroencephalography and Clinical Neurophysiology,* published under the supervision of the Int. Fed. of Societies for Electroencephalography and Clinical Neurophysiology), 1989–2004
» Scientific Program Chair, 5th Annual Conference of the EEG and Clinical Neuroscience Society, Houston, 2003
» Member, Special Study Section-8, SBIR-program, NIH, 1993–2001
» Elected Senior Member of IEEE, 1990
» Faculty Development Leave Award, University of Houston, 1988–1989

Research Interests

(Biomedical) Signal Analysis and Intelligent Systems, Neural Engineering

Valery Kalatsky

Assistant Professor
Ph.D., Texas A&M University

Honors & Awards

» Alfred P. Sloan Research Fellow, Neuroscience, 2005
» Phi Kappa Phi, Texas A&M University Chapter, 1998

Research Interests

Neuro-Engineering, Optical Imaging of Intrinsic Signals, Neuro-Biology, Brain Mapping, Representation of Sensory Modalities in Mammalian Neocortex, Cortical Plasticity

Nicolaos B. Karayiannis

Professor
Ph.D., University of Toronto

Honors & Awards

» University of Houston El Paso Energy Foundation Faculty Achievement Award, 2000
» Young Faculty Research Excellence Award, UH Cullen College of Engineering, 1997
» Department of Electrical and Computer Engineering HKN and IEEE Student Chapters
» W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 1994
» Outstanding Teaching Award, UH Cullen College of Engineering, 1992-1997

Research Interests

Medical Imaging and Diagnostic Video, Computational Intelligence (Neural Networks and Neuro-Fuzzy Systems), Pattern Recognition, Wireless Communications, Image and Video Compression

M. Amin Kayali

Research Assistant Professor
Ph.D., Texas A&M University

Research Interests

Computational Neuroscience, Neuroimaging, Neural Engineering, Biomedical Signal Analysis

Han Le

Professor
Ph.D., Massachusetts Institute of Technology

Honors & Awards

» Technology Council of the Gerson-Lehrman Investment Group
» Member of Focus Study Group, U.S. Department of Homeland Security, 2004
» DARPA Outstanding Performer Award (Team), 2000
» Chief Technology Advisor of *Applied Optoelectronics,* 1999–2000
» IBM National Fellowship, National Magnet Laboratory, MIT, 1984–1985

Research Interests

Smart Sensing System, Optical Sensing and Imaging, Semiconductor Optoelectronics, Lasers, Photonics

Dmitri Litvinov

Professor
Ph.D., University of Michigan, Ann Arbor

Honors & Awards

» Senior Member, IEEE
» Associate Member, Information Storage Industry Consortium
» Key Employee Award, Seagate Technology
» 30 Technical Achievement Awards, Seagate Technology
» Junior Faculty Research Award, UH Cullen College of Engineering, 2007
» Executive Board Member of the Magnetic Recording Conference (TMRC), 2002
» Horace H. Rackham Fellowship, 1998–1999
» Applied Physics Fellowship 1998–1999
» University of Michigan, Physics Department Fellowship 1994–1995
» Moscow Institute of Physics and Technology, Outstanding Student Fellowship, 1991–1992

Research Interests

Nanomagnetics, Magnetic Sensor Arrays, Magnetic Data Storage, Biosensors, Cancer Diagnostics, High Throughput Drug Screening, Magnetic Computing


Liu


Long


Markenscoff


Ogmen


Pai


Pei

C. Richard Liu

Professor
Ph.D., Jiaotong University, China

Honors & Awards

» Most Innovative Research Project, Texas Department of Transportation, 2005

Research Interests

Sensor Technologies, Well Logging, Wireless Communications

Stuart A. Long

Professor & UH Associate Dean for Undergraduate Research and The Honors College
Ph.D., Harvard University

Honors & Awards

» Career Teaching Award, UH Cullen College of Engineering, 2008
» IEEE Antennas and Propagation Society Outstanding Service Award, 2007
» IEEE Board of Directors, 2005–2006
» Fluor Daniel Faculty Excellence Award, UH Cullen College of Engineering, 2006
» IEEE Region 5 Educator of the Year, 2003
» Outstanding Faculty Award, University of Houston Alumni Organization, 2002
» IEEE Millennium Medal, 2000
» President, IEEE Antennas and Propagation Society, 1996
» Senior Faculty Research Award, UH Cullen College of Engineering, 1995
» IEEE-HKN Outstanding Electrical Engineering Teacher, 1994
» IEEE Antennas and Propagation Society Distinguished Lecturer, 1992–1994
» Distinguished Engineering Faculty Award, Engineering Alumni Association, 1992
» University Teaching Excellence Award, 1991
» Fellow of the IEEE, 1991
» Editorial Board of the *Journal of Electromagnetic Waves and Application,* 1986–1990
» W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 1983
» Hamilton Award as Outstanding Engineering Graduate, 1968
» Member, Electromagnetics Academy
» Sigma Xi
» NSF Fellowship
» B.A. granted magna cum laude
» Phi Beta Kappa
» Tau Beta Pi

Research Interests

Dielectric Resonator and Microstrip Antennas, Wireless Communications Antennas, Electromagnetic Measurements, Engineering Education and Pedagogy

Pauline Markenscoff

Associate Professor
Ph.D., University of Minnesota

Research Interests

Cellular Automata, Parallel Processing

Haluk Ogmen

Department Chair & Professor
Ph.D., Université Laval, Québec, Canada

Honors & Awards

» American Library Association Choice 2008 Outstanding Academic Title Award for the book: *Experimental Phenomena of Consciousness: A Brief Dictionary,* T. Bachmann, B. G. Breitmeyer, H. Ogmen, Oxford University Press: New York, N.Y., 2007.
» Member, Central Visual Processing Study Section, Center for Scientific Review, National Institutes of Health, 2005–2009
» Invited Speaker, Distinguished Lecture Series, Schepens Eye Research Institute, Harvard Medical School, Boston, MA, 2007
» Honorary Visiting Professor of Computational Neuroscience, University of Bradford, Bradford, U.K.
» Fellow, Hanse Wissenschaftskolleg (Hanse Institute for Advanced Studies), 2004
» Senior Faculty Research Award, UH Cullen College of Engineering, 2003
» W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 1998
» Outstanding Teaching Award, UH Cullen College of Engineering, 1993-1995
» Young Faculty Research Award, UH Cullen College of Engineering, 1994

Research Interests

Visual Perception, Visual Psychophysics, Neural Modeling, Neuro-Engineering, Computational Neuroscience

David M. Pai

Associate Professor
Ph.D., University of British Columbia, Canada

Research Interests

CMOS Analog and Digital Electronics

Steven S. Pei

Professor
Ph.D., State University of New York at Stony Brook

Honors & Awards

» Honorary Visiting Professor, Hainan University, Hainan, China, 2007
» Senior Faculty Research Award, UH Cullen College of Engineering, 1999
» Outstanding Achievement Award, Association of American-Chinese Professionals, 1999
» Shell Interdisciplinary Scholar, 1995

Research Interests

Optoelectronic Materials and Devices, High Speed and High Band Width Electronic Materials and Devices, Sensors and Tracking Devices for Public Safety, Homeland Security and Healthcare Applications


Ruchhoeft


Shattuck


Sheth


Shieh


Trombetta

Paul Ruchhoeft

Associate Professor
Ph.D., University of Houston

Honors & Awards

» UH Cullen College of Engineering Distinguished Young Alumni Award, 2008
» Outstanding Teaching Award, UH Cullen College of Engineering, 2005
» Young Faculty Research Excellence Award, UH Cullen College of Engineering, 2004

Research Interests

Nanofabrication, Microfabrication, Lithography, Bio-Marker Fabrication, Thin-film Deposition, Reactive Ion Etching and Modeling of Resist Exposure and Development

David P. Shattuck

Associate Professor & Associate Dean for Undergraduate Programs
Ph.D., Duke University

Honors & Awards

» IEEE/HKN Outstanding Teacher Award, Department of Electrical and Computer Engineering, 2007, 2006, 2004, 2002, 1999, 1991
» W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 2006, 1991
» IEEE Region 5 Outstanding Engineering Educator Award, 2003
» El Paso Corporation Faculty Achievement Award, University of Houston, 2003
» Abraham E. Dukler Distinguished Engineering Faculty Award, 2001
» Outstanding Teaching Award, UH Cullen College of Engineering, 2001, 1999
» Outstanding Faculty Award, Houston Alumni Organization, 1999
» Enron Teaching Excellence Award, University of Houston System, 1999
» Runner-up, W.T. Kittinger Teaching Excellence Award, Cullen College of Engineering, University of Houston, 1996–1997
» Outstanding Educator, Mortar Board National Honor Society, 1989–1990

Research Interests

Development of Computer-Based Tools, Programs and Textbooks for Effective Instruction in Circuit Analysis and Electronics

Bhavin R. Sheth

Assistant Professor
Ph.D., Massachusetts Institute of Technology

Honors & Awards

» Caltech, Division of Biology Fellowship, 1998–2003
» The Sontheimer Award (MIT), 1996
» McDonnell-Pew Fellowship in Cognitive Neuroscience, 1991–1995

Research Interests

Visual Perception, Information Processing in Sleep, Functions of Sleep, Neuroimaging (MEG) of Autism and Related Developmental Disorders, Role of Emotion in Perception

Leang S. Shieh

Professor
Ph.D., University of Houston

Honors & Awards

» Senior Member, IEEE
» Senior Member, AIAA
» Registered Professional Engineer in the State of Texas
» Recipient of more than 10 Outstanding Teacher Awards, UH Cullen College of Engineering
» Fluor Daniel Faculty Excellence Award, UH Cullen College of Engineering, 2003–2004
» El Paso Faculty Achievement Award, University of Houston, 2001–2002
» W.T. Kittinger Teaching Excellence Award, Cullen College of Engineering, University of Houston, 1997, 1973
» Senior Faculty Research Excellence Award, Cullen College of Engineering, University of Houston, 1988
» Honor of Merit, Instituto Universitario Politecnico, Republic of Venezuela, 1978
» University Teaching Excellence Award, University of Houston, 1976
» Authored and co-authored more than 270 peer reviewed journal papers

Research Interests

Digital Control, Optimal Control, Self-tuning Control, Hybrid Control of Uncertain Systems, Soft Computing

Len P. Trombetta

Associate Professor
Ph.D., Lehigh University

Honors & Awards

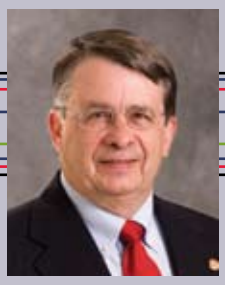
» Outstanding Teaching Award, UH Cullen College of Engineering, 2008, 2001, 1994, 1991
» W.T. Kittinger Teaching Excellence Award, UH Cullen College of Engineering, 1995
» Eta Kappa Nu Outstanding Teacher Award, 1992

Research Interests

Dielectric Materials for Advanced CMOS Devices, including High-k Materials; MOS Insulator Defect Studies, especially Hot Carrier Induced Defects, Si-SiO2 Interface Defect Generation and Radiation Damage; Electron Device Physics, particularly Ultra-Small MOSFETs; Wide Band Gap Semiconductor Materials, Quantum Transport Modeling in Nano-sized Electron Devices


Williams


Wilton


Wolfe


Wosik


Zagozdzon-Wosik


Yu

Jeffery T. Williams

Professor
Ph.D., University of Arizona

Honors & Awards

- IEEE/HKN Outstanding Electrical Engineering Instructor, Department of Electrical and Computer Engineering, University of Houston, 2003, 1993
- Best Presentation Award (group), ION GPS 2003 Conference, 2003
- Best Presentation Award (group), ION GPS 2002 Conference, 2002
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE), 1997
- Elected Full Member, International Union of Radio Scientists (USRI), 1996
- Outstanding Teaching Award, UH Cullen College of Engineering, 1995, 1994, 1991
- Finalist for the University Outstanding Teacher Award, University of Houston, 1994
- Greenwood Award (Faculty Achievement Award), city of Houston, 1993
- W.T. Kittinger Teaching Excellence Award, Cullen College of Engineering, University of Houston, 1993
- Young Faculty Research Award, UH Cullen College of Engineering, 1992
- Nominated for National Distinguished Young Electrical Engineering Teacher Award by local Eta Kappa Nu Chapter, 1991

Research Interests

Microstrip Antennas, Antenna Design, Electromagnetic Measurements, Leaky Wave Effects, RF and Microwave Circuits

Donald R. Wilton

Professor
Ph.D., University of Illinois at Urbana-Champaign

Honors & Awards

- Plenary Speaker, AMEREM Meeting, 2006
- Who's Who in America, 2003
- Highly Cited rating, ISIhighlycited.com, 2003
- Distinguished Alumni Award, UIUC Electrical and Computer Engineering Department, 2002
- IEEE Millennium Medal, 2000
- Guest Co-Editor, *IEEE Trans. Antennas and Propagat.,* Special Issue on Advanced Numerical Techniques in Electromagnetics, 1997
- Senior Faculty Research Award, UH Cullen College of Engineering, 1996
- IEEE Antennas and Propagation Society Distinguished Lecturer, 1984–1986
- Fellow of the IEEE, 1985
- Outstanding Faculty Member, College of Engineering, University of Mississippi, 1982–1983
- Best Basic EMP Non-Source Region Papers, Nuclear EMP Meetings, 1982, 1978

Research Interests

Electromagnetic Theory, Computational Electromagnetics, Periodic Structures, Electromagnetic Interference and Compatibility

John C. Wolfe

Professor
Ph.D., University of Rochester

Honors & Awards

- Fluor-Daniel Faculty Excellence Award, UH Cullen College of Engineering, 2002
- Halliburton Research Excellence Award, University of Houston, 1991
- Program Chair, Electron, Ion, and Photon Beam and Nanofabrication Conference, 1999
- Guest Editor, *Journal of Vacuum Science and Technology,* Nov.–Dec. 1999

Research Interests

Nanofabrication, Advanced Lithography, Charged Particle Optics, Thin Film Technology, Reactive Ion Etching

Jarek Wosik

Research Professor
Ph.D., Institute of Physics, Polish Academy of Science, Warsaw, Poland

Research Interests

Design and Fabrication of Magnetic Resonance Imaging Surface and Intravascular Single Probes and Arrays for Bio-Medical Research and Clinical Applications, High Frequency Bio-Sensors and Dielectric Spectroscopy, Bio-Sensors for Microwave and mm-wave Spectroscopy

Wanda Zagozdzon-Wosik

Associate Professor
Ph.D., Warsaw University of Technology, Warsaw, Poland

Research Interests

Novel Materials for Nano-Scale Integrated Circuits; Silicon Processing including VLSI Process Integration and Process/Device Simulation; Nano- and Micro-Electro-mechanical Systems (NEMS/MEMS) for Applications in Biomedical Sensors

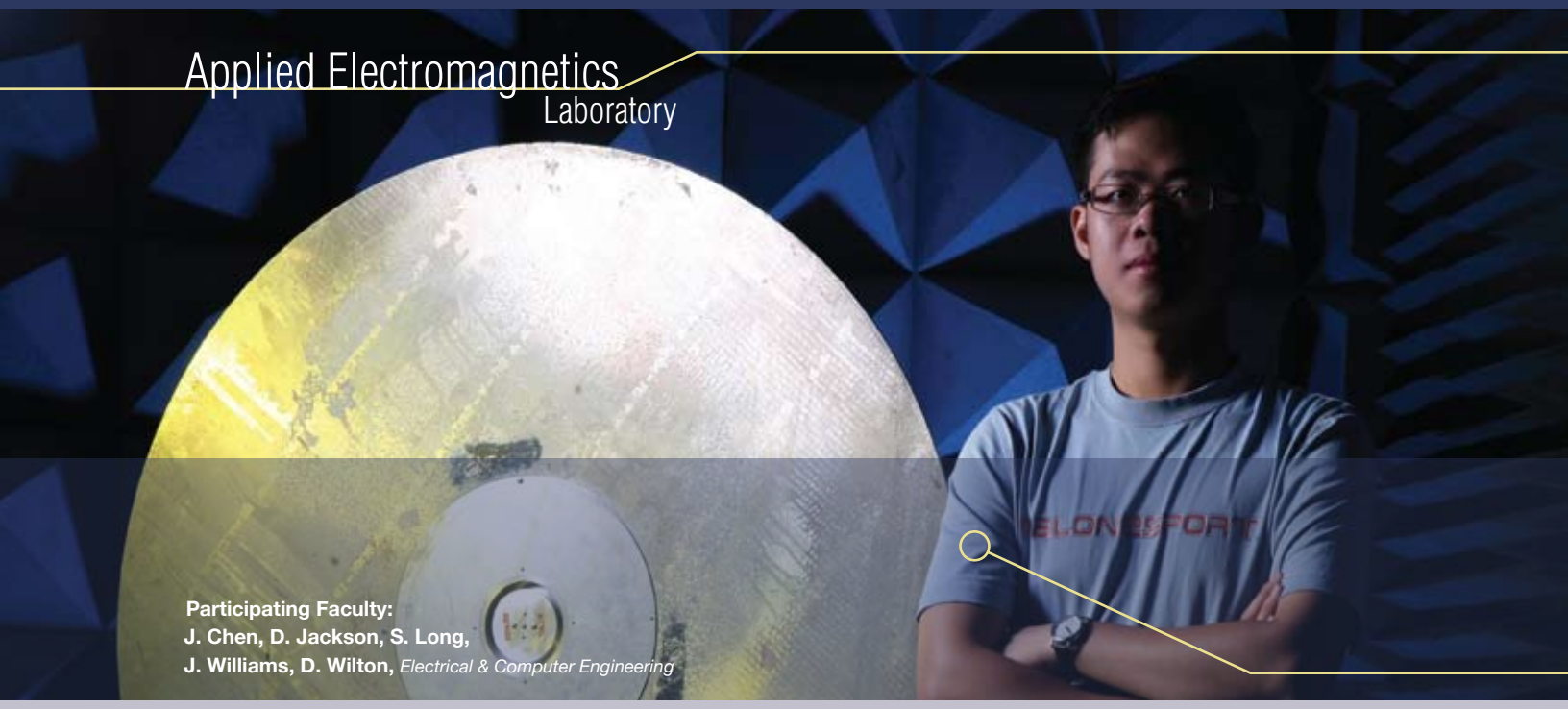
Qingkai Yu

Research Assistant Professor
Ph.D., University of Houston

Research Interests

Electronic Materials, Nanomaterials, Nanofabrication and Nanodevices

Applied Electromagnetics Laboratory



Participating Faculty:
J. Chen, D. Jackson, S. Long,
J. Williams, D. Wilton, *Electrical & Computer Engineering*

Electromagnetics deals with the study of electromagnetic fields and their engineering applications in antenna design, microwave circuits, and the scattering and interaction of electromagnetic waves with objects. At the University of Houston Cullen College of Engineering, the Applied Electromagnetics Laboratory (AEL) group is dedicated exclusively to this area.

Affiliated faculty members have established a collaborative environment within the group by jointly advising the lab's graduate students and collaborating on research projects, which include antenna design and development, numerical modeling of electromagnetic structures and radiation emissions.

The AEL group is working on several antenna design and development projects, including antennas that are specifically designed to eliminate or minimize surface and lateral wave radiation. Such structures can improve the efficiency of an antenna system and allow it to be used more easily as an element in an array. Previous work has been done to develop reduced surface wave microstrip antennas, and now similar techniques are being used to design a dielectric resonator antenna with similar reduced surface wave characteristics.

Other antenna work involves the use of metamaterials—materials not found in nature that, depending on their makeup, can have unusual electromagnetic properties. Such materials can be used for a variety of applications and to create antennas that have highly directional patterns, or that have properties that allow certain frequencies to radiate but not others. They could, possibly, be used to create arrays with fewer elements that are still very efficient.

The AEL is also working to make global positioning systems more accurate. GPS systems rely on the concept of an antenna phase center, which is the point where the radiation emitted by an antenna is assumed to originate, and is often not located on the antenna itself. Depending on the particular system, an antenna's phase center can be several meters away from the antenna itself. Although pinpointing a GPS unit's location within several meters is acceptable, some applications require far more accurate positioning. These include critical military systems and the docking of large cargo ships as well as docking maneuvers involving the space shuttles and the space station.

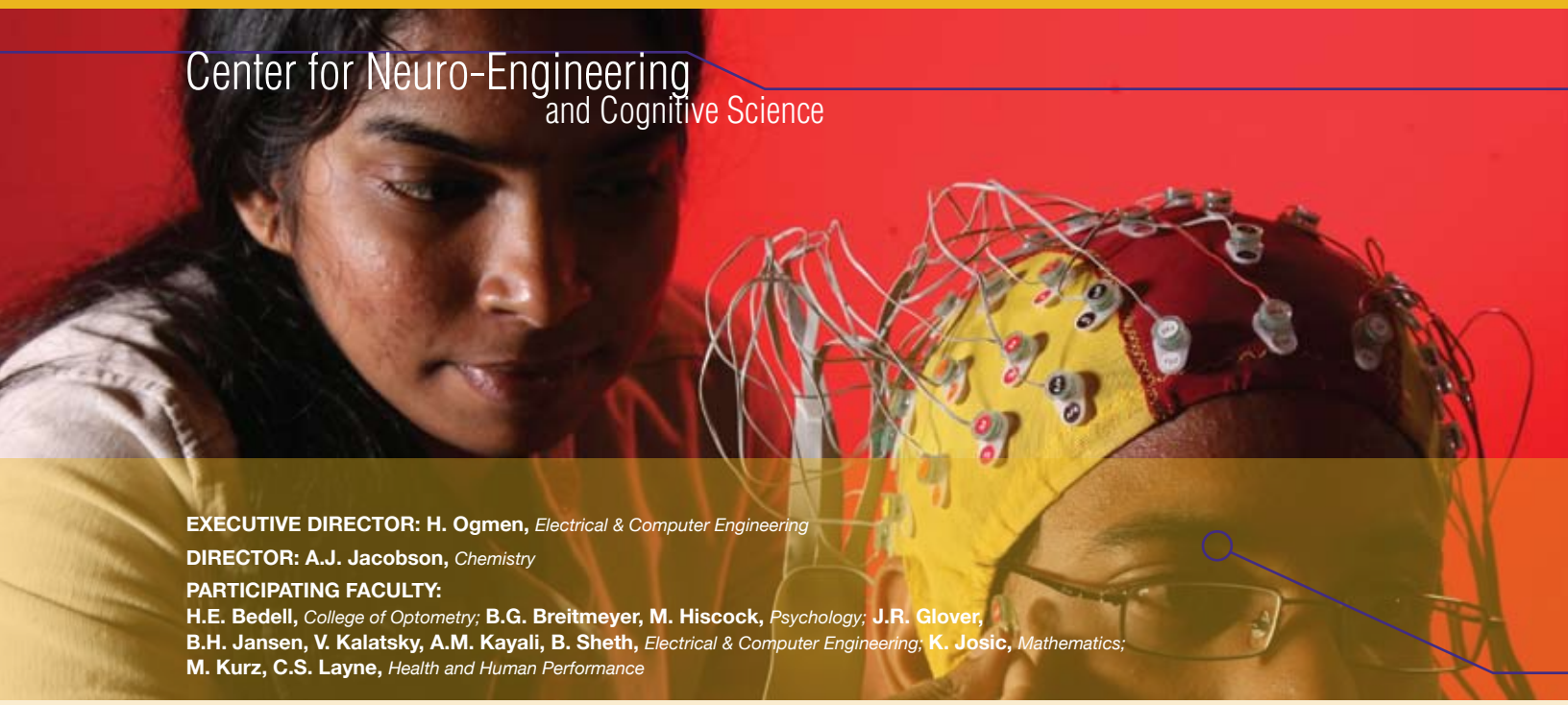
The second primary area of focus at the AEL is the numerical modeling of electromagnetically complex structures.

A powerful computational electromagnetics tool dubbed EIGER (Electromagnetic Interactions GEneRalized) has been developed in partnership with a variety of agencies, including the Lawrence Livermore National Laboratory, Sandia National Laboratories, NASA, the Navy's SPAWAR Lab and the consulting firm Advanced Numerical Tools and Services. EIGER can electromagnetically model large and complex structures, such as an entire Navy ship, and is constantly being updated to model even larger structures.

The AEL's third main research area involves electromagnetic emissions and their effects on human subjects and implantable medical devices. The group is conducting both experimental and numerical studies in this area. One specific topic is the design of an MRI machine compatible with implantable medical devices. More generally, the group is interested in how radiation encountered in everyday life, such as the radiation emitted by MRI machines and metal detectors at airports, affects people and those with implantable devices.

During the coming year AEL members will continue to investigate and develop technologies in the area of applied electromagnetics and pursue funding opportunities to continue and expand their research.

Center for Neuro-Engineering and Cognitive Science



EXECUTIVE DIRECTOR: H. Ogmen, *Electrical & Computer Engineering*

DIRECTOR: A.J. Jacobson, *Chemistry*

PARTICIPATING FACULTY:
H.E. Bedell, *College of Optometry;* **B.G. Breitmeyer, M. Hiscock,** *Psychology;* **J.R. Glover, B.H. Jansen, V. Kalatsky, A.M. Kayali, B. Sheth,** *Electrical & Computer Engineering;* **K. Josic,** *Mathematics;* **M. Kurz, C.S. Layne,** *Health and Human Performance*

The Center for Neuro-Engineering and Cognitive Science is dedicated to the study of the nervous system and the application of engineering principles, techniques and tools to neuroscience. These efforts focus on four major areas of research: brain wave analysis, visual perception, cognition and behavior as well as imaging and stimulating the brain.

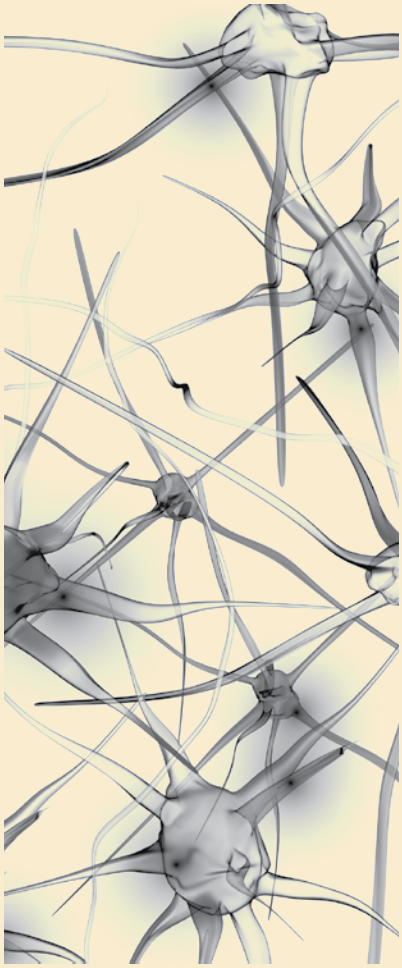
The history of CNECS dates back to 1996 with the founding of the UH Cognitive Science Initiative. The goal of the initiative was to encourage collaboration and interaction among the university's different colleges and departments.

That mission still holds true today. One of CNECS defining characteristics is its interdisciplinary nature, said Haluk Ogmen, executive director of the center and chair of the department of electrical and computer engineering. This approach, he said, reflects the reality of how many significant scientific advances are achieved today.

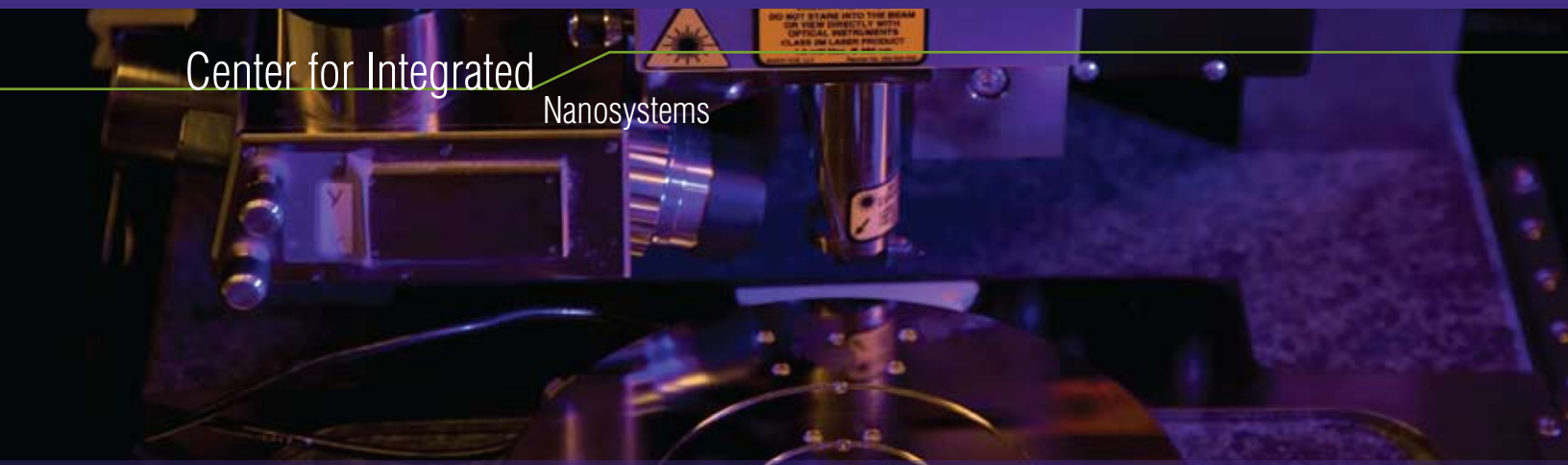
"The basic structure of academia, in terms of colleges and departments, is mainly designed for granting bachelor's degrees," said Ogmen. "But when you do research, this structure doesn't always work. It's very difficult to stay in a narrow field—things are much more interdisciplinary now than they were 20 years ago. The center provides a structure for people from different departments to work together."

Research at the center includes theoretical (mathematical modeling) as well as experimental approaches. Theoretical techniques include building sophisticated models of the brain and mind. Experimental techniques cover behavioral methods as well as various imaging modalities such as optical imaging, electroencephalography (EEG), magnetoencephalography (MEG) and functional magnetic resonance imaging (fMRI). CNECS researchers investigate brain function in both its normal and abnormal states.

In addition to providing this structure for interdisciplinary research, the center seeks to provide education of an interdisciplinary nature, offering courses and a certificate program in cognitive science.



Center for Integrated Nanosystems



DIRECTOR: D. Litvinov, *Electrical & Computer Engineering and Chemical & Biomolecular Engineering*

ASSOCIATE DIRECTOR: R. Willson, *Chemical & Biomolecular Engineering and Biochemical & Biophysical Sciences*

PARTICIPATING FACULTY:
A. Bensaoula, *Physics;* **J. Bao, S. Brankovic, F. Claydon, V. Kalatsky, P. Ruchhoeft, J. Wolfe,** *Electrical & Computer Engineering;* **A. Ignatiev,** *Physics, Chemistry, Electrical & Computer Engineering;* **T.R. Lee,** *Chemistry, Chemical & Biomolecular Engineering;* **D. Luss, K. Martirosyan,** *Chemical & Biomolecular Engineering;* **D. Stokes,** *Physics;* **L. Sun,** *Mechanical Engineering*

Beyond research, in 2008 the Center for Integrated Nanosystems had two significant developments. First, the center (formerly the Center for Nanomagnetic Systems) was renamed to reflect evolutionary developments in the center's research program that go beyond what is covered under the nanomagnetics umbrella. And second, the center welcomed Jiming Bao, an assistant professor of electrical and computer engineering, who specializes in nanophotonics and photonic crystals research.

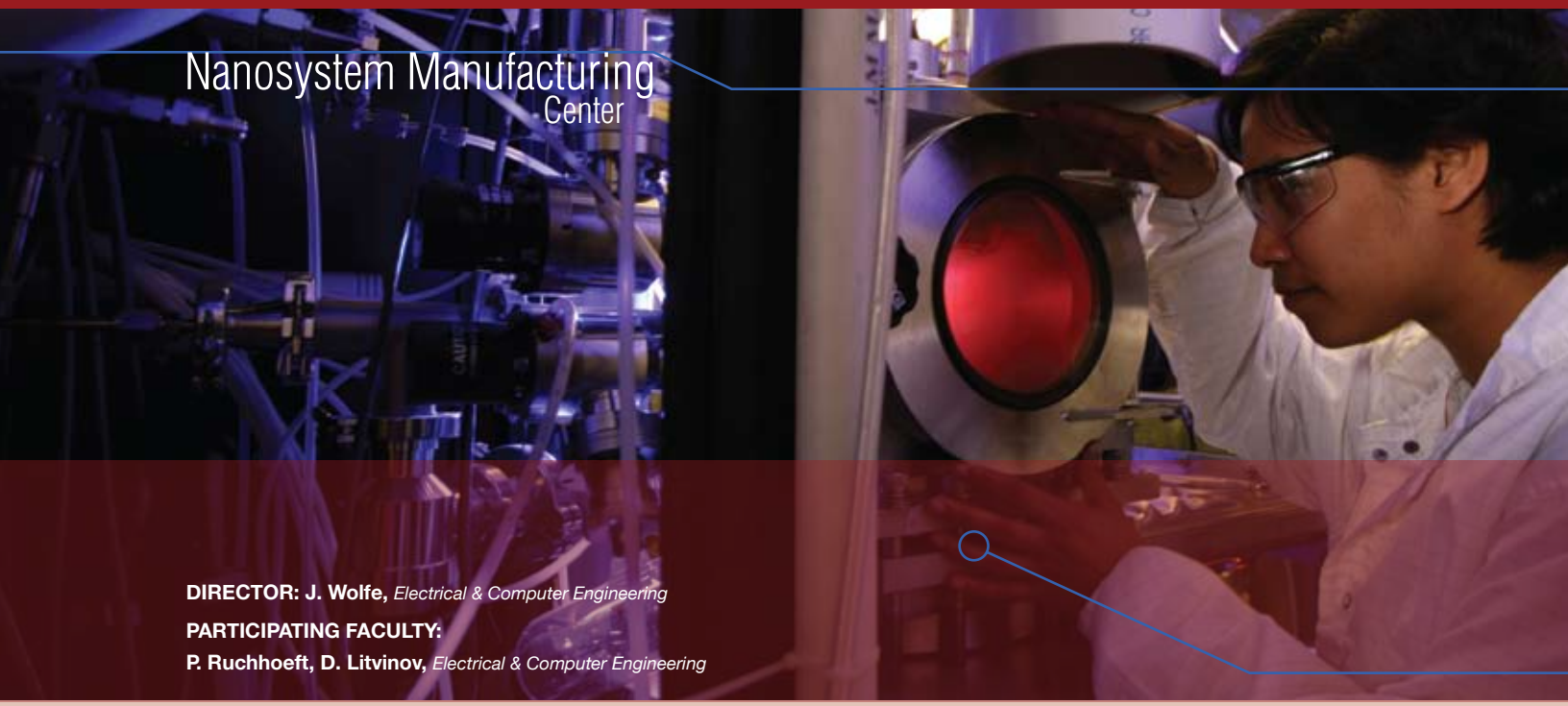
Among some of the projects taken on during the year included a collaboration by professors Richard Willson and Paul Ruchhoeft with researchers at both the Texas Medical Branch (UTMB) and the Baylor College of Medicine to develop ultra-sensitive, point-of-care diagnostic tools using micro-retroreflectors. What those researchers have discovered is the reflectivity of such reflectors, when fabricated at the micron scale, can drop significantly when small quantities of bacteria or virus particles link opaque nanoparticles to the reflector surface. These changes can be observed with low-cost optics and grants from the Western Regional Center of Excellence for Biodefense and Emerging Infectious Diseases. The NIH Center at UTMB has awarded more than $2.4 million to integrate this technology with modern microfluidics devices to create a low-cost sensor capable of using patient symptoms probe for a large variety of diseases.

In adition, professors Stanko Brankovic and Dmitri Litvinov collaborated with researchers from Seagate Technology and Arizona State University to study the magnetoresistance of the nanocontacts made of the novel phase-separated ferromagnetic metal-metal oxide/hydroxide nanomaterials. The approach is to build, test and study prototype nanocontact devices having different and well characterized material structures. These devices will be built using a bottom-up fabrication scheme while nanocontact structures vary from single crystal nickel or iron to the nanocontact with ferromagnetic matrix with a certain fraction of metal-oxide/hydroxide phase. This research addresses the feasibility of ferromagnetic metal-metal oxide/hydroxide nanomaterials synthesized in the nanoelectrode geometry configuration as a novel approach for fabrication of magnetic field sensors. This project will establish the fundamental relationship between the size and material structure of ferromagnetic nanocontacts and their magnetoresistance.

This research program represents a multidisciplinary effort which has a large transformative potential for development of future magnetic field sensors for magnetic recording, magnetic imaging, spintronics and magnetic biosensor technologies. The new knowledge created in this project will be incorporated into undergraduate and graduate nanotechnology and nanofabrication courses at the University of Houston, which will become a part of the broad educational outreach through the Electrochemical Society's short course.

This work will also provide the training for three doctoral students and for several high school teachers and undergraduate students involved in summer research programs sponsored by the National Science Foundation. Students involved in this project will have a chance to get training and to work in an industrial research environment through internships provided by Seagate Technology.

Nanosystem Manufacturing Center



DIRECTOR: J. Wolfe, *Electrical & Computer Engineering*

PARTICIPATING FACULTY:
P. Ruchhoeft, D. Litvinov, *Electrical & Computer Engineering*

The mission of the Nanosystem Manufacturing Center is to develop technology for manufacturing integrated nanosystems. Support from the National Science Foundation in 2008 continued the development of an advanced neutral beam printer and supporting mask-making hardware for a high throughput lithograph in the sub-100 nm regime. Other projects by these center researchers include a proof of concept tool for removing photoresist from 300 mm silicon wafers through a collaboration with Axcelis Technologies Inc., as well as the development of two new concepts for fabricating water filters that are currently being evaluated by potential investors. Researchers also demonstrated, for the first time, the ability to fabricate nanoscale structures in 3-D. Among the main accomplishments of the center:

Neutral beam lithography: This is a proximity printing technique where a stencil mask (a membrane with open transmission windows) is flooded by a broad beam of energetic (e.g. 30 keV) helium atoms and transmitted beamlets expose resist on a substrate. The major accomplishments last year included a careful study of the advantages of this technique vis-à-vis ion beam proximity lithography, the development of a mechanical nanostepping capability with sub-nanometer pattern placement accuracy, and the development of advanced source technology. Our work is summarized in an invited review article in *Journal of Physics* D (Jan.–Feb., 2008).

Photoresist ashing: Resist masks are used in every level of integrated circuit manufacturing. We solved the long standing residue problem in ashing high dose, ion implanted photoresist, thus eliminating several expensive cleaning cycles in integrated circuit manufacturing. Because of this advance, we were contracted by Axcelis Technologies Inc. to build a proof-of-concept tool for ashing 300 mm silicon wafers. The tool is now undergoing shake-down tests before starting an evaluation program with several major integrated circuit chip manufacturing companies. Through this project, we developed a new way to measure substrate loss during resist ashing in collaboration with Axcelis and Professor Wolfgang Donner in the department of physics. The approach has unprecedented accuracy—about 0.5 angstroms or just ¼ of an atomic layer.

3-D lithography: A novel plasma enhanced resist coating process was developed with NSF sponsorship that unlocks the potential of ion and neutral beam proximity lithography for patterning 3-D surfaces. The technique is expected to find wide application in microelectromechanical systems (MEMS). The technique enabled the fabrication of multichannel cuff electrodes about 10 times smaller than what exists today. We used the cuffs to monitor neuronal signals in a grasshopper. This research is part of a larger program with Professor Richard Liu the UH Department of Electrical and Computer Ennineering and Professor Fabrizio Gabianni in the Neuroscience Department at the Baylor College of Medicine.

Subsurfacing Sensing Technology & Well Logging Groups

DIRECTOR: C.R. Liu, *Electrical & Computer Engineering*

PARTICIPATING FACULTY:
D. Wilton, L. Shieh, J. Chen, *Electrical & Computer Engineering*

Though two different bodies within the Cullen College of Engineering, the Well Logging Group and Subsurface Sensing Technology Group share the same director and similar goals—to detect and analyze material underground.

The Well Logging Group is dedicated to the science of recording the attributes of oil wells, often as they are being drilled. Understanding the characteristics of earth formations around the wells, which run thousands of feet deep, allows companies to extract oil and gas from the earth as efficiently as possible. Given the high cost of oil exploration, efficient exploration and drilling helps keep the price of gasoline, heating oil and numerous other petroleum-based products in down.

The lab and its associated consortium are funded largely by companies in the petroleum industry, which benefit from advances made by the lab's researchers. The lab's current membership roster includes ExxonMobil Corporation, Shell, Chevron Corporation, Saudi Aramco Oil Company, ConocoPhillips Corporation, BP America, Statoil, BakerHughes, Weatherford Energy Services, Path Finder Energy Services, China National Logging Corporation, Schlumberger and Halliburton.

The Well Logging Lab, which gets much of its funding from these companies, manages the world's only Standard-API nuclear logging calibration facility.

In the Subsurface Sensing Technology Group researchers are dedicated to developing sensors for various applications including sensors that evaluate surfaces. Often, technologies developed by the group are used to look beneath road surfaces for defects or to check for proper construction. In recent years, the lab has focused on subsurface imaging using electromagnetic methods, such as ground-penetrating radar and laser sensors.

When viewed in terms of grants received, 2008 was a highly successful year for both the Well Logging Group and the Subsurface Sensing Technology Group. The lab received grants from industry, the National Science Foundation and the Texas Department of Transportation totaling approximately $650,000.

The lab also published several journal and conference papers in 2008 and Professor Richard Liu served as a member of the Committee on Radiation Source Use and Replacement for the National Academy of Science.

Southwest Public Safety Technology Center

EXECUTIVE DIRECTOR: S. Pei, *Electrical & Computer Engineering*

DIVISION DIRECTORS AND OFFICERS: P. Bellamy, G. Dilmore, H. Le, J. Ma, J. Peters

PARTICIPATING FACULTY:
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The Southwest Public Safety Technology Center (SWTC) is a one-of-a-kind multi-disciplinary center designed to serve the work force of first responders and public safety officials. This includes everyone from law enforcement and fire services to emergency medical and emergency management personnel.

SWTC was created in 2005 with a grant from the National Institute of Justice. SWTC Director Pat Bellamy was appointed by the Harris County in 2006 to chair the Houston Ship Channel Security Council, which oversees the $34 million port security grant to Harris County. In 2007, SWTC became a member of the Department of Homeland Security (DHS); the Center for Maritime, Island and Port Security, which is led by the University of Hawaii in Honolulu, the DHS Center for Natural Disasters, Coastal Infrastructure, and Emergency Management, led by the University of North Carolina at Chapel Hill and Jackson State University.

Projects continued in 2008 included the "Characterization and Evaluation of Taser Safety," which works to develop accurate electromagnetic modeling of the effects on human subject models and develop a figure of merit for taser safety evaluation. The study of "Situational Awareness Effectiveness in Command and Control Operations" lays a foundation of knowledge in the area of situation awareness using observational, interview and survey data collected from a multi-jurisdiction law enforcement and transportation management command and control center.

While all researchers aspire for their work to have real-world applications, the pressing safety and security issues require technological advances ready for use in a matter of months, not years.

"If what we develop is a technology that can not be commercialized and purchased off the shelf, our task is not completed," said Professor Steven Pei. "Our task is really RD&D—research, development and deployment."

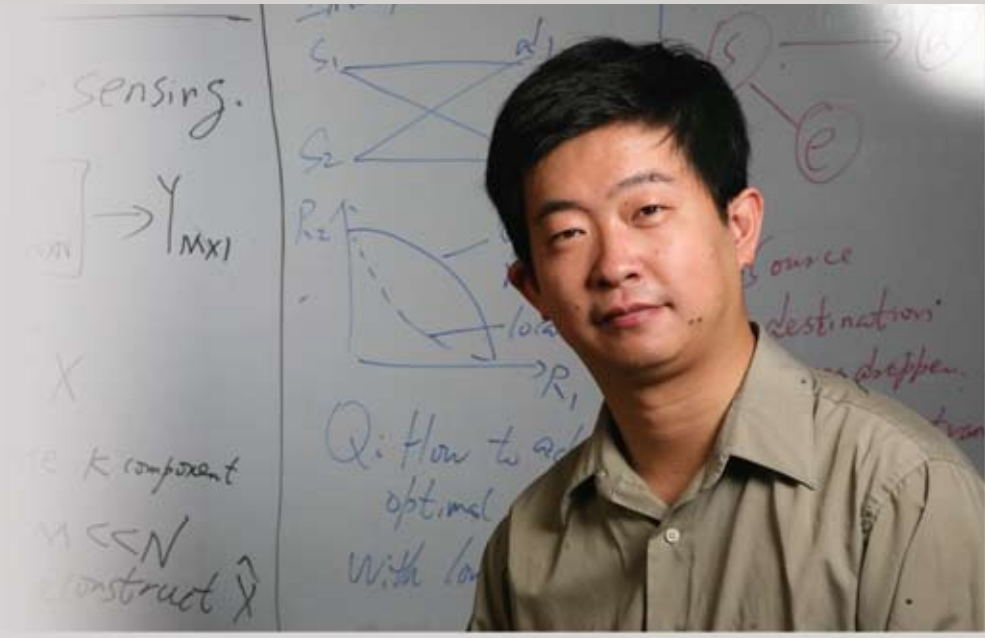
RD&D is only part of SWTC's mission. Integrating state-of-the-art technology with education is key for this center said Gordon Dilmore 2008 director of SWTC.

"Educating the technology users and decision-makers in the public safety arena is also a primary objective of SWTC," said Dilmore. "Police chiefs and law enforcement executives may have a degree in criminal justice or related area in social sciences; however, very few have an advanced degree in natural sciences or engineering."

SWTC also offers basic technology skills trainings for the law enforcement workforce. Much of this training is offered in cooperation with the Sheriffs' Association of Texas (SAT) in Austin.

"The partnering between UH and SAT makes SWTC uniquely positioned to serve the training and other technology needs of the public safety community in Texas," said Joe Peters of the Sheriffs' Association of Texas and director of the SWTC Technology Assistance Division in Austin.

Because of its mission to train and assist the public safety workforce, the SWTC is geographically dispersed to effectively address rural and urban issues. The center, for instance, has established branch offices and testbeds in Houston, Austin, the Middle Rio Grande border region and in Del Rio. This arrangement allows the center to develop strategies and use its resources in a manner that will ensure the greatest impact.



New ECE Faculty Hires

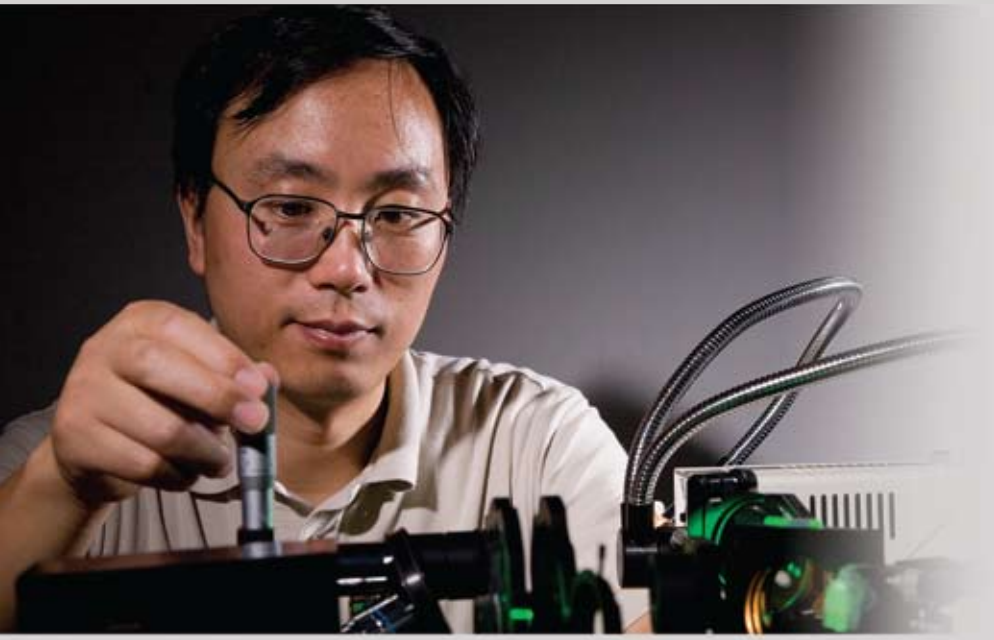
The University of Houston Cullen College of Engineering Department of Electrical Engineering hired two new faculty members in 2008, adding depth and expertise in the areas of wireless communications and nanomaterials.

Zhu Han came to UH in September from Boise State University where he spent two years as an assistant professor in the department of electrical and computer engineering.

Prior to teaching, Han was an electrical engineer for JDS Uniphase Corporation in Maryland where he worked in research and development, testing wireless and telecommunication equipment. At UH, Han's research is focused on wireless communications, specifically wireless networking, signal processing and security.

Since he has been with the university, Han has taught both introductory and advanced courses in telecommunications.

A native of Beijing, China, Han earned his bachelor's in electronic engineering from Tsinghua University in 1997 and his master's and Ph.D. from the University of Maryland in 1999 and 2003, respectively.



Jiming Bao joined the university in September after five years as a post-doctoral fellow and later a research associate at Harvard University.

At UH, Bao is an assistant professor and teaches a course in digital electronics. He plans to introduce a new, graduate-level course on solar cells this fall. The course is closely related to his research, which works to identify the optical properties of nanowires, metallic nanostructures and nanoparticles. Through the research, he hopes to identify new materials, which could be used to create novel devices such as a high-efficiency infrared light detector.

A native of Cixi, China, Bao earned both his bachelor's and master's degrees in physics from Zhejiang University in 1992 and 1995, respectively. He spent three years as a physics graduate student at Wayne State University in Detroit before entering the applied physics program at the University of Michigan where he obtained his Ph.D. in 2003.

Professor Retires

Throughout his 39 years with the University of Houston, Wallace "Wally" Anderson was instrumental in growing the Cullen College of Engineering's Department of Electrical and Computer Engineering.

As the former chair, he not only helped increase the number of faculty, but also the amount of research being conducted within the department.

"At that time (Charles) Kirkpatrick was dean and there were only 19 people in the department," said Anderson, of his start as department chair in 1972. "When I left we had 33 faculty; it kind of changed the face of the department. We started to become more competitive."

He remained on as chair through 1977. He would serve again as interim chair from 1996 to 1998 as the college searched for a new dean. In these administrative roles, he recruited and hired many of the department's senior faculty.

Anderson, who joined UH in 1969 as a full professor, balanced these administrative duties with teaching. Up until his 2008 retirement, he taught classes on solid-state physics, electromagnetics, statistical estimation theory, communication theory, applied mathematics, quantum mechanics and stochastic processes, a course he developed that is still being taught today.

In the lab, he had a wide-range of research interests. These included coherent optics, signal processing, pattern recognition, acoustic wave propagation, X-ray backscattering and estimation theory. He explored these areas with funding from organizations that included the National Science Foundation and National Institutes of Health. He has published more than 90 papers on his findings in several well-known scholarly journals.

He received his bachelor's degree in electrical engineering from the University of North Dakota, his master's in physics from Rice University and his Doctor of Science degree in electrical engineering from the University of New Mexico in 1948, 1957 and 1961, respectively.

Prior to his time at UH, he taught at both Trinity and New York universities and spent time as a researcher at Southwest Research Institute in San Antonio as well as McCollum Exploration Company.

High-Tech Equipment to Aid Launch of Nanofabrication Facility

Grant funding secured by a professor in the department of electrical and computer engineering has allowed for the purchase of the University of Houston's first true nanofabrication tool.

The new scientific machine, dubbed a dual beam focused ion beam system, will be housed in the recently built Science and Engineering Research Center at UH's main campus.

"The university will have its first true nanofabrication tool of production quality, the same kind people use in industry," said Professor Dmitri Litvinov. "It will enable, for the first time, device nanofabrication capability to the Greater Houston area."

The machine will be the first addition to a nearly 6,000 square foot clean room within the center slated for development into a new nanofabrication facility that will be openly accessible to individuals in the Greater Houston area. A $380,000 grant from the National Science Foundation, along with $225,000 in additional support from the UH Division of Research and the college, allowed for its purchase.

The state-of-the art system is capable of both nanoscale prototyping and metrology. However, its uses are extensive, and include abilities such as direct milling of device patterns, reactive etching with precursor gas, electron and ion beam lithography, precision sectioning, high-resolution microscopy and site-specific microbiopsy.

Grant to Fund Work on Novel Magnetic Sensor Technology

Stanko Brankovic, assistant professor of electrical engineering, is attempting to develop a novel magnetic field sensor technology that will be key in the creation of a low-cost system to map magnetic objects quickly and accurately. The development of these cost-efficient, highly sensitive magnetic nanodevices could have wide ranging impact on everything from medical diagnostics to national defense.

Brankovic received the $500,000 grant from the National Science Foundation. The funding is supported by NSF's GOALI program, which provides grant opportunities for academic and industry partnerships.

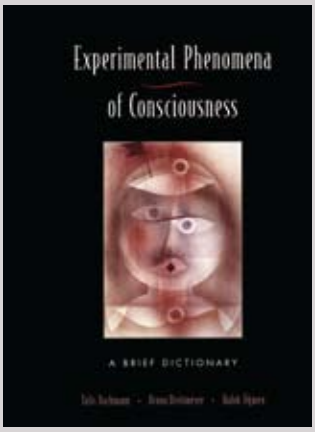
Brankovic, along with co-investigators Professor Dmitri Litvinov, UH professor of electrical and computer engineering, Arizona State University Professor Ray Carpenter and Nils Gokemeijer at Seagate Technology, are using the funding to support an electrochemical nanofabrication method allowing the development of devices smaller than 10 nanometers. The result would be a magnetic field sensor at least a hundred times more sensitive than anything currently available.

Associate Professor Named to Distinguished Lecturer Post

Ji Chen, associate professor of electrical and computer engineering has been named a distinguished lecturer by the Electromagnetic Compatibility Society, a division of the Institute of Electrical and Electronics Engineers.

Notified in August 2008, Chen is among two nationwide chosen. His term, which began Jan. 1, 2009, will run through Dec. 31, 2010.

Throughout the two years, Chen will present—at the request of interested EMC Society chapters across the United States and abroad—one of three lectures relating to electromagnetic compatibility. His topics include biomedical electromagnetic compatibility, wireless electromagnetic compatibility and electromagnetic computation.



Technology Created by UH Professors Could Help Better Understand the Brain

Two professors in the Cullen College of Engineering Department of Electrical and Computer Engineering have created an implantable electrode cuff and wireless telemetry system to better understand how certain neurons in locusts' brains process sensory information.

The technologies, created by professors Jack Wolfe and Richard Liu, are assisting Baylor College of Medicine researchers in analyzing signals given off by tiny nerves within the locust. Their collaboration could provide the information essential to understanding how the neuron activity correlates to the insect's actual behavior, and ultimately dispel controversy over how motor actions are generated.

Department Chair Publishes Third Book

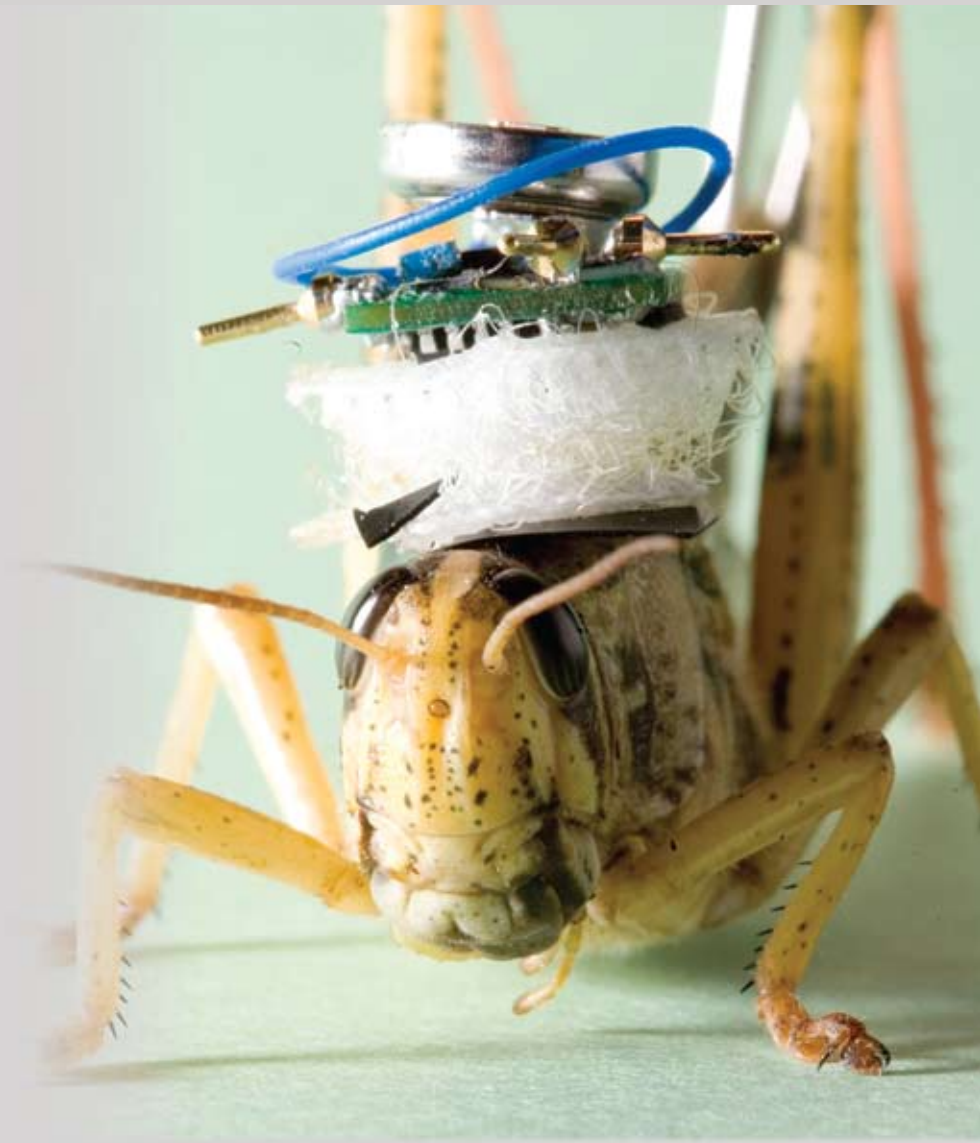
Haluk Ogmen, chair and professor of electrical and computer engineering, and Bruno Breitmeyer, UH professor of psychology, have published their third book in two years on visual perception and consciousness.

The book is co-authored by Talis Bachmann from University of Tartu, Estonia and specifically focuses on how the brain processes various visual stimuli at the conscious and unconscious levels. Titled *Experimental Phenomena of Consciousness: A Brief Dictionary,* the book is a collection of consciousness phenomena in which awareness emerges as an experimental variable.

Nanoengineering Minor Proposed

To help facilitate a transition into the era of nanoscale-integrated systems, professors at the UH Cullen College of Engineering are developing a nanoengineering (NEMO) minor that could be an option as early as fall 2009.

A $200,000 National Science Foundation grant is expected to fund the cost associated with the start of the program. The minor will integrate the three courses on nanoengineering already taught at the college with new courses in a structured nanoengineering curriculum. Three professors in the department of electrical and computer engineering are among the faculty coordinating its launch.



Student Nabs Research Poster Award

Minh Tran, an electrical engineering major, was presented with a poster award for his research related to low-profile vehicle mounted antennas at the Cullen College of Engineering's Fourth Annual Undergraduate Research Day in October. He was among 10 students to share research projects at the event.

Alongside David Jackson, electrical and computer engineering professor, Tran looked at using a leaky-wave antenna as a means of providing less bulkier antennas for high-frequency communications. In the future, these could be used on commercial and military vehicles.

Undergraduate Wins SHPE Competition

Rehan Momin, an electrical engineering major, was among a group of students to win an intense 24-hour competition in December centered on designing a water supply system for use in an impoverished Latin American country.

Held at the Society of Hispanic Professional Engineers national conference for the last three years, the competition is dubbed the "Extreme Engineering Challenge."

In the round-the-clock exercise testing patience and problem solving, Momin and his team were tasked with creating an imaginary company, physically designing a water supply system meeting specifications set by a made-up client and presenting their final design to buyers.

Momin shared the first place title and a $4,000 prize with nine other students from universities across the United States.

Electrical Engineering Major Named Outstanding Junior

The Cullen College of Engineering named electrical engineering major Joshua Kovitz their Outstanding Junior for the 2008-2009 academic year.

He is one of two recognized for the award, given annually to a stand out junior and senior. Projected to graduate in spring 2010, Kovitz was excited about the college-wide honor.

"I really put a lot of effort into school," said Kovitz. "I just kept on pushing, pushing, pushing and now it's kind of like I get the award I feel I worked really hard for."

The 21-year-old has made the dean's list every semester he's attended UH and in 2007 and 2008, the Honor's College dean's list. He's a member of Tau Beta Pi, the national engineering honor society; The Honor Society of Phi Kappa Phi, the nation's oldest, largest and most selective all-discipline honor society and the Institute for Electrical and Electronics Engineers (IEEE). In 2008, he won first place in the regional IEEE Student Branch Web site Contest after redesigning the chapter's site.

Faculty and Staff List

Professors

Charlson, E.J.
Claydon, F.J. *Associate Dean for Undergraduate Programs & Computer Facilities*
Crisan, O.
Glover, J.R.
Jackson, D.R.
Jansen, B.H.
Karayiannis, N.B.
Le, H.Q.
Liu, C.R.
Long, S.A. *Associate Dean of Undergraduate Research and The Honors College*
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Wolfe, J.C.

Associate Professors

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Chen, J.
Hebert, T.J.
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Pai, D.M.
Ruchhoeft, P.
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Zagozdzon-Wosik, W.

Assistant Professors

Bao, J.
Brankovic, S.R.
Chen, Y.
Han, Z.
Kalatsky, V.A.
Sheth, B.R.

Research Professors

Wosik, J.

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Kayali, M.
Yu, Q.

Joint and Adjunct Appointments; Lecturers

Anderson, W.L. *Professor (part-time)*
Bering, E. *Professor (joint appointment, Physics)*
Bilgen, M. *Adjunct Assistant Professor*
Baskin, D. *Professor (joint appt., Neurosurgery, The Methodist Hospital)*
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Brandt, M. *Adjunct Professor*
Capolino, F. *Adjunct Associate Professor*
De la Rosa-Pohl, D. *Lecturer*
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Ortiz, J. *Adjunct Assistant Professor*
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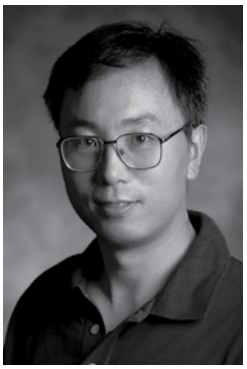
James N. Ortiz (Chair), *NASA/JSC*
Paul Rocha, *Centerpoint Energy*
Tammy Savoie, *Siemens PT & D*
Tom Sofka, *Macro Enterprises Ltd.*
Jeff Whitney, *Berkana Resources Corp.*
Bill Wormington, *KBR*



Jiming Bao

Assistant Professor

Ph.D., University of Michigan

Research Interests (2008)
Semiconductor nanowire optoelectronics, silion photonics and metallic nanostructures for plasmonics

Professional Service (2008)
» Reviewer, *Optics Express, Journal of the Optical Society of America B*

Refereed Journal Publications (2008)
» Zimmler, M., J. Bao, F. Capasso, S. Müller and C. Ronning, "Laser Action in Nanowires: Observation of the Transition from Amplified Spontaneous Emission to Laser Oscillation," *Applied Physics Letters,* Vol. 93, 51101–51103, 2008.

» Wiley, B., D. Lipomi, J. Bao, F. Capasso and G. Whitesides, "Fabrication of Surface Plasmon Resonators by Nanoskiving Single-Crystalline Gold Microplates," *Nano Letters*, Vol. 8, 3023–3028, 2008.

» Bao, Jiming, D. Bell, F. Capasso, T. Mårtensson, J. B. Wagner, J. Trägårdh and L. Samuelson, "Optical Properties of Rotationally Twinned InP Nanowire Heterostructures," *Nano Letters,* Vol. 8, 836–841, 2008.

Conference Proceedings & Presentations (2008)
» Zimmler, M.A., J.M. Bao, S. Mueller, K.A. Sunter, C. Ronning and F. Capasso, "Laser Scillation Thresholds for ZnO Nanowires," MRS Fall Meeting, Boston, MA, Dec. 1–5, 2008.

Betty J. Bar

Associate Professor and Director of Undergraduate Studies

Ph.D., University of Houston

Research Interests (2008)
Numerical Analysis

Professional Service (2008)
» Faculty advisor, Texas Epsilon Chapter Tau Beta Pi

» College representative to Undergraduate Council

» Director of Undergraduate Studies

Stanko R. Brankovic

Assistant Professor

Ph.D., Arizona State University

Research Interests
Electrochemical Nanofabrication and Nanomaterials Synthesis, Electrocatalysis, Electrochemical Thin Film Growth, Magnetic Materials, Sensors, Corrosion, and Physics and Thermodynamics of Electrified Interfaces

Professional Service (2008)
» Co-organizer of the 10th International Symposium on Magnetic Materials Processes and Devices at the 214th Electrochemical Society Meeting, Honolulu, HI, Oct. 12–17, 2008.

» Co-organizer of the Electrodeposition for Energy Application symposium at 213th Electrochemical Society Meeting, Phoenix, AZ, May 18–23, 2008.

» Course instructor, Electrochemical Society Education Series "Electrodeposition of Magnetic Materials" first offering at 214th Electrochemical Society Meeting, Honolulu, HI, Oct. 12–17, 2008.

» Member, Executive Committee of the Electrodeposition Division of the Electrochemical Society

» Member, Editorial Board of *Nanotechnology, Science and Applications Journal*

» Reviewer: *Electrochimica Acta, Electrochemistry Short Communications, Electrochemical and Solid State Letters, Journal of Electrochemical Society, Thin Solid Films, Nanotechnology, IEEE Transactions on Nanotechnology, Surface Science*

» Member of the NSF, DOE and ACS-PF panel review process

Research Centers & Laboratories (2008)

» Center for Nanomagnetic Systems

Refereed Journal Publications (2008)

» George, J., S.-E. Bae, D. Litvinov, J. Rancheler and S.R. Brankovic, "Sulfur and Saccharin Incorporation into Electrodeposited CoFe Alloys," *Electrochemical Society,* 155, D589–D594, 2008.

» Brankovic, S.R., S.-E. Bae and D. Litvinov, "Fe3+ Effect on Magnetic Moment of Electrodeposited CoFe Alloys - Experimental Study and Analytical Model," *Electrochimica Acta,* 53, 5934–5940, 2008.

» Shivareddy, S., S.-E. Bae and S.R. Brankovic, "The Analysis of the Cu Surface Morphology Evolution during Electropolishing," *Electrochemical Society Transactions,* 13, 21–32, 2008.

» Shamsi, A., S.-E. Bae, G. Majkic and S.R. Brankovic, "Electrochemical Transducers – A New Approach to Ultrasound Sensor Design," *Electrochemical Society Transactions,* 11, 15–23, 2008.

» Brankovic, S.R., A. Shamsi, S.-E. Bae, G. Majkic and D. Litvinov, "Electrochemical Synthesis and Nanofabrication of Materials for Magnetic and Ultrasound Sensors Application," *Nanotechnology 2008, NANO, IEEE Conference on Nanotechnology* Volume, Issue 18–21, 605–606, 2008.

Editorials (2008)

» *ECS Transactions–Electrodeposition for Energy Applications,* editors: S.R. Brankovic and K. Rajeshwar, Vol. 10, issue 13, 2008

Conference Proceedings & Presentations (2008)

» Brankovic, S.R., "Design of Critical Parameters for Electrodeposition of 2.4 T CoFe Alloys," Seagate Research Center, Pittsburgh, PA, June 18, 2008 (invited).

» Brankovic, S.R., "Nucleation, Growth and Morphological Stability of Noble Metal Nanostructures Produced by Surface Controlled Red-Ox Reactions," Gordon Research Conference, New London, NH, July 28, 2008 (invited).

» Brankovic, S.R., A. Shamsi, S.-E. Bae, G. Majkic and D. Litvinov, "Electrochemical Synthesis and Nanofabrication of Materials for Magnetic and Ultrasound Sensors Application," IEEE Conference on Nanotechnology, Arlington, TX, Aug. 18–21, 2008 (invited).

» Brankovic, S.R., S.-E. Bae, G. George, J. Rantschler and D. Litvinov, "Critical Parameters of Solution Design for Electrodeposition of 2.4 T CoFe Alloys," 214th Electrochemical Society Meeting, Honolulu, HI, Oct. 10–17, 2008 (invited).

» Shivareddy, S., S.-E. Bae and S.R. Brankovic, "Cu Surface Morphology Evolution during Electropolishing," 213th Electrochemical Society Meeting, Phoenix, AZ, May 18-22, 2008.

» Gokcen, D., S.-E. Bae and S.R. Brankovic, "Structure-Property Relation of Pt Submonolayers on Au(111) via Galvanic Displacement of CuUPD/Au(111)," 213th Electrochemical Society Meeting, Phoenix, AZ, May 18–22, 2008.

Funded Research Programs (2008)

» NSF-GOALI, Phase Separated Ferromagnetic Metal-Metal Oxide/Hydroxide Nanomaterials as a Transformative Concept for Magnetic Field Sensors

» ACS-Petroleum Fund, Structure—Property Relation of Monolayer Catalysts Obtained by Galvanic Displacement of Underpotentially Deposited Monolayers

» DOD-SERDP, Single Ferromagnetic Nanocontact Based Devices as Magnetic Field Sensors

» National Semiconductor Corp., Stress Control in Electrodeposited NiFe Alloys

» Texas Center for Superconductivity, University of Houston, Electrodeposition of Exchange Spring Magnet Nanomaterials

» Grants to Enhance and Advance Research (GEAR), University of Houston, Guided Self-assembly Based Fabrication of Nanostructures, their Properties and Emergent Applications in Energy and Sensing

E.J. Charlson

Professor

Ph.D., Carnegie Mellon

Research Interests
Integrated Circuit Layout Design and Fabrication, Solid State Devices

Professional Service (2008)
» Purchasing and Plant Operations Committee, University of Houston

» Grievance Committee (elected), Cullen College of Engineering

» Promotion and Tenure Committee (elected), College of Engineering

» Post Tenure Review Committee (elected), Department of ECE

Research Centers & Laboratories (2008)
» Center for Advanced Materials and Texas Center for Superconductivity

Conference Proceedings & Presentations (2008)
» Radhakrishnan, G., A. Freundlich, E.J. Charlson and B. Fuhrmann, "Epitaxial Growth of III-V Semiconductor Vertical and Tilted Nanowires on Silicon," Proceedings of the 33rd IEEE Photovoltaics Specialists, 2008.

» Torrico, W., E.J. Charlson and S. Bhaskaran, "Properties of Hot Filament CVD Diamond," Poster Session, UH-AGEP Program, Rice University AGEP Conference, Aug. 2008 (Poster with abstract published).

Funded Research Programs (2008)
» National Science Foundation, Alliance for Graduate Education and the Professorate

Ji Chen

Associate Professor

Ph.D., University of Illinois at Urbana-Champaign

Honors & Awards (2008)
» Asia-Pacific Microwave Conference (APMC) prize, Asia-Pacific Microwave Conference, 2008

» IEEE EMC Society Distinguished Lecturer 2009-2011

Research Interests
Computer Engineering, Computational Electromagnetics, Micro- and Nano-Electromagnetics, Biomedical Instruments

Research Centers & Laboratories (2008)
» Computer Engineering

Refereed Journal Publications (2008)
» Yang, P., Y. Chen, J. Chen, W. Bulter, and X. Wu, "Microwave early Detection of Breast Cancers Using a Virtual-Focus Scanning Method," *Electromagn. Biol. Med.,* Vol. 27(3), 312–22, 2008.

» Wu, Dagang, J. Chen, and C.R. Liu, "An Efficient FDTD Method for Axially Symmetric LWD Environments," *IEEE Transactions on Geosciences and Remote Sensing,* Vol. 46(6), 1652–1656, June 2008.

» Jackson, D.R., J. Chen, R. Qiang, F. Capolino and A.A.Oliner, "The Role of Leaky Plasmon Waves in the Directive Beaming of Light through a Subwavelength Aperture," *Optics Express,* Vol. 16(26), 21271–21281, 2008.

Conference Proceedings & Presentations (2008)
» Chen, J., R. Qiang and W. Kainz, "Time-Domain Modeling Techniques for Periodic Structures," International workshop on metamaterials, Nanjing, China, Page(s):16–19, Nov. 9-12, 2008 (Invited).

» Situ, N., X. Yuan, J. Chen and G. Zouridakis, "Malignant Melanoma Detection by Bag-of-Features Classification," Engineering in Medicine and Biology Society, 2008. 30th Annual International Conference of the IEEE, Page(s): 3110–3113, Aug. 20-25, 2008.

» Wu, H.-H., D. Wu, J. Chen and R. Liu, "Evaluation of Electrical Properties for Complex Mixtures with a Low-Frequency Periodic Technique," Microwave Symposium Digest, 2008 IEEE MTT-S International, Page(s):1349–1352, June 15-20, 2008.

» Bit-Babik, G., A. Faraone, T. Wittig, A. Prokop, C. Penney, A. Christ, J. Shen and J. Chen, "Standardization of Computational Techniques for Compliance Evaluation of the Human Exposure in Automotive Environments," Bioinformatics and Biomedical Engineering, 2008. ICBBE 2008. The 2nd International Conference, Page(s):791–794, May 16–18, 2008.

» Wu, K.-L., P.A. Heng, X. Gao, Y. Xie, L. Zhao, J. Chen and M. Zhang, "Development of The First Chinese Electromagnetic Human Model and Its Use for SAR Calculations," received Asia-Pacific Microwave Conference (APMC) prize in 2008 Asia-Pacific Microwave, Dec. 16–20, 2008.

» Shen, J., R. Qiang, J. Chen, D. Jackson, M. Ayatollahi, Y. Qi and P. Jarmuszewski, "A Decomposition/Superposition Technique for Multi-Transmitter System SAR Measurement," Antennas and Propagation Society International Symposium, 2008. AP-S 2008. IEEE, July 5–11, 2008.

» Ayatollahi, M., J. Shen, R. Qiang, J. Chen, Y. Qi, T. Hubing and P. Jarmuszewski, "Effects of Supporting Structure on Wireless SAR Measurement," Antennas and Propagation Society International Symposium, 2008. AP-S 2008. IEEE, Page(s):1–4, July 5–11, 2008.

» Qiang, R., D. Jackson, D. Wilton, J. Chen and W. Kainz, "Time-Domain Modeling Techniques for Periodic Structures," Electromagnetic Compatibility, 2008. EMC 2008. IEEE International Symposium, Aug. 18–22, 2008.

» Wu, Hsu-Hsiang, J. Shen, D. Wu, J. Chen, Chris Fuller and James Drewniak, "Evaluation of Effective Electrical Properties for Lossy Periodic Composite Structures Using a Finite Difference Method," 2008 General Assembly, Chicago, IL, August, 2008.

» Shen, J., R. Qiang , J. Chen, D. Jackson, D. Wilton and F. Capolino, "M-FDTD Method f3D AS or Periodic Structures," 2008 General Assembly, Chicago, IL, Aug. 2008.

» Qiang, Rui , J. Shen, Ji Chen, B. Archambeault and Fan Yang, "EGB Structures with Fractal Elements and Multi-layered Elements," 2008 General Assembly, Chicago, IL, Aug. 2008.

Funded Research Programs (2008)

» U.S. Food and Drug Administration, The Development of Two Human Subject EM CAD Models

» Research in Motion, SAR Modeling in Wireless Communications

» NASA, Parallel MPI Code

» National Science Foundation, Center for EMC Research

» Tubel Technology, Wireless Power Transfer

» St. Jude Medical System, MRI Safety for Implantable Device

» Cyberonics, MRI Safety for Gradient Coil

» Huawei Technology, Wirless Filter Modeling Tool

Yuhua Chen

Assistant Professor

D. Sc., Washington University in St. Louis

Research Interests

Optical Networks, FPGA-Based Reconfigurable Systems, Intelligent Sensor Networks, Reconfigurable System-on-Chip (SoC), Networks-on-Chip (NoC), Quality-of-Service (QoS), Heterogeneous Networks, High Performance Routers and System Prototyping

Professional Service (2008)

» NSF Review Panelist

» Voting member, IEEE Multimedia Communications Technical Committee (MMTC)

» Member, IEEE Communications Society Optical Networking Technical Committee

» Journal Reviewer, *IEEE/OSA Journal of Lightwave Technology, Photonic Technology Letters, Computer Communications, IEEE Communications Letters, Wiley Security and Communication Networks, International Journal of Computers and Applications*

» Technical Program Committee, Globecom 2008

» International Program Committee, IASTED International Conferences on Wireless and Optical Communications (WOC) 2008

» Member of Faculty Search Committee, Department of ECE

» Mentor, WELCOME (Women in Engineering Learning Community for Maximizing Excellence) Program

Research Centers & Laboratories (2008)

» System Research Laboratory (SRL)

Refereed Journal Publications (2008)

» Chen, Y. and P.K. Verma, "Secure Optical Burst Switching – Framework and Research Directions," *IEEE Communications Magazine,* Vol. 46, no. 8, 40–45, Aug., 2008.

» Chen, Y., and W. Tang, "Critical Region Analysis of Optical Burst Switching Routers with Input Fiber Delay Lines," *ISAST Transactions on Communications and Networking,* Vol. 2, no. 1, 11-13, 2008.

» Chen, Y., and P.K. Verma, "Impact of Bimodal Traffic on Latency in Optical Burst Switching Networks," *Research Letters in Communications,* Vol. 2008, Article ID 175359, 3 pages, doi:10.1155/2008/175359, 2008.

Conference Proceedings & Presentations (2008)

» Wang, L., Y. Chen and M. Thaker, "Virtual Burst Assembly at Ingress Edge Routers – A Solution to Out-of-Order Delivery in Optical Burst Switching Networks," IEEE Globecom 2008, Nov. 1–6, 2008.

» Lin, J., Y. Chen and A. Cheng, "On-Line Burst Header Scheduling in Optical Burst Switching Networks," IEEE International Conference on Advanced Information Networking and Applications (AINA), 363–369, March 2008.

Funded Research Programs (2008)

» National Science Foundation, CRI: IAD: Reconfigurable Optical Burst Switching Research Testbed Acquisition and Development

» Texas Higher Education Coordinating Board, Latency and Jitter Control for Telesurgery and Telemedicine Using Asymmetric WDM Burst Switching

Frank J. "Fritz" Claydon

Professor & Associate Dean for Administration and Research

Ph.D., Duke University

Professional Service (2008)

» National Science Foundation Review Panels

Funded Research Programs (2008)

» Texas Workforce Commission, University of Houston Youth In Technology Project

» National Science Foundation, RET Site at the University of Houston: Innovations in Nanotechnology

» Texas Workforce Commission, Peer Mentoring, Scholarships and Work Study Support

» National Science Foundation, The University of Houston Research Experience for Undergraduates, Innovations in Nanotechnology

» Texas Higher Education Coordinating Board (TETC), Step Forward: Preparing Low-Income High School Students for Academic Success in ECE at UH

» Texas Higher Education Coordinating Board , Retention of Female Undergraduates ECE Students at the University of Houston

» Texas Higher Education Coordinating Board , Undergraduate Recruiting and Retention of ECE Students at the University of Houston: Best Practices

» National Science Foundation, RET Site: Research Experiences for Greater Houston High School Science and Math Teachers

» National Science Foundation, STEP - AHEAD: Access to Higher Education through Academic Retention and Development at the University of Houston

» National Science Foundation, S-STEM: A Pathway to Success for Academically Promising Low-Income Engineering Students at an Urban University

Ovidiu Crisan

Professor

Ph.D., Polytechnic Institute of Timisoara, Romania

Honors & Awards (2008)

» Life Senior Member, IEEE

Research Interests

Power Systems Operation Optimization and Control and Wide Area Measurement System (WAMS)

Professional Service (2008)

» Reviewer for *Electric Power Components and Systems,* Taylor & Francis Ltd. Publishing Corporation; Prentice Hall

» Member of the Editorial Board, *Electric Power Components and Systems,* Taylor & Francis Ltd Publishing Company

» Associate Editor, *International Journal of Electrical Energy Systems (IJEESS)*

» Member of the UH Strategic Energy Alliance, Energy & Natural Resources Cluster

» Member of the International Program Committee and Reviewer for IASTED Asian Conference on Power and Energy Systems (AsiaPES 2008)

Research Centers & Laboratories (2008)

» Power Systems and Control Equipment Laboratory

John R. Glover

Professor

Ph.D., Stanford University

Honors & Awards (2008)

» Cullen College of Engineering Outstanding Teaching Award

Research Interests

Biomedical Signal Analysis and Intelligent Systems

Professional Service (2008)

» Reviewer, *IEEE Transactions on Biomedical Engineering*

Research Centers & Laboratories (2008)

» Center for Neuro-Engineering and Cognitive Science

» Bio-Signal Analysis Laboratory

Funded Research Programs (2008)

» Texas Higher Education Coordinating Board, Undergraduate Recruiting and Retention of ECE Students at the University of Houston: Best Practices

Zhu Han

Assistant Professor

Ph.D. University of Maryland, College Park

Research Interests

Collaborative Transmission Networks, Cognitive Radios, Compressed Sensing, Sensor Network Design, Security, Bio Signal Processing, MIMO Wireless Communications

Professional Service (2008)

» Publicity Chair, Cognitive Radio Workshop with IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2008

» Guest Editor, Special Issue on Game Theory in Wireless Networks, *EURASIP Journal on Advances in Signal Processing*

» Guest Editor, Special Issue on Fairness of Radio Resource Management Techniques in Wireless Networks, *EURASIP Journal on Wireless Communications and Networking*

» Member, Technical Programming Committee of IEEE Global Communications Conference, 2008

» MAC Symposium Vice Chair of IEEE Wireless Communications and Networking Conference, 2008.

» Member, Technical Programming Committee of IEEE Global Communications Conference, IEEE International Conference on Communications, IEEE Consumer Communications and Networking Conference, ChinaCom, EEE International Conference on Wireless and Mobile Computing, Networking and Communications, Third IEEE Workshop on Networking Technologies for Software Defined Radio (SDR) Networks, IEEE Vehicular Technology Conference, International Wireless Communication and Mobile Computing Conference, 2008

Research Centers & Laboratories (2008)

» Wireless Communication, Networking and Security Lab

Books and Articles Published (2008)

» Han, Z. and K.J. Ray Liu, *Resource Allocation for Wireless Networks: Basics, Techniques, and Applications,* Cambridge University Press, UK, April 2008.

Refereed Journal Publications (2008)

» Ibrahim, A., Z. Han and K.J. Ray Liu, "Distributed Energy-Efficient Cooperative Routing in Wireless Networks," *IEEE Transactions on Wireless Communications,* Vol.7, no.10, 3930–3941, Oct. 2008.

» Agarwal, R., V. Majjigi, Z. Han, R. Vannithamby and J. M. Cioffi, "Low Complexity Resource Allocation with Opportunistic Feedback over Downlink OFDMA Networks," *IEEE Journal on Selected Areas on Communications,* special issue on Exploiting Limited Feedback in Tomorrow's Wireless Communication Networks, Vol. 26, no. 8, 1462–1472, Oct. 2008.

» Huang, J., Z. Han, M. Chiang and H.V. Poor, "Auction-Based Resource Allocation for Cooperative Communications," *IEEE Journal on Selected Areas on Communications,* Special Issue on Game Theory, Vol. 26, no.7, 1226–1238, Sept. 2008.

» Pandana, C., Z. Han, and K.J. Ray Liu, "Cooperation Enforcement and Learning for Optimizing Packet Forwarding Probability in Autonomous Wireless Networks," *IEEE Transactions on Wireless Communications,* Vol. 7, no. 8, 3150–3163, Aug. 2008.

» Han, Z., Z. Ji and K.J. Ray Liu, "A Cartel Maintenance Framework to Enforce Cooperation in Wireless Networks with Selfish Users," *IEEE Transactions on Wireless Communications,* Vol. 7, Issue: 5, Part 2, 1889–1899, May 2008.

» Li, H., Z. Han and H.V. Poor, "Asymptotic Analysis of Cooperative Relay Networks Using Random Matrix Theory," *EURASIP Journal on Advances in Signal Processing,* special issue on Wireless Cooperative Networks, Vol. 2008, Article ID 235867, April 2008.

» Sun, Y.L., Z. Han and K.J. Ray Liu, `Defense of Trust Management Vulnerabilities in Distributed Networks," *IEEE Communications Magazine,* special issue on Security in Mobile Ad Hoc and Sensor Networks, Vol. 46, Issue 2, p.p.112–119, Feb. 2008.

Conference Proceedings & Presentations (2008)

» Dong, L., Z. Han, A.P. Petropulu and H.V. Poor, "Secure Collaborative Beamforming," in *Proceedings of Allerton Conference on Communication, Control, and Computing,* Allerton, IL, Oct. 2008.

» Saad, W., Z. Han, A. Hjorungnes and M. Debbah, "Network Formation Games for Distributed Uplink Tree Construction in IEEE 802.16j Networks," in *Proceedings of IEEE Global Communications Conference,* New Orleans, LA, Nov. 2008.

» Shrestha, B., D. Niyato, Z. Han and E. Hossain, "Wireless Access in Vehicular Environments Using Bit Torrent and Bargaining," in *Proceedings of IEEE Global Communications Conference,* New Orleans, LA, Nov. 2008.

» Han, Z. and Y. Sun, "Wave Cooperative Transmission Protocol for Underwater Acoustic Communications," in *Proceedings of IEEE International Conference on Communications,* Beijing, China, May 2008

» Saad, W., Z. Han, M. Debbah and A. Hjorungnes, "A Distributed Merge and Split Algorithm for Fair Cooperation in Wireless Networks," in *Proceedings of IEEE International Conference on Communications Workshop on Cooperative Networks,* Beijing, China, May 2008.

» Han, Z. and J. Hai, "Replacement of Spectrum Sensing and Avoidance of Hidden Terminal for Cognitive Radio," in *Proceedings of IEEE Wireless Communications and Networking Conference (WCNC),* Las Vegas, NV, April 2008.

» Huang, J., Z. Han, M. Chiang and H.V. Poor, "Auction-Based Resource Allocation For Multi-Relay Asynchronous Cooperative Networks," in *Proceedings of IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP),* Las Vegas, NV, April 2008 (Invited)

Funded Research Programs (2008)

» National Science Foundation, Collaborative Research: Trusted Cooperative Transmission: Turning a Security Weakness into a Security Enhancement

» U.S. Air Force Office of Scientific Research, Reconfigurable Electronics and Non-Volatile Memory Research

» University of Houston New Faculty Award

Thomas J. Hebert

Associate Professor

Ph.D., University of Southern California

Research Interests

Statistic-based Bayesian Algorithms for Video/Image Processing, In Vivo Scanning Laser Imaging of the Retina, Embedded Real-time Video Processing, 3-D Medical Imaging with Low SNR Data, Automated Analysis of Ventricular Function with Gated Single Photon Emission CT, Computer Vision, Time-varying Deformable 3-D Models, Optimization Theory

Professional Service (2008)

» Reviewer, *Physics in Medicine and Biology, IEEE Trans on Medical Imaging, IEEE Trans on Image Processing, Computer Vision, Graphics, and Image Processing, Journal of the Optical Society of America A*

Research Centers & Laboratories (2008)

» Image Processing & Medical Imaging Laboratory

Funded Research Programs (2008)

» Burdine Endowment, Texas Medical Center, Extracting Functional Information from Gated Myocardial Perfusion Image Sequences

David R. Jackson

Professor

Ph.D., UCLA

Research Interests

Microstrip Antennas, Leaky-wave Antennas, Periodic Structures, High-frequency Effects in Microwave Integrated Circuits, Electromagnetic Interference and Compatibility

Professional Service (2008)

» Chair, IEEE Antennas and Propagation Society Transnational Committee

» Chair, USNC Commission B of the International Union of Radio Science

» Member, MTT IMS Sub-Committee 1 (Field Analysis and Guided Waves)

» Vice Chair, Technical Committee MTT-15 (Microwave Field Theory)

» Member of Editorial Board, IEEE Trans. Microwave Theory and Techniques

Research Centers & Laboratories (2008)

» Applied Electromagnetics Laboratory

Books & Articles in Books (2008)

» Jackson, D.R. and A.A. Oliner, "Leaky-Wave Antennas," Chapter 7 of *Modern Antenna Handbook,* C. Balanis, Editor, John Wiley & Sons, Inc., 2008.

Refereed Journal Publications (2008)

» Basilio, L.I., J.T. Williams, D.R. Jackson and R.L. Chen, "Characteristics of an Inverted Shorted Annular-Ring-Reduced Surface-Wave Antenna," *IEEE Antennas and Wireless Propagation Letters,* Vol. 7, 123–126, 2008.

» Burghignoli, P., G. Lovat, F. Capolino, D.R. Jackson and D.R. Wilton, "Modal Propagation and Excitation on a Wire-Medium Slab," *IEEE Trans. Microwave Theory and Techniques,* Vol. 56, 1112–1124, May 2008.

» Lovat, G., P. Burghignoli, F. Capolino and D.R. Jackson, "Directive Leaky-Wave Radiation from a Dipole Source in a Wire Medium Slab," *IEEE Trans. Antennas and Propagation,* Vol. 56, 1329–1339, May 2008.

» Rodríguez-Berral, R., F. Mesa and D.R. Jackson, "Excitation of an Infinite Microstrip Line with a Vertical Coaxial Feed," *IEEE Trans. Microwave Theory and Techniques,* Vol. 56, 1638–1648, July 2008.

» Baccarelli, P., S. Paulotto, D.R. Jackson and A.A. Oliner, "Leaky Modes at Backward Endfire on Periodic Printed Structures," *Radio Science,* Vol. 43, RS4S21, Aug. 2008.

» Celepcikay, F. T., D. R. Wilton, D.R. Jackson and F. Capolino, "Choosing Splitting Parameters and Summation Limits in the Numerical Evaluation of 1-D and 2-D Periodic Green's Functions Using the Ewald Method," *Radio Science,* Vol. 43, RS6S01, doi:10.1029/2007RS003820, 2008.

» Hu, Y., D.R. Jackson, J.T. Williams and S.A. Long, "Characterization of the Input Impedance of the Inset-Fed Rectangular Microstrip Antenna," *IEEE Trans. Antennas and Propagation,* Vol. 56, 3314–3318, Oct. 2008.

» Paulotto, S., P. Baccarelli, F. Frezza and D.R. Jackson, "Full-Wave Modal Dispersion Analysis and Broadside Optimization for a Class of Microstrip CRLH Leaky-Wave Antennas," *IEEE Trans. Microwave Theory and Techniques,* Vol. 56, 2826–2837, Dec. 2008.

» Jackson, D.R., J. Chen, R. Qiang, F. Capolino and A.A. Oliner, "The Role of Leaky Plasmon Waves in the Directive Beaming of Light Through a Subwavelength Aperture," *Optics Express,* Vol. 16, Issue 26, 21271–21281, Dec. 22, 2008.

Conference Proceedings & Presentations (2008)

» Celepcikay, F.T., D.R. Wilton, D.R. Jackson and F. Capolino, "Interpolation of 2D Periodic Layered-Medium Green's Function," *URSI National Radio Science Meeting,* Boulder, CO, Jan. 3–6, 2008 (Conf. Abstract).

» Paulotto, S., P. Baccarelli, F. Frezza and D.R. Jackson, "Techniques for Scanning through Broadside with Periodic Leaky-Wave Antennas," *URSI National Radio Science Meeting,* Boulder, CO, Jan. 3–6, 2008 (Conf. Abstract).

» Lau, A., D.R. Jackson, J.T. Williams, F. Mesa and J. Bernal, "Investigation of Fields and Currents for Broadband over Power Line (BPL) Communications," *IEEE MTT Intl. Microwave Symposium,* Atlanta, GA, June 15–20, 2008.

» Shete, V., D.R. Jackson and J.T. Williams, "A Via-Loaded Annular-Ring RSW Antenna," *IEEE AP-S Intl. Symp.,* San Diego, CA (Symp. Digest), July 5–12, 2008.

» Lovat, G., P. Burghignoli and D.R. Jackson, "An Investigation of Directive Radiation From Ultra Subwavelength-Thick Planar Antennas with Partially-Reflecting Surfaces," *IEEE AP-S Intl. Symp.,* San Diego, CA (Symp. Digest), July 5–12, 2008.

» Steshenko, S., F. Capolino, D.R. Wilton and D.R. Jackson, "Ewald Acceleration for the Dyadic Green's Functions for a Linear Array of Dipoles and a Dipole in a Parallel-Plate Waveguide," *IEEE AP-S Intl. Symp.,* San Diego, CA (Symp. Digest), July 5–12, 2008.

» Shen, J., R. Qiang, J. Chen, D. R. Jackson, M. Ayatollahi, Y. Qi , and P. Jarmuszewski, "A Decomposition/Superposition Technique for Multi-transmitter System SAR Measurement," *IEEE AP-S Intl. Symp.,* San Diego, CA (Symp. Digest), July 5–12, 2008.

» Burghignoli, P., G. Lovat, F. Capolino, D.R. Jackson and D.R. Wilton, "Omnidirectional Radiation from a Fabry-Perot Antenna Based on a Metal Strip Grating," *RiNEm* 2008 *(Riunione Nazionale di Elettromagnetismo),* Lecce, Italy, Sept. 15–18, 2008.

» Komanduri, V.R., F. Capolino, D.R. Jackson and D.R. Wilton, "Computation of the One-Dimensional Free-Space Periodic Green's Function for Leaky Waves using the Ewald Method," *URSI General Assembly,* Chicago, IL, Aug. 8–16, 2008 (Digest).

» Celepcikay, F.T., D.R. Wilton and D.R. Jackson, "Interpolation of 2D Layered-Medium Periodic Greens Function," *URSI General Assembly, Chicago,* IL, Aug. 8–16, 2008 (Digest).

» Paulotto, S., P. Baccarelli and D.R. Jackson, "Analysis of a Gap-Coupled Microstrip Line Leaky-Wave Antenna," *URSI General Assembly,* Chicago, IL, Aug. 8–16, 2008 (Digest).

» Shen, J., R. Qiang , J. Chen, D.R. Jackson, D. R. Wilton and F. Capolino, "3D ASM-FDTD Method for Periodic Structures," *URSI General Assembly,* Chicago, IL, Aug. 8–16, 2008 (Digest).

» Qiang, R., D.R. Jackson, D.R. Wilton, J. Chen and W. Kainz, "Time-Domain Modeling Techniques for Periodic Structures," *IEEE International Symposium on Electromagnetic Compatibility (EMC 2008),* Detroit, MI, Aug. 18–22, 2008 (Digest).

Funded Research Programs (2008)

» Tubel Energy, Wireless Power and Data Transfer Inside of a Well Pipe

Ben H. Jansen

Professor

Ph.D., Free University, Amsterdam, The Netherlands

Honors & Awards (2008)

» Member, Special Emphasis Panel ZAT1 PK 2, Basic Science, National Center for Complementary and Alternative Medicine (NCCAM), June 18–19, 2008 and Oct. 27–28, 2008.

Research Interests

(Biomedical) Signal Analysis and Intelligent Systems, Neural Engineering

Professional Service (2008)

» Member, Program Committee, 25th Annual Houston Conference on Biomedical Engineering Research, 2008

» Reviewer for: *IEEE Transactions on Biomedical Engineering, Clinical Neurophysiology, Journal of Neuroscience Methods, Human Brain Mapping*

» Manuscript review: *Digital Signal Processing: Theory and Applications Using MATLAB* by Kathy Ossman, McGraw-Hill, 2008

Research Centers & Laboratories (2008)

» Bio-signal Analysis Laboratory

Refereed Journal Publications (2008)

» Bonala B., N.N. Boutros and B.H. Jansen, "Target Probability Affect the Likelihood that a P300 will be Generated in Response to a Target Stimulus, but not its Amplitude," *Psychophysiology*, 45, 93–99, 2008.

» Miller V.H. and B.H. Jansen, "Oscillatory Neural Network for Pattern Recognition: Trajectory Based Classification and Supervised Learning," *Biological Cybernetics,* 99 (6): 459–471, 2008.

Conference Proceedings & Presentations (2008)

» Dinh, T. and B.H. Jansen, "Can Brain Responses Predict Human Sensorimotor Adaptability to Novel Environments?," *25th Annual Houston Conference on Biomedical Engineering Research,* Feb. 7–8, 2008.

» Viswanathan, D. and B.H. Jansen, "The Effect of Expectancy on Dishabituation," *25th Annual Houston Conference on Biomedical Engineering Research,* Feb. 7–8, 2008.

» Gerber, D.G. and B.H. Jansen, "Spatio Temporal Evoked Potential Analysis," *25th Annual Houston Conference on Biomedical Engineering Research,* Feb. 7–8, 2008.

» Bonala, B.K. and B.H. Jansen, "Development of a Mathematical Model of P300 Generation," *25th Annual Houston Conference on Biomedical Engineering Research,* Feb. 7–8, 2008.

» Zhu, X., A. Kayali, and B.H. Jansen, "Functional Magnetic Resonance Markers of Sensory Gating," *25th Annual Houston Conference on Biomedical Engineering Research,* Feb. 7–8, 2008.

Funded Research Programs (2008)

» Grants to Enhance and Advance Research (GEAR), University of Houston, Neuro-engineering Technologies for Imaging Brain Function

» UH-IBIS Travel Grant, Functional Brain Imaging: Joint Methods Development and Application to Neuropsychiatric Disease

Valery A. Kalatsky

Assistant Professor

Ph.D., Texas A&M University

Research Interests

Neuro-engineering, Optical Imaging of Intrinsic Signals, Neuro-biology, Brain Mapping, Representation of Sensory Modalities in Mammalian Neocortex, Cortical Plasticity

Professional Service (2008)

» Reviewer: *Journal of Neuroscience, Journal of Neurophysiology, Neuroimage, Image and Vision Computing, Documenta Ophthalmologica, Neuron*

» Organizing committee, 12th Annual Chinese-American Kavli Frontiers of Science Symposium, to be held in China.

» Judge, 4th Annual ECE Graduate Research Conference (GRC), April 25, 2008.

» Organizing committee, 5th Annual ECE Graduate Research Conference (GRC).

Research Centers & Laboratories (2008)

» Center for Neuro-Engineering and Cognitive Science

» Center for Nanomagnetic Systems

Conference Proceedings & Presentations (2008)

» Kalatsky, V.A. 11th Annual Chinese-American Kavli Frontiers of Science symposium, organized by National Academy of Science. Irvine, CA, Oct. 2–5, 2008.

» Kalatsky, V.A., K. Kreikemeier and H.R. Dinse, "Spatial and Temporal Dynamics of Plasticity in Adult Visual Cortex: High Resolution Imaging Study," The 8th HFSP Annual Awardees Meeting, Berlin, Germany, July 6–9, 2008.

» Kalatsky, V.A., "Cortical Maps: Fourier Approach to Optical Imaging," Program on the Anatomy, Development, and Evolution of the Brain. Kavli Institute for Theoretical Physics (KITP), UCSB, CA, March 17–20, 2008. Organizers: Ken Kosik, Alexei Koulakov, Greg Lemke, Sara Solla, Sam Wang.

» Kalatsky, V.A., "Fourier Approach to Functional Brain Mapping," Medical College of Georgia (MCG), GA, Jan. 9, 2008. Host: Sergei Kirov

Funded Research Programs (2008)

» Human Frontier Science Program, Spatial and Temporal Dynamics of Plasticity in Adult Visual Cortex: High Resolution Imaging Study

» Grants to Enhance and Advance Research (GEAR), University of Houston, Fast Intrinsic Signals and their Utility for Optical Imaging of Brain Function

» IBIS, Travel Grant to Establish Collaboration with WMC

M. Amin Kayali

Research Assistant Professor

Ph.D. Texas A&M University

Research Interests

Functional Neuroimaging, Computational Neuroscience, Statistical Learning Theory, Pattern Recognition, Nonlinear Dynamics

Professional Service (2008)

» Member: American Physical Society, Society for Neuroscience and AAAS

Refereed Journal Publications (2008)

» Chiu, Pearl H., M.A. Kayali, K.T. Kishida, D. Tomlin, L.G. Klinger, M.R. Klinger and P.R. Montague, "Self Responses along Cingulate Cortex Reveal Quantitative Neural Phenotype for High-Functioning Autism," *NEURON* 57, 463, 2008

Conference Proceedings & Presentations (2008)

» Chiu, P., A. Kayali, K. Kishida, D. Tomlin, L.G. Klinger, M.R. Klinger and R. Montague, "Self Responses Along Cingulate Cortex Reveal Quantitative Neural Phenotype for High Functioning Autism," International Meeting for Autism Research, London, UK., 2008.

» Chiu, P., A. Kayali, K. Kishida, D. Tomlin, L. Klinger, M. Klinger and R. Montague, "Self Responses Along Cingulate Cortex Reveal Quantitative Neural Phenotype for High Functioning Autism," Poster, Cognitive Neuroscience Society, San Francisco, CA, 2008.

» Zhu, X., M.A. Kayali and B.H. Jansen, "Functional Magnetic Resonance Markers of Sensory Gating," *25th Annual Houston Conference on Biomedical Engineering Research,* Houston, TX, 2008.

Han Le

Professor

Ph.D., Massachusetts Institute of Technology

Research Interests
Smart Sensing System, Optical Sensing and Imaging, Semiconductor Optoelectronics, Lasers, Photonics (applications in homeland securities)

Professional Service (2008)
» Proposal reviewer, U.S. Department of Energy

» Paper reviewer, *Optics Letters, IEEE Photonics Technology Letter, Optics Express*

» Member, Technology Advisory Board, Cosemi, Inc (Irvine, CA)

» Member, Committee for the Defense and Security Symposium

» Presentations at Vietnam National Universities, Vietnam National Center for Technological Progress, and organizing activities for a conference "Vietnam Opto 2008"

Research Centers & Laboratories (2008)
» Photonic Device and System Laboratory

» Southwest Public Safety Technology Center

Conference Proceedings & Presentations (2008)
» *(Invited talk)* H.Q. Le, G.L. Dilmore, P. Bellamy and S.S.S. Pei, "Some Technological Issues on Border Security," Special Conference on US-Mexico Border Security – (Co-chaired by the US Consul General in Mexico) at Collegio Del Frontera Norte, Tijuanna, Mexico, June (2008).

» Conference Co-Chair, International Chair of Vietnam Opto 2008, co-sponsored by the US OIDA, Japan OITDA, EU EPIC, and the US Navy ONR-Global. Local sponsor: the Vietnam Ministry of Science and Technology, Hochiminh City, Vietnam (2008).

Funded Research Programs (2008)
» U.S. Department of Justice, National Institute of Justice

Dmitri Litvinov

Professor

Ph.D., University of Michigan, Ann Arbor

Research Interests
Nanomagnetics, Magnetic Sensor Arrays, Magnetic Data Storage, Biosensors, Cancer Diagnostics, High Throughput Drug Screening, Magnetic Computing

Professional Service (2008)
» AdCom Member, IEEE Magnetics Society

» Chair, IEEE Nanotechnology Council Technical Committee on Nanomagnetics

» Program Committee Member, IEEE Nano Conference 2008, Arlington, Houston, Texas

» Associate Editor, IEEE Transactions on Nanotechnology

» Editor-in-Chief, *Journal of Nanotechnology, Science and Applications*

» IEEE Magnetic Society Representative to IEEE Nanotechnology Council

» Senior Member, IEEE Magnetics Society

Research Centers & Laboratories (2008)
» Center for Integrated Nanosystems

» UH Nanofabrication Facility

Refereed Journal Publications (2008)
» Khizroev, S., R. Ikkawi, N. Amos, R. Chomko, V. Renugopalakrishnan, R. Haddon and D. Litvinov, "Protein-Based Disk Recording at Areal Densities beyond 10 Terabit/in2," *Materials Research Society Bulletin,* Vol. 33 (September issue), 864–871, 2008.

» Litvinov, D., V. Parekh, Ch. E, D. Smith, J. Rantschler, P. Ruchhoeft, D. Weller and S. Khizroev, "Nanoscale Bit-Patterned Media for Next Generation Data Storage Systems," *Journal of Nanoelectronics and Optoelectronics,* Vol. 3, 93–112, 2008.

» Amos, N., R. Ikkawi, R. Haddon, D. Litvinov and S. Khizroev, "Controlling Multidomain States to Enable Sub-10nm Magnetic Force Microscopy," *Applied Physics Letters,* Vol. 93 (20), Art. No. 203116, 1–3, 2008.

» Bandic, Z.Z., D. Litvinov and M. Rooks, "Nanostructured Materials in Information Storage," *Materials Research Society Bulletin,* Vol. 33 (Sept. issue), 831–834, 2008.

» Rantschler, J., Ch. E, J., S. Khizroev and D. Litvinov, "Micromagnetics of Signal Propagation in Magnetic Cellular Logic Data Channels," *Journal of Applied Physics,* Vol. 104, Art. No. 054311, 1–4, 2008. [Editor's choice in the AIP Virtual Journal of Nanoscience & Technology, Vol. 18 (12), Sept. 2008].

» Leem, G., A.C. Jamison, Sh. Zhang, D. Litvinov and T.R. Lee, "Facile Synthesis, Assembly, and Immobilization of Ordered Arrays of Monodisperse Magnetic Nanoparticles on Silicon Substrates," *Chemical Communications,* Vol. 40, 4989–4991, 2008.

» Vu, B., D, Litvinov and R. Willson, "Gold Nanoparticle Effects in PCR: Polymerase Adsorption Favors Smaller Products," *Analytical Chemistry,* Vol. 80 (14), 5462–5467, 2008.

» Litvinov, D., V. Parekh, Ch. E, D. Smith, J. Rantschler, P. Ruchhoeft, D. Weller and S. Khizroev, "Recording Physics, Design Considerations, and Fabrication of Nanoscale Bit-Patterned Media," *IEEE Transactions on Nanotechnology,* Vol. 7(4), 463–476, 2008.

» Brankovic, S.R., S.-E. Bae and D. Litvinov, "The Effect of Fe3+ on Magnetic Moment of Electrodeposited CoFe Alloys – Experimental Study and Analytical Model," *Electrochimica Acta,* Vol. 53, 5934–5940, 2008.

» George, J., J. Rantschler, S.-E. Bae, D. Litvinov and S.R. Brankovic, "Sulfur and Saccharin Incorporation into Electrodeposited CoFe Alloys: Consequences for Magnetic and Corrosion Properties," *Journal of Electrochemical Society,* Vol. 155 (9), D589–D594, 2008.

» Rantschler, J., Ch. E, J.O., S. Khizroev, and D. Litvinov, "Micromagnetic Study of Domain Wall Dynamics in Bit-Patterned Nanodots," *Journal of Applied Physics,* Vol. 103, Art. No. 113910, 2008.

» Ikkawi, R., N. Amos, A. Lavrenov, A. Krichevsky, D. Teweldebrhan, S. Ghosh, A.A. Balandin, D. Litvinov and S. Khizroev, "Near-Field Optical Transducer for Heat-Assisted Magnetic Recording for Beyond-10-Tbit/in2 Densities," *Journal of Nanoelectronics and Optoelectronics,* Vol. 3, 44–54, 2008.

» Parekh, V., Ch. E, P. Ruchhoeft, S. Khizroev and D. Litvinov, "Magnetization Reversal in Patterned (Co/Pd)n Multilayers," *Journal of Applied Physics,* Vol. 103, Art. No. 063904, 1–4, 2008.

» Amos, N., R. Fernandez, R. Ikkawi, B. Lee, A. Lavrenov, A. Krichevsky, D. Litvinov and S. Khizroev, "Magnetic Force Microscopy Study of Magnetic Stripe Domains in Sputter Deposited Permalloy Thin Films," *Journal of Applied Physics,* Vol. 103(7), Art. No. 07E732, 2008.

» Rantschler, J., Ch. E, S. Zhang, S. Khizroev, T.R. Lee and D. Litvinov, "Low Temperature Vacuum Annealing Study of (Co/Pd)n Magnetic Multilayers," *Journal of Applied Physics,* Vol. 103, Art. No. 07B510, 2008.

» Smith, D., V. Parekh, Ch. E, S. Zhang, W. Donner, T.R. Lee, S. Khizroev and D. Litvinov, "Magnetization Reversal and Magnetic Anisotropy in Patterned Co/Pd Multilayer Thin Films," *Journal of Applied Physics,* Vol. 103, Art. No. 023920, 2008.

» Lau, J.W., R.D. McMichael, S.H. Chung, J. Rantschler, V. Parekh and D. Litvinov, "Microstructural Origin of Switching Field Distribution in Patterned Co/Pd Multilayer Dots," *Applied Physics Letters,* Vol. 92, Art. No. 012506, 2008.

Conference Proceedings & Presentations (2008)

» Brankovic, S., A. Shamsi, S. Bae, G. Majkic and D. Litvinov, "Electrochemical Synthesis and Nanofabrication of Materials for Magnetic and Ultrasound Sensors Application," IEEE Nano 2008, Arlington, TX, Aug. 2008.

» Martirosyan, K. and D. Litvinov, "Functional Properties of Barium Hexaferrite Magnets Sintered by using Nanostructured Particles," IEEE Nano 2008, Arlington, TX, Aug. 2008.

» Rantschler, J., Ch. E, S. Khizroev and D. Litvinov, "A Micromagnetic Study of Signal Propagations along MCA Data Channels," IEEE Nano 2008, Arlington, TX, Aug. 2008.

» Smith, D., J. Rantschler, P. Ruchhoeft, S. Khizroev and D. Litvinov, "The Effect of Size Distribution on the Switching Field Distribution of Co/Pd Multilayered Nanostructure Arrays," IEEE Nano 2008, Arlington, TX, Aug. 2008.

» Amos, N., A. Lavrenov, R. Fernandez, R. Ikkawi, D. Litvinov and S. Khizroev, "High-Resolution and High-Coercivity FePt L10 Magnetic Force Microscopy Nanoprobes to Study Next-generation Magnetic Recording Media," *53rd Conference on Magnetism and Magnetic Materials,* Austin, TX, Nov. 2008.

» Martirosyan, K., E. Galstyan, H. Ye and D. Litvinov, "Nano-Textured Fe85Ga15 Alloys: Fabrication and Properties," 53rd Conference on Magnetism and Magnetic Materials, Austin, TX, Nov. 2008.

» Ikkawi, R., N. Amos, A. Krichevsky, A. Lavrenov, D. Litvinov and S. Khizroev, "Exploiting Far- and Nar-Fiel Optics to Develop Energy Efficient Transducer for Heat-Assisted Magnetic Recording," INTERMAG, Madrid, Spain, May 2008.

» Gomez, P., S. Khizroev and D. Litvinov, "Calculation of Minimum Parameters Required for Low-Field Low-Size Nano Nuclear Magnetic Resonance (NanoNMR)," INTERMAG, Madrid, Spain, May 2008.

» Amos, N., R. Ikkawi, R. Fernandez, A. Lavrenov, A. Krichevsky, D. Litvinov and S. Khizroev, "Plateau Probes to Enhance the Capabilities of Magnetic Force Microscopy," INTERMAG, Madrid, Spain, May 2008.

» Ikkawi, R., N. Amos, A. Balandin, D. Litvinov and S. Khizroev, "Numerical Analysis of Heat Transfer Mechanisms Induced by Laser Heating in Far- and Near-Field HAMR Systems," INTERMAG, Madrid, Spain, May 2008.

» Ruiz, A., V. Parekh, J. Rantschler, P. Ruchhoeft, S. Khizroev and D. Litvinov, "Magnetic Annular Nanostructure Fabrication Using Ion Beam Proximity Lithography," IEEE Nano 2008, Arlington, TX, Aug. 2008.

Funded Research Programs (2008)

» Health Resources and Services Administration, Acquisition of Core Equipment to Support NanoHealth-Related Biomedical Research in the Greater Houston Area

» National Science Foundation, NUE: Development of the NanoEngineering Minor Option (NEMO) at the University of Houston

» National Science Foundation, MRI: Consortium Proposal: Acquisition of a Dual Beam Focused Ion Beam System to Support Transformative Device and Materials Research in the Greater Houston Area

» Texas Advanced Research Program, Nanoscale Patterned Magnetic Recording Medium: Device Physics and Fabrication of Imprint Templates

» National Science Foundation, GOALI: Phase Separated Ferromagnetic Metal-Metal Oxide/ Hydroxide Nanomaterials as a Transformative Concept for Magnetic Field Sensors

» National Science Foundation, GOALI: Dynamics and Manipulation of Logic States in Couples Nanomagnetic Arrays

» National Institutes of Health, Development of Nanomagnetic Sensor Array for High Throughput Molecular Screening

» Office of Naval Research, Design and Scalability Physics of Nanomagnetic Device Structures for Magnetoelectronics, Magnetic Field Sensors, and Biosensor Applications

» National Science Foundation, NIRT: Nanomanufacturing Strategy and System Design for Nanoscale Patterned Magnetic Recording Medium

» National Science Foundation, MRI: Development of an Energetic Atom Beam Lithography System for Nanosystem Prototyping and Manufacturing

C. Richard Liu

Professor

Ph.D., Jiaotong University, China

Research Interests

Sensor Technologies, Well Logging, Wireless Communications

Professional Service (2008)

» Member: Radiation Source Use and Replacement Committee, National Academy of Science

» Member, Technical Advisory Committee, Texas Department of Transportation

Research Centers & Laboratories (2008)

» Subsurface Sensing Laboratory

» Well Logging Laboratory

Refereed Journal Publications (2008)

» Zhong, L., J. Li, A. Bhardwaj, L.C. Shen and R. Liu, "Computation of Tri-axial Induction Logging Tools in Layered Anisotropic Dipping Formations," *IEEE Transactions on Geoscience and Remote Sensing,* Vol. 46, no. 4, April 2008.

» Tsai, J.S.H., J.H. Lin, L.S. Shieh, C.R. Liu and S.M. Guo, "Decentralized Observer-Based Tracker for Analog Systems with Saturating Actuators and State Constraints," *Computers and Mathematics with Applications* Vol. 55, No. 1, 1–22, Jan. 2008.

» Tsai, J.S.H., C.T. Wang, S.M. Guo, L.S. Shieh and C.R. Liu, "Observer-Based Digital Tracker for Maneuvering Target Described by the Continuous-Time Nonlinear Dynamic System," Proceedings of the Institution of Mechanical Engineers, Part G, *Journal of Aerospace Engineering,* Vol. 222, No. 2, 213–228, April 2008.

» Tsai, J.S.H., C.L. Wei, S.M. Guo, L.S. Shieh and C.R. Liu, "EP-Based Adaptive Tracker with Observer and Fault Estimator for Nonlinear Time-Varying Sampled-Data Systems Against Actuator Failures," *Journal of the Franklin Institute* Vol. 345, No. 5, pp. 508–535, Aug. 2008.

» Zhou, H.Q., L.S. Shieh, C.R. Liu and Q.G. Wang, "Digital Design of Combined PI and State Feedback Controller for Nonlinear Stochastic Systems," *IMA Journal of Mathematical Control & Information,* Vol. 25, No. 3, 305–322, Sept. 2008.

» Wu, D., J. Chen and C.R. Liu, "An Efficient FDTD Method for Axially Symmetric LWD Environments," *IEEE Transactions on Geosciences and Remote Sensing,* Vol. 46(6), 1652–1656, June 2008.

Conference Proceedings & Presentations (2008)

» Nie, X., N. Yuan and R.C. Liu, "A 3D Fast Integral Equation Method for Simulation of Induction Logging Response in Formations with Large Conductivity Contrasts," *IEEE MTTS,* Hawaii, June 2008

» Guo, C., C.P. Kao, J. Li and R.C. Liu, "Design of Air Coupled GPR Antenna with Optimized Impedance," *ICEEG 2008,* Wuhan, China, 2008.

» Xie, J. and R. Liu, "Automatic Skid Number Evaluation Using Texture Laser Measurement," International Asia Pacific Convention Center & HNA Resort Sanya, China, April 6–8, 2008

» Chen, X., L. Guo, J. Yu, J. Li and R. Liu, "Evaluating Innovative Sensors and Techniques for Measuring Traffic Loads," International Asia Pacific Convention Center & HNA Resort Sanya, China, April 6–8, 2008

» Nie, X., N. Yuan and R. Liu, "Simulation of LWD Tool Response Using a Fast Integral Equation Method," SEG 2008, Las Vegas, NV, Nov. 2008

» Tsai, J.S.H., M.H. Lin, S.M. Guo, P.Y. Sun, L.S. Shieh and C.R. Liu, "Digital Redesign of the Decentralized Adaptive Control for Linear Large-Scale Systems with Actuator Faults," The 10th IASTED International Conference on Control and Applications, Quebec City, Quebec, Canada, May 26–28, 2008.

» Tsai, J.S.H., M.H. Lin, S.M. Guo, L.S. Shieh and C.R. Liu, "Novel State-Space Self-Tuning Control of Two-Dimensional Linear Discrete-Time Stochastic Systems for Active Fault Tolerant Control," The 12th Word MultiConference on Systemics, Cybernetics and Informatics (WMSCI 2008), Orlando, FL, June-29–July 2, 2008.

Funded Research Programs (2008)

» National Science Foundation, Role of Neuronal Activity in Visually Guided Escape Behaviors

» Texas Department of Transportation, Implementation of an FCC Compliant Radar System

» Texas Department of Transportation, Ground and Air Coupled FCC Compliant GPS Sytems

» Texas Department of Transportation, Laser Texture Measurement Device

» Thirteen oil and service companies, Well Logging Projects

» Oil and service companies, API Calibration Facility

Stuart A. Long

Professor & UH Associate Dean for Undergraduate Research and The Honors College

Ph.D., Harvard University

Honors & Awards (2008)
Career Teaching Award, Cullen College of Engineering

Research Interests
» Dielectric Resonator and Microstrip Antennas, Wireless Communications Antennas, Electromagnetic Measurements

Professional Service (2008)
» IEEE Antennas and Propagation Society National Meetings Coordinator, 1988-present, IEEE Audit Committee, 2005–2008; IEEE Membership and Geograpical Activities Board, 2008.

» Reviewer for Technical Journals: *IEEE Transactions on Antennas and Propagation; Electronics Letters; Journal of Electromagnetic Waves and Applications, IEE Proceedings-Microwaves, and Antennas and Propagation; IEEE Antennas and Wireless Propagation Letters, Microwave and Wireless Components Letters*

» University Honors College Council, 1982–present; Committee of Associate Deans, 2000–present; Athletics Advisory Committee, 2000–present; Associate Dean for Educational Activities, 2002–2008; Academic Advisor to Honor's Program Students, 1983–present; Associate Dean of Undergraduate Research and The Honors College, 2006–present; Department of Electrical and Computer Engineering Executive Committee, 2005–present; ECE Department Faculty Search Committee, 2006–present; University Research Council, 2006–present.; Chair, Search Committee for Civil Engineering Chair, 2008; Interim Dean, Honors College, 2008–present.

Research Centers & Laboratories (2008)
» Applied Electromagnetics Laboratory

Refereed Journal Publications (2008)
» Hu, Y., D.R. Jackson, J.T. Williams, S.A. Long and V.R. Komanduri, "Characterization of the Input Impedance of the Inset-Fed Rectangular Microstrip Antenna," *IEEE Transactions Antennas Propagation,* Vol. 56, 3314–3318, Oct. 2008.

Conference Proceedings & Presentations (2008)
» Melde, K. and S.A. Long, "The Impact of the Technical Leadership, Outstanding Teaching, and Active Mentoring of Professor Donald G. Dudley Jr.," Proceedings of the IEEE AP-S International Symposium, San Diego, CA, July 2008.

Funded Research Programs (2008)
» National Science Foundation, STEP-AHEAD: Access to Higher Education through Academic Retention and Development at the University of Houston

» National Science Foundation, S-STEM: A Pathway to Success for Academically Promising Low-Income Engineering Students at an Urban University

» Texas Workforce Commission, University of Houston Youth In Technology Project

» National Science Foundation, RET Site at the University of Houston: Innovations in Nanotechnology

» Texas Workforce Commission, Peer Mentoring, Scholarships and Work Study Support

» National Science Foundation, The University of Houston Research Experience for Undergraduates: Innovations in Nanotechnology

» Texas Higher Education Coordinating Board (TETC), Step Forward: Preparing Low-Income High School Students for Academic Success in ECE at UH

» Texas Higher Education Coordinating Board, Retention of Female Undergraduates ECE Students at the University of Houston

» Texas Higher Education Coordinating Board, Undergraduate Recruiting and Retention of ECE Students at the University of Houston: Best Practices

» National Science Foundation, RET Site: Research Experiences for Greater Houston High School Science and Math Teachers

Pauline Markenscoff

Associate Professor

Ph.D., University of Minnesota

Research Interests
Cellular Automata, Parallel Processing

Professional Service (2008)
» Director, Computer and Systems Engineering Program, UH

» Reviewer, Scientific Journals

Research Centers & Laboratories (2008)
» Computational Tissue Engineering Laboratory

Haluk Ogmen

Professor and Chair

Ph.D., Université Laval, Québec, Canada

Honors & Awards (2008)
» Member, Central Visual Processing Study Section, Center for Scientific Review, National Institutes of Health, 2005–2009

» Honorary Visiting Professor of Computational Neuroscience, University of Bradford, Bradford, U.K.

» American Library Association Choice 2008 Outstanding Academic Title award for the book: T. Bachmann, B. G. Breitmeyer, H. Ogmen, *Experimental Phenomena of Consciousness: A Brief Dictionary,* Oxford University Press: New York, NY (2007).

Research Interests
Visual Perception, Visual Psychophysics, Neural Modeling, Neuro-Engineering, Computational Neuroscience

Professional Service (2008)
» Executive Director, University of Houston Center for Neuro-Engineering and Cognitive Science

» Member, NIH Central Visual Processing (CVP) Study Section

» Member of the Editorial Board, Cognitive Neurodynamics

» Specialty Editor (Current Events), Neural Networks

» Member of Steering Committee, 4th International IEEE EMBS Conference on Neural Engineering, Antalya, Turkey, 2009.

» Member of Steering Committee, UH, Methodist, Weill Cornell Institute for Biomedical Imaging Sciences (IBIS)

» Member, NSF Center Site Visit Team

» Member of College of Reviewers, Canada Research Chairs (CRC) Program

» Journal Peer-Reviewer: *IEEE Transactions on Biomedical Engineering,* Journal of Vision, *Perceptual & Motor Skills, Vision Research*.

» External member of doctoral committee: Bradford University, UK; Ecole Polytechnique Fédérale de Lausanne, Switzerland.

» Chair, Biomedical Engineering Department Chair Search Committee

» Member, Industrial Engineering Faculty Search Committee

» Member, University of Houston ad-hoc Animal Facilities Space Committee

Research Centers & Laboratories (2008)
» Center for Neuro-Engineering and Cognitive Science

Refereed Journal Publications (2008)

» Breitmeyer, B.G., E. Tapia, H. Kafaligonul and H. Ogmen, "Metacontrast Masking and Stimulus Contrast Polarity," *Vision Research,* Vol. 48, 2433–2438, 2008.

» Ogmen, H., G. Purushothaman and B.G. Breitmeyer, "Metacontrast, Target Recovery, and the Magno- and Parvocellular Systems: A Reply to the Perspective," *Visual Neuroscience,* Vol. 25, 611–616, 2008.

» Breitmeyer, B.G., M.H. Herzog and H. Ogmen, "Motion, not Masking, Provides the Medium for Feature Attribution," *Psychological Science,* Vol. 19, 823–829, 2008.

» Otto, T., H. Ogmen and M.H. Herzog, "Assessing the Microstructure of Motion Correspondences with Non-Retinotopic Feature Attribution," *Journal of Vision,* Vol. 8, 1–15, 2008.

» Aydin, M., M.H. Herzog and H. Ogmen, "Perceived Speed differences Explain Apparent Compression in Slit Viewing," *Vision Research,* Vol. 48, 1603–1612, 2008.

» Breitmeyer, B.G., A. Koc, H. Ogmen and R. Ziegler, "Functional Hierarchies of Nonconscious Visual Processing," *Vision Research,* Vol. 48, 1509–1513, 2008.

» Ogmen, H., S.S. Patel, G. Purushothaman and H.E. Bedell, "Moving Backward through Perceptual Compensation," *Behavioral and Brain Sciences,* Vol. 31, 212–213, 2008.

» Purushothaman, G., H.E. Bedell, H. Ogmen and S.S. Patel, "Neurophysiology of Compensation for Time Delays: Visual Prediction is Off Track," *Behavioral and Brain Sciences,* Vol. 31, 214, 2008.

Conference Proceedings & Presentations (2008)

» Ogmen, H., "The Microgenesis of Non-Retinotopic Form Perception," XXIX International Congress of Psychology, Berlin, Germany, 2008 (invited).

» Herzog, M.H., M. Boi, H. Ogmen and J. Krummenacher, "Where are the Feature Maps?," Second International Symposium on Visual Search and Attention, Fribourg, Switzerland, 2008.

» Ogmen, H., M.H. Herzog and M. Aydin, "Dynamics of Non-Retinotopic Form Perception revealed by a Masking Paradigm," *Journal of Vision,* Vol. 8, 817a. VSS'08: Vision Sciences Society Conference, Naples, FL, 2008.

» Boi, M., T.U. Otto, H. Ogmen and M.H. Herzog, "Non-Retinotopic Motion Induced by a Ternus-Pikler Display," ECVP'2008, Utrecht, The Netherlands, 2008.

» Boi, M., T.U. Otto, H. Ogmen and M.H. Herzog, "Integration of Contrast Across Non-Retinotopic Locations," Forum of European Neuroscience FENS'2008, Geneva, Switzerland, 2008.

» Otto, T.U., H. Ogmen and M.H. Herzog, "Feature Integration Across Space, Orientation, and Time in Human Vision," Forum of European Neuroscience FENS'2008, Geneva, Switzerland, 2008.

» Yilmaz, O., S. Guler and H. Ogmen, "Inhibitory Surround and Grouping Effects in Human and Computational Multiple Object Tracking," IS&T/SPIE Human Vision and Electronic Imaging XIII Conference Proceedings, SPIE Vol. 6806, pp. 68060R1–68060R12, San Jose, CA, 2008.

Funded Research Programs (2008)

» Disruptive Technology Office (DTO) via intuVision Inc., Cognitive Concepts for Video Content Extraction

Shin-Shem Steven Pei

Professor

Ph.D., State University of New York at Stony Brook

Research Interests

Optoelectronic Materials and Devices, High Speed and High Band Width Electronic Materials and Devices; Sensors and Tracking Devices for Public Safety, Homeland Security and Healthcare Applications

Professional Service (2008)

» City of Houston Wireless Tower Commission

» 18th Congressional District Homeland Security Task Force

Research Centers & Laboratories (2008)

» Center for Advanced Materials (CAM)

» Southwest Public Safety Technology Center (SWTC)

Refereed Journal Publications (2008)

» Yu, Q., J. Lian, S. Siriponglert, H. Li, Y. Chen and S.-S. Pei, "Graphene Segregated on Ni surfaces and Transferred to Insulators," *Applied Physics Letters,* 93, 113103 (2008); also selected for Virtual Journal of Nanoscale Science & Technology, Vol. 18, No. 13, Sept. 29, 2008.

» Wu, W., Q. Yu, J. Zhang, J. Lian, G. Liang, R. Ewing and S.-S. Pei, "Horizontally-Aligned Growth of Cu5Si Polycrystalline Nanorods on Si," *Apply Physics Letters,* 92, 253113, 2008.

» Yu, Q., J. Lian, S. Siriponglert, H. Li, Y. Chen and S.-S. Pei, "Graphene Synthesis by Surface Segregation on Ni and Cu," arXiv, 0804.1778, Vol. 2 , 2008.

Conference Proceedings & Presentations (2008)

» Bai, J. and S. Pei, "The Way for a New Industry," *KAUST Workshop on "Commercialization of Next Generation Energy Technologies,"* Stanford University, CA, Nov. 23–25, 2008.

Funded Research Programs (2008)

» Center for Advanced Materials, Nano-tube and Nano-wire for Optoelectronic Applications

» National Institute of Justice, Continued Support of the Southwest Public Safety Technology Center

» National Science Foundation, Large Scale Synthesis of Horizontally Aligned SiC Nanowires for Devices

» Harris County, Houston Ship Channel Security

Paul Ruchhoeft

Associate Professor

Ph.D., University of Houston

Honors & Awards (2008)

» UH Cullen College of Engineering Distinguished Young Alumnus Award

Research Interests

Nanofabrication, Microfabrication, Lithography, Bio-marker Fabrication, Thin-film Deposition, Reactive Ion Etching and Modeling of Resist Exposure and Development

Professional Service (2008)

» Member, IEEE & AVS

Research Centers & Laboratories (2008)

» Nanosystems Manufacturing Center

» Center for Integrated Nanosystems

Refereed Journal Publications (2008)

» Xu, L., A. Nasrullah, Z. Chen, M. Jain, P. Ruchhoeft, D. J. Economou and V. M. Donnelly, "Etching of Nanopatterns in Silicon using Nanopantography," *Applied Physics Letters,* Vol. 92, 013124, 2008.

» Litvinov, D., V. Parekh, C.E, D. Smith, J. Rantschler, P. Ruchhoeft, D. Weller, and S. Khizroev, "Nanoscale Bit-Patterned Media for Next Generation Data Storage Systems," *Journal of Nanoelectronics and Optoelectronics,* Vol. 3(2), 93-112, 2008.

» Litvinov, D., V. Parekh, C.E, D. Smith, J. Rantschler, P. Ruchhoeft, D. Weller and S. Khizroev, "Recording Physics, Design Considerations, and Fabrication of Nanoscale Bit-Patterned Media," *IEEE Transactions on Nanotechnology,* Vol. 7(4), 463–476, 2008.

» Parekh, V.C.E, P. Ruchhoeft, S. Khizroev, and D. Litvinov, "Magnetization Reversal in Patterned, (Co/Pd)(n) Multilayers," *Journal of Applied Physics,* Vol. 103(6), 063904, 2008.

Conference Proceedings & Presentations (2008)

» Ruchhoeft, P.,"Fabrication of Large-area Nanostructure Arrays using Aperture Array Lithography," The 8th International Conference on Nanotechnology, Arlington, TX 2008.

» Smith, D., J. Rantschler, P. Ruchhoeft, S. Khizroev and D. Litvinov, "The Effect of Size Distribution on the Switching Field Distribution of Co/Pd Multilayered Nanostructure Arrays," The 8th International Conference on Nanotechnology, Arlington, TX 2008.

» Ruiz, A., V. Parekh, J. Rantschler, P. Ruchhoeft, S. Khizroev and D. Litvinov, "Magnetic Annular Nanostructure Fabrication Using Ion Beam Proximity Lithography," The 8th International Conference on Nanotechnology, Arlington, TX 2008.

Funded Research Programs (2008)

» Western Regional Center for Biodefense and Emerging Infectious Diseases, Towards the Development of a Syndrome-Specific Diagnostic Tool

» Western Regional Center for Biodefense and Emerging Infectious Diseases, A Highly Sensitive, Low-Labor Pathogen Detector Based on Retroreflector-Linked Immunosorbent Assay

» State of Texas Advanced Research Program, Development of Implantable Glucose Monitor Technology Using Self-Assembling Micro-Retroreflectors

» National Science Foundation, MRI: Development of Polymorfos, a Versatile Source of Energetic Ions and Atoms for Nanostructure Manufacturing

» State of Texas Advanced Research Program, Nanoscale Patterning of Magnetic Recording Medium: Device Physics and Fabrication of Imprint Templates

» University of British Columbia, Fabrication and Suspension of Biologically Active Micro-Retroreflectors

David P. Shattuck

Associate Professor & Associate Dean for Undergraduate Programs

Ph.D., Duke University

Research Interests

Development of Computer-based Tools, Programs and Textbooks for Effective Instruction in Circuit Analysis and Electronics

Professional Service (2008)

» Associate Dean for Undergraduate Programs, UH Cullen College of Engineering

Bhavin R. Sheth

Assistant Professor

Ph.D., Massachusetts Institute of Technology

Research Interests

Visual Perception, Information Processing in Sleep, Functions of Sleep, Neuroimaging (MEG) of Autism and Related Developmental Disorders, Role of Emotion in Perception

Research Centers & Laboratories (2008)

» Center for Neuro-Engineering and Cognitive Science

Refereed Journal Publications (2008)

» Sheth, B.R. and D.A. Wu, "Single Mechanism, Divergent Effects; Multiple Mechanisms, Convergent Effect," *Behavioral and Brain Sciences,* 31, 215, 2008.

» Sheth, B.R. and S. Shimojo, "Adapting to an Aftereffect," *Journal of Vision.* 8, 1–10, 2008.

» Sheth, B.R., D. Janvelyan and M. Khan (2008) "Practice Makes Imperfect: Restorative Effects of Sleep on Motor Learning," *PLoS ONE* 3(9): e3190, 2008.

» Sheth, B.R. and T. Pham, "How Emotional Arousal and Valence Influence Access to Awareness," *Vision Research* 48: 2415–2424, 2008.

Conference Proceedings & Presentations (2008)

» Sheth, B.R., N. Ngyuen and D. Janvelyan, "How Sleep Affects Our Memory for Faces," Annual Meeting of the Society for Neuroscience, Washington, DC Vol. 34, Nov. 15–19, 2008.

» Coskun, M. A., S. Reddoch, D.A. Pearson, K. Loveland, E.M. Castillo, A.C. Papanicolaou and B.R. Sheth, "Do Individuals with Autism have Noisier Neural Circuits?" Annual Meeting of the Society for Neuroscience, Washington, DC, Vol. 34, Nov. 15–19, 2008.

» Wu, W., S. Liu and B.R. Sheth, "Physiological Signature of Loss of Consciousness during Sleep," Annual Meeting of the Society for Neuroscience, Washington, DC Vol. 34, Nov. 15–19, 2008.

» Sheth, B.R., M.A. Coskun, L. Varghese, S. Reddoch, E.M. Castillo, D.A. Pearson, K. Loveland and A.C. Papanicolaou, "Inhomogeneous Somatic Maps in Autism," International Meeting for Autism Research, London, UK 107.10, 55, May 15–17, 2008.

» Breitmeyer, B., T. Pham and B.R. Sheth, "How Emotional Arousal and Affect Influence Access to Visual Awareness [Abstract]," *Journal of Vision,* 8(6), 248, 248a, http://journalofvision.org/8/6/248/, doi:10.1167/8.6.248, 2008.

» Sheth, B.R., N. Nguyen and D. Janvelyan, "How Sleep Influences Our Memory for Faces [Abstract]," *Journal of Vision,* 8(6):876, 876a, http://journalofvision.org/8/6/876/, doi:10.1167/8.6.876.

Funded Research Programs (2008)

» National Alliance for Autism Research, Dynamic Topography of Somatosensory and Motor Systems in Individuals with Autism

Leang S. Shieh

Professor

Ph.D., University of Houston

Research Interests

Digital Control, Optimal Control, Self-tuning Control, Hybrid Control of Uncertain Systems, Soft Computing

Professional Service (2008)

» Reviewer, Army Research Proposal and various refereed journals

Research Centers & Laboratories (2008)

» Controls and Power Systems Laboratory

Books or Articles in Books Published (2008)

» Lu, Z., L.S. Shieh and G.R. Chen, "A New Topology for Artificial Higher Order Neural Networks – Polynomial Kernel Networks," in Artificial High Order Networks for Economics and Business.

» M. Zhang, Editor, *Information Science Reference* (IGI Global formerly Idea Group Publishing; ISBN: 978-1-59904-897-0; 542 pp), 431-441, July 2008.

Refereed Journal Publications (2008)

» Tsai, J.S.H., J.H. Lin, L.S. Shieh, C.R. Liu and S.M. Guo, "Decentralized Observer-Based Tracker for Analog Systems with Saturating Actuators and State Constraints," *Computers and Mathematics with Applications,* Vol. 55, No. 1, 1–22, Jan. 2008.

» Guo, S.M., K.T. Liu, J.S.H. Tsai and L.S. Shieh, "An Observer-Based Tracker for Hybrid Interval Chaotic Systems with Saturating Inputs: The Chaos-Evolutionary-Programming Approach," *Computers and Mathematics with Applications,* Vol. 55, No. 6, pp. 1225–1249, March 2008.

» Chen, P.Y., R.D. Chen, Y.P. Chang, L.S. Shieh and H.A. Malki, "Hardware Implementation for Genetic Algorithm," *IEEE Transactions on Instrumentation and Measurement,* Vol. 57, No. 4, 699–705, April 2008.

» Lee, H.J., L.S. Shieh and D.W. Kim, "Digital Control of Nonlinear Systems: Optimal Linearization-Based Digital Redesign Approach," *IET Control Theory and Applications,* Vol. 2, No. 4, 337–351, April 2008.

» Tsai, J.S.H., C.T. Wang, S.M. Guo, L.S. Shieh and C.R. Liu, "Observer-Based Digital Tracker for Maneuvering Target Described by the Continuous-Time Nonlinear Dynamic System," *Proceedings of the Institution of Mechanical Engineers, Part G, Journal of Aerospace Engineering,* Vol. 222, No. 2, 213–228, April 2008.

» Wang, S.P., L.S. Shieh, J.S.H Tsai and Y.P. Zhang, "Optimal Digital Controller and Observer Design for Multiple Time-Delay Transfer Function Matrice with Multiple Input-Output Time Delays," *International Journal of Systems and Science,* Vol. 39, No. 5, 461–476, May 2008.

» Tsai, J.S.H., J.Y. Lin, L.S. Shieh J. Chandra and S.M. Guo, "Self-Tuning Fault-Tolerant Digital PID Controller for MIMO Analogue Systems with Partial Actuator and System Component Failures," *IMA Journal of Mathematical Control & Information,* Vol. 25, No. 2, 221–238, June 2008.

» Tsai, J.S.H., C.L. Wei, S.M. Guo, L.S. Shieh and C.R. Liu, "EP-Based Adaptive Tracker with Observer and Fault Estimator for Nonlinear Time-Varying Sampled-Data Systems Against Actuator Failures," *Journal of the Franklin Institute* Vol. 345, No. 5, 508–535, Aug. 2008.

» Zhou, H.Q., L.S. Shieh, C.R. Liu and Q.G. Wang, "Digital Design of Combined PI and State Feedback Controller for Nonlinear Stochastic Systems," *IMA Journal of Mathematical Control & Information,* Vol. 25, No. 3, 305–322, Sept. 2008.

Conference Proceedings & Presentations (2008)

» Tsai, J.S.H., M.H. Lin, S.M. Guo, P.Y. Sun, L.S. Shieh and C.R. Liu, "Digital Redesign of the Decentralized Adaptive Control for Linear Large-Scale Systems with Actuator Faults," The 10th IASTED International Conference on Control and Applications, Quebec City, Quebec, Canada, May 26–28, 2008.

» Tsai, J.S.H., M.H. Lin, S.M. Guo, L.S. Shieh and C.R. Liu, "Novel State-Space Self-Tuning Control of Two-Dimensional Linear Discrete-Time Stochastic Systems for Active Fault Tolerant Control," The 12th Word MultiConference on Systemics, Cybernetics and Informatics (WMSCI 2008), Orlando, Florida, USA, June 29–July 2, 2008.

» Tsai, J.S.H., M.H. Lin, S.M. Guo and L.S. Shieh, "Digital Redesign of the Decentralized Adaptive Control for a Class of Nolinear Large-Scale Systems," The 2008 CACS International Automatic Control Conference (CACS/IACC 2008), Tainan, Taiwan, Nov. 21–23, 2008.

» Tsai, J.S.H., C.L. Wei, S.M. Guo and L.S. Shieh, "Tracker for Nonlinear Time-Varying Sampled-Data Systems against Actuator Failures," The 2008 CACS International Automatic Control Conference (CACS/IACC 2008), Tainan, Taiwan, Nov. 21–23, 2008.

» Tsai, J.S.H., Y.Y. Du, S.M. Guo, L.S. Shieh and C.W. Chen, "Improved Observer-Based Digital Redesign Tracker for Nonlinear Sampled Data Systems," The 2008 CACS International Automatic Control Conference (CACS/IACC 2008), Tainan, Taiwan, Nov. 21–23, 2008.

Funded Research Programs (2008)

» National Science Foundation, Development of an Innovative Multi-Functional Smart Vibration Platform

» Texas Department of Transportation, Laser Texture Measurement Devices

Len Trombetta

Associate Professor

Ph.D., Lehigh University

Honors & Awards (2008)

» Outstanding Teacher Award, UH Cullen College of Engineering

Research Interests

Dielectric Materials for Advanced CMOS Devices, including High–k Materials; MOS Insulator Defect Studies, Especially Hot Carrier Induced Defects, Si-SiO2 Interface Defect Generation and Radiation Damage; Electron Device Physics, particularly Ultra-Small MOSFETs; Defects in semiconductor materials

Professional Service (2008)

» ECE Effective Teaching Committee, 2008–present

» ECE ABET Committee Chair, 2005–present

» ECE Academic Standards Committee, 1995–2008

» College Curriculum Committee, 2005–2008

» Course coordinator for undergraduate electronics sequence, 1992–present

» NSF SBIR Phase I Review panel, March 2008

» Journal article reviews for *Journal of Applied Physics and Applied Physics Letters*

Research Centers & Laboratories (2008)

» Microelectronics Laboratory

Funded Research Programs (2008)

» AFRL/VS, Reduction in Susceptibility of MOS Devices to Radiation- and Electrically-Induced Defects

Donald R. Wilton

Professor

Ph.D., University of Illinois, Urbana-Champaign

Research Interests

Electromagnetic Theory, Computational Electromagnetics, Periodic Structures, Scattering, Electromagnetic Interference and Compatibility, Well Logging

Professional Service (2008)

» Chair, Raj Mittra Travel Grant Committee

Research Centers & Laboratories (2008)

» Applied Electromagnetics Laboratory

» Well Logging Laboratory

Refereed Journal Publications (2008)

» Burghignoli, P., G. Lovat, F. Capolino, D.R. Jackson and D.R. Wilton, "Modal Propagation and Excitation on a Wire Medium Slab," *IEEE Trans. Microwave Theory and Techniques,* Vol. 56, 1112–1124, May 2008.

» Lovat, G., P. Burghignoli, F. Capolino, D.R. Jackson and D.R. Wilton, "Directive Leaky-Wave Radiation from a Dipole Source in a Wire-Medium Slab," *IEEE Trans. Antennas and Propagation,* Vol. 56, 1329–1339, May 2008

» Khayat, M.A., D.R. Wilton and P.W. Fink, "An Improved Transformation and Optimized Sampling Scheme for the Numerical Evaluation of Singular and Near-Singular Potentials," *IEEE Antennas and Wireless Propagation Letters,* Vol. 7, 377–380, July 2008.

» Celepcikay, F.T., D.R. Wilton, D.R. Jackson and F. Capolino, "Choosing Splitting Parameters and Summation Limits in the Numerical Evaluation of 1-D and 2-D Periodic Green's Functions using the Ewald Method," *Radio Sci.,* Vol. 43, RS6S01, doi:10.1029/2007RS003820, 2008 (Invited).

Conference Proceedings & Presentations (2008)

» Celepcikay, F.T., D.R. Wilton, D.R. Jackson and F. Capolino, "Interpolation of 2D Periodic Layered-Medium Green's Function," URSI National Radio Science Meeting, Boulder, CO, Jan. 3–6, 2008 (Conf. Abstract).

» Burghignoli, P., G. Lovat, F. Capolino, D.R. Jackson and D.R. Wilton, "Omnidirectional Radiation from a Fabry-Perot Antenna based on a Metal Strip Grating," Riunione Nazionale di Elettromagnetismo (RiNEm 2008), Lecce, Italy, Sept. 15–18, 2008.

» Shen, J., R. Qiang , J. Chen, D.R. Jackson, D.R. Wilton and F. Capolino, "ASM-FDTD Method for Periodic Structures," XXIV URSI General Assembly, Chicago, IL, Aug. 2008 (Digest).

» Celepcikay, F.T., D.R. Wilton and D.R. Jackson, "Interpolation of 2D (?) Layered-Medium Periodic Green's Function," XXIV URSI General Assembly, Chicago, IL, Aug. 8-16, 2008 (Digest).

» Komanduri, V.R., F. Capolino, D.R. Jackson and D.R. Wilton, "Computation of the One-Dimensional Free-Space Periodic Green's Function for Leaky Waves using the Ewald Method," URSI General Assembly, Chicago, IL, Aug. 8–16, 2008 (Digest).

» Johnson, W.A., L.I. Basilio, D.R. Wilton, J.D. Kotulski, N.J. Champagne, A.A. Cruz-Cabrera and D.W. Peters, "EIGER Development and Application to an IR Frequency-Selective Surface," IEEE International Symposium on Antennas and Propagation, San Diego, CA, July 2008 (Digest).

» Champagne, N.J. and D.R. Wilton, "Integrating the Gradient of the Thin Wire Kernel," IEEE International Symposium on Antennas and Propagation, San Diego, CA, July 2008 (Digest).

» Wilton, D.R. and N.J. Champagne, "Evaluating the Gradient of the Thin Wire Kernel," IEEE International Symposium on Antennas and Propagation, San Diego, CA, July 2008 (Digest).

» Steshenko, S., F. Capolino, D.R. Wilton and D.R. Jackson, "Ewald Acceleration for the Dyadic Green's Functions for a Linear Array of Dipoles and a Dipole in a Parallel-Plate Waveguide," IEEE International Symposium on Antennas and Propagation, San Diego, CA, July 2008 (Symp. Digest).

» Shen, J., R. Qiang, J. Chen, D.R. Jackson, D.R. Wilton and F. Capolino, "3D ASM-FDTD Method for Periodic Structures," URSI General Assembly, Chicago, IL, Aug. 8–16, 2008 (Digest).

» Qiang, R., D.R. Jackson, D.R. Wilton, J. Chen and W. Kainz, "Time-Domain Modeling Techniques for Periodic Structures," IEEE International Symposium on Electromagnetic Compatibility (EMC 2008), Detroit, MI, Aug. 18–22, 2008 (Digest).

Funded Research Programs (2008)

» Well Logging Laboratories, Well Logging Consortium

John C. Wolfe

Professor

Ph.D., University of Rochester

Research Interests

Nanofabrication, Advanced Lithography, Charged Particle Optics, Reactive Ion Etching

Professional Service (2008)

» Member, Advisory Committee of the International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication

» Reviewer, *Journal of the American Vacuum Science and Technology*

Research Centers & Laboratories (2008)

» Nanosystem Manufacturing Center

Refereed Journal Publications (2008)

» Wolfe, J.C. and B.P. Craver, "Neutral Particle Lithography: A Simple Solution to Charge Related Artefacts in Ion Beam Proximity Printing," *Journal of Physics D,* Vol. 41, 024007–024018, Jan. 2008 (Invited).

» Bhargava, M., W. Donner, A.K. Srivastava and J.C. Wolfe, "Bragg Diffraction, Synchrotron X-Ray Reflectance, and X-Ray Photoelectron Spectroscopy Studies of Low Temperature Plasma Oxidation of Native SiO2 on SOI," *J. Vac. Sci. Technol. B,* Vol. 26, 305–309, Jan. 2008.

» Craver, B., H. Nounu, J. Wasson and J.C. Wolfe, "Neutral Particle Proximity Lithography: Non-Contact Nanoscale Printing without Charge-Related Artifacts," *J. Vac. Sci. Technol. B,* Vol. 26, 1866–1870, Nov. 2008.

» Parikh, D., B. Craver, H. Nounu, F. Fong and J.C. Wolfe, "Nanoscale Pattern Definition on Non-Planar Surfaces using Ion Beam Proximity Lithography and Conformal, Plasma-Deposited Resist," *Journ. Microelectromechanical Systems,* Vol. 17, 735–740, June 2008.

» Yao, M., O.-K. Tan, S.-C. Tjin and J.C. Wolfe, "Effects of Intermediate Dielectric Films on Multilayer Surface Plasmon Resonance Behavior," *Acta Biomaterialia,* Vol. 4, 2016–27, Nov. 2008.

Conference Proceedings & Presentations (2008)

» Craver, B., A. Roy, H. Nounu, H.-J. Guo and J.C. Wolfe, "Atom Beam Lithography: Proximity Lithography with Energetic Neutral Atoms," 2008 NSF CMMI Engineering Research and Innovation Grantees and Research Conference, Knoxville, TN. Jan. 7–10, 2008

» Craver, B., A. Roy, H. Nounu and J.C. Wolfe, "2-Dimensional Mechanical Nanostepping for Neutral Particle Aperture Array Lithography," 52nd International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Portland, OR, May 26–29, 2008.

» Parikh, D., H. Fotowat, F. Gabbiani and J.C. Wolfe, "A Multi-Electrode Cuff for Neuronal Sensing in the Locust: Pattern Definition over Aggressively Non-Planar Topography," 52nd International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), Portland, OR, May 26–29, 2008.

» Craver, B., A. Roy, H. Guo, J. Reynolds, H. Nounu, L.E. Ocola and J.C. Wolfe, "An Atom Beam Lithography Tool for Fabricating Dense Nanostructure Arrays," 20th International Conference on the Application of Accelerators in Research and Industry, Ft. Worth, TX, Aug. 10–15, 2000.

Funded Research Programs (2008)

» National Science Foundation, NIRT: Nanomanufacturing Strategy and System Design for Nanoscale Patterned Magnetic Recording Medium.

» National Science Foundation, MRI: Development of an Energetic Atom Beam Lithography System for Nanosystem Prototyping and Manufacturing

» Axcelis Technologies, Surface Wave Plasma Ashing Studies

» National Science Foundation, Collaborative Research: Role of Neuronal Activity In Visually Guided Escape Behaviors

Jarek Wosik

Research Professor

Ph.D., Institute of Physics, Polish Academy of Science, Warsaw, Poland

Research Interests

Magnetic Resonance Imaging (MRI) Cryogenic Arrays for Osteoporosis, Novel MRI Coil Designs for 3D Eye Growth Study of Infant Rhesus Monkeys, Rf Induced Cancer Hyperthermia with Nanoparticles, Microwave Characterization of Superconducting Materials.

Professional Service (2008)

» Journal Reviewer, *IEEE Transactions on Applied Superconductivity, Journal of Applied Physics, Applied Physics Letters, Physics Review Letters, Superconductor Science and Technology*

» Grant Reviewer, Research Grants Council of Hong Kong, DoD-AirForce (superconducting electronics), Science and Technology Center in Ukraine (funded by EU and US), NSF (Solid State Div.)

» Editorial board: Technical Co-Editor for *IEEE Trans. on Applied Superconductivity* special issue (ASC-2008)

Research Centers & Laboratories (2008)

» High Frequency Bioengineering Laboratory

Refereed Journal Publications (2008)

» Bockhorst, K.H., P.A. Narayana, R. Liu, P. Ahobila-Vijjula, J. Ramu, M. Kamel, J. Wosik, T. Bockhorst, K. Hahn, K. M. Hasan and J.R. Perez-Polo, "Early Postnatal Development of Rat Brain: In Vivo Diffusion Tensor Imaging," *Journal of Neuroscience Research,* Vol. 86, No. 7, 1520–1528, May 2008.

» Padmaraj, D., W. Zagozdzon-Wosik, L.-M. Xie, V.G. Hadjiev, P. Cherukuri and J. Wosik, "Parallel and Orthogonal E-Field Alignment of Single-Walled Carbon Nanotubes by AC Dielectrophoresis," *Nanotechnology,* Vol. 20 p. 035201, Dec. 2008 (online).

Conference Proceedings & Presentations (2008)

» Darne, C.D., L.-M. Xie, D. Padmaraj, P. Cherukuri W. Zagozdzon-Wosik and J. Wosik, "Resonant and Broadband Microwave Permittivity Measurements of Single-walled Carbon Nanotubes," *Nanotubes and Related Nanostructures,* edited by Yoke Khin Yap (*Mater. Res. Soc. Symp. Proc.* Volume 1057E) 2008.

» Wosik, J., C. Darne, L.-M. Xie, W. Zagozdzon-Wosik, J. Krupka and H.K. Schmidt, "Complex Permittivity Measurements of Single-Walled Carbon Nanotubes Fibers," Proc. of the 5th International Conference on Microwave Materials and Their Applications, 5, Hangzhou, China, Nov. 1–4, 2008.

» Xue, L., L.-M. Xie, M.R. Kamel, F. Ip, J. Wosik, A.C. Wright and F.W. Wehrli, "Investigation of Mutual Inductance Coupling and Capacitive Decoupling of N-Element Array System," *Proc. Intl. Soc. Mag. Reson. Med.* 16, p. 1186, 2008.

» Wosik, J., K. Nesteruk, M.R. Kamel, F. Ip, L. Xue, A.C. Wright and F.W. Wehrli, "Cryogenic Varactor-Tuned 4-element Array and Cryostat for μ-MRI of Trabecular Bone in the Distal Tibia," *Proc. Intl. Soc. Mag. Reson. Med.* 16, p. 443, 2008.

» Wosik, J., K. Nesteruk, M.R. Kamel, F. Ip, L.-M. Xie, A.C. Wright and F.W. Wehrli, "A Novel Planar Design for a 3 T Superconducting "Intrinsically Detuned" MRI Coil," *Proc. Intl. Soc. Mag. Reson. Med.* 16, p. 1107, 2008.

» Xue, L., L.-M. Xie, M.R. Kamel, F. Ip, J. Wosik, A.C. Wright and F.W. Wehrli, "Investigation of Mutual Inductance Coupling and Capacitive Decoupling of N-Element Array System," 16th Annual Intl. Soc. Mag. Reson. Med. Meeting, Toronto, Canada, May 5–9 2008.

» Wosik, J., K. Nesteruk, M.R. Kamel, F. Ip, L. Xue, A.C. Wright and F.W. Wehrli, "Cryogenic Varactor-Tuned 4-element Array and Cryostat for μ-MRI of Trabecular Bone in the Distal Tibia," 16th Annual Intl. Soc. Mag. Reson. Med. Meeting, Toronto, Canada, May 5–9 2008.

» Wosik, J., K. Nesteruk, M.R. Kamel, F. Ip, L.-M. Xie, A.C. Wright and F.W. Wehrli, "A Novel Planar Design for a 3 T Superconducting "Intrinsically Detuned" MRI Coil," 16th Annual Intl. Soc. Mag. Reson. Med. Meeting, Toronto, Canada, May 5–9 2008.

» Darne, C.D., "Microwave Characterization of Single-walled Carbon Nanotubes (SWNT) using Split Post Dielectric Resonator (SPDR) Technique," 35rd Semiannual TcSUH Student Symposium, Texas Center for Superconductivity at UH, Houston, TX, May 16, 2008.

» Wosik, J., "Novel RF Sensors for MRI and Therapeutic Devices for Cancer Treatment," IBIS Retreat 2008, Hilton Hotel, UH, March 9, 2008.

Funded Research Programs (2008)

» National Institutes of Health/University of Pennsylvania, Structural MRI of Trabecular Bone for Therapy Response Monitoring

» TcSUH, Rf HTS Sensors for MRI and Therapeutic Devices for Cancer Treatment

» TcSUH, Cryogenic MRI coils

» University of Texas/National Institutes of Health, The Development of Quantitative Perfusion Techniques on the 7T Scanner for Spinal Cord and Brain

» IBIS, Radio Frequency Induced Destruction of Cancer Cells

Wanda Zagozdzon-Wosik

Associate Professor

Ph.D., Warsaw University of Technology, Warsaw, Poland

Research Interests

Novel Materials for Nano-Scale Integrated Circuits; Silicon Processing Including VLSI Process Integration and Process/Device Simulation; Nano- and Micro-Electromechanical Systems (NEMS/MEMS) for Applications in Biomedical Sensors

Professional Service (2008)

» Member, Process/Technology Subcommittee

» Session Chair, IEEE Bipolar/BiCMOS Circuit and Technology Meetings

» Member, Board of Electrochemical Society, South Texas Section Secretary, Treasurer Member, Program Committee of International Rapid Thermal Processing Conference Member, Technical Program Subcommittee of Rapid Thermal Processing Symposium in European Material Research Society

» Reviewer, *Journal of Vacuum Science and Technology, Superlattices and Microstructures and Material Research Society*

Research Centers & Laboratories (2008)

» Microelecromechanical Systems

» Nanomechanical Systems

Refereed Journal Publications (2008)

» Padmaraj, D., W. Zagozdzon-Wosik, L.-M. Xie, V.G. Hadjiev, P. Cherukuri and J. Wosik, "Parallel and Orthogonal E-Field Alignment of Single-Walled Carbon Nanotubes by AC Dielectrophoresis," *Nanotechnology,* Vol. 20, p. 035201, Dec. 2008.

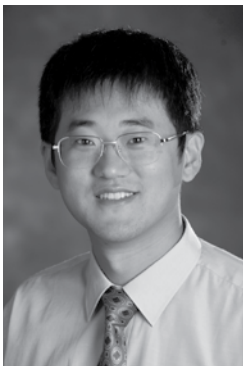
Conference Proceedings & Presentations (2008)

» Darne, C.D., L.-M. Xie, D. Padmaraj, P. Cherukuri, W. Zagozdzon-Wosik and J. Wosik, "Resonant and Broadband Microwave Permittivity Measurements of Single-Walled Carbon Nanotubes," *Nanotubes and Related Nanostructures,* edited by Yoke Khin Yap, Mater. Res. Soc. Symp. Proc., Vol. 1057E, 1057–II15–61 Warrendale, PA, 2008.

» Wosik, J., C. Darne, L.-M. Xie, W. Zagozdzon-Wosik, J. Krupka and H.K. Schmidt, "Complex Permittivity Measurements of Single-Walled Carbon Nanotubes Fibers," Proc. of the 5th International Conference on Microwave Materials and Their Applications, 5, Hangzhou, China, Nov. 1–4, 2008.

Funded Research Programs (2008)

» ARP, Physical Mechanisms of Biological Rotary Motors



Qingkai Yu

Research Assistant Professor

Ph.D. University of Houston

Research Interests

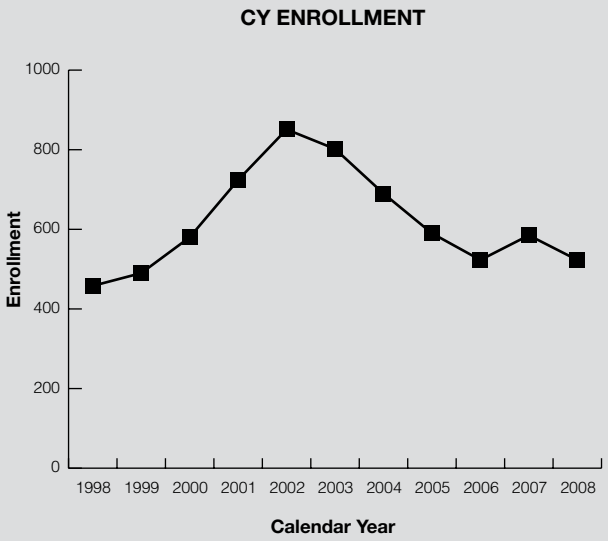
Electronic materials, nanomaterials, nanofabrication and nanodevices.

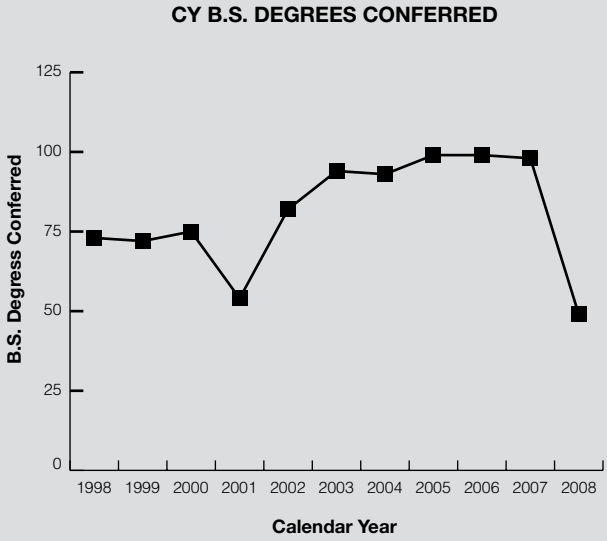
Refereed Journal Publications (2008)

» Yu, Q., J. Lian, S. Siriponglert, H. Li, Y. Chen and S.-S. Pei, "Graphene Segregated on Ni surfaces and Transferred to Insulators," *Applied Physics Letters,* 93, 113103 (2008); also selected for *Virtual Journal of Nanoscale Science & Technology,* Vol. 18, No. 13, Sept. 29, 2008.

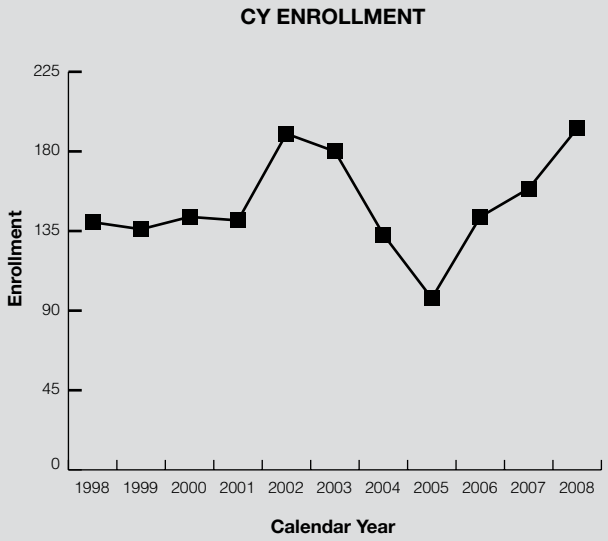
» Wu, W., Q. Yu, J. Zhang, J. Lian, G. Liang, R. Ewing and S.-S. Pei, "Horizontally-Aligned Growth of Cu5Si Polycrystalline Nanorods on Si," *Apply Physics Letters,* 92, 253113, 2008.

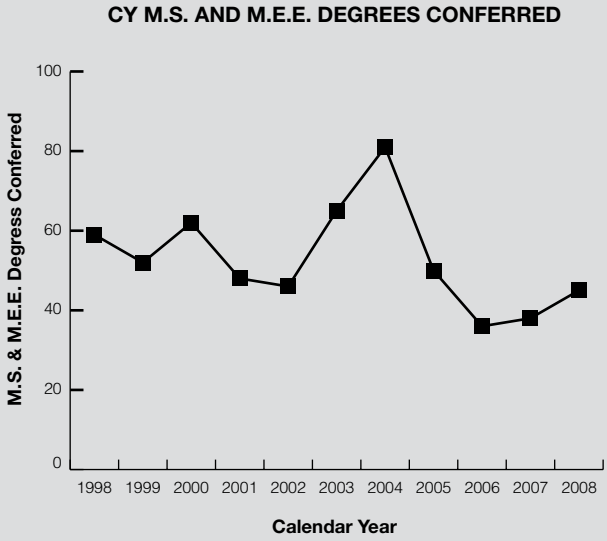
Undergraduate Program



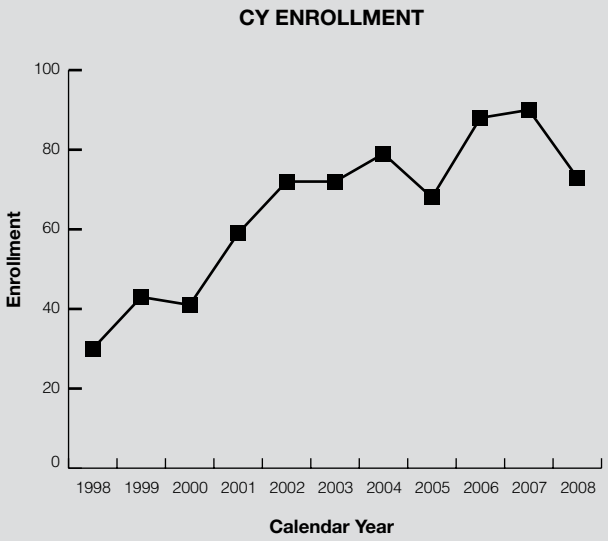


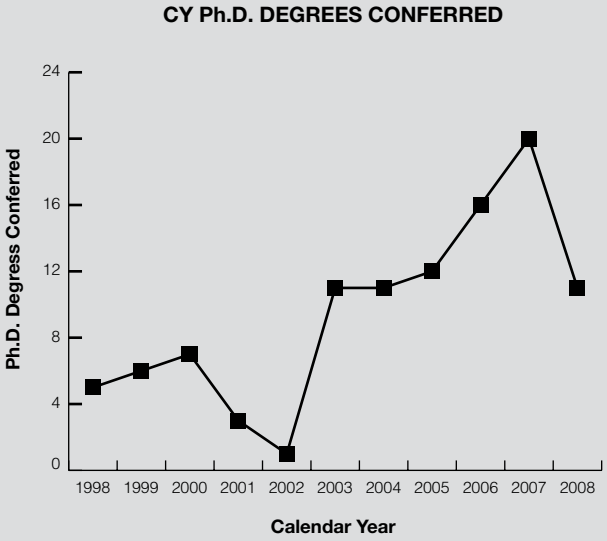
M.S. and M.E.E. Programs



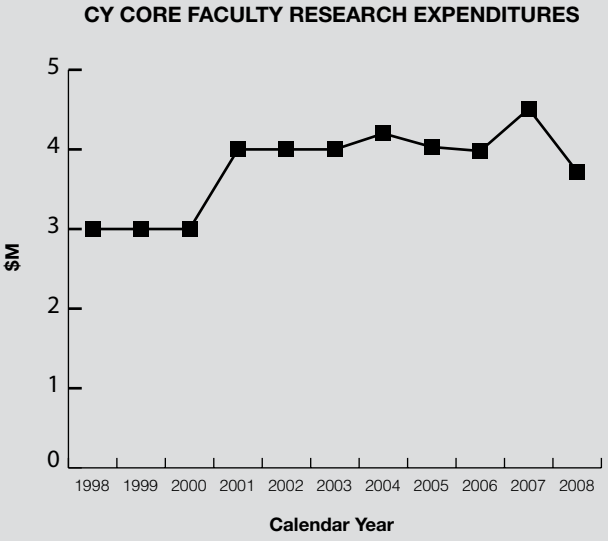


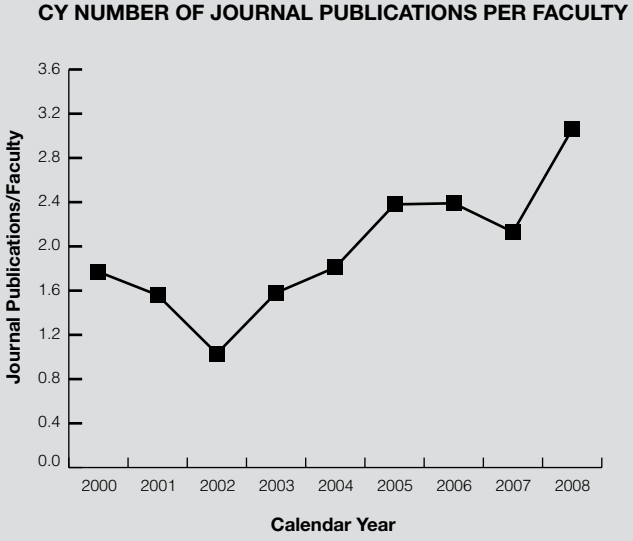
Ph.D. Program





Research





Principal Investigator	Agency	Period of time	Amount Awarded	Title
S.R. Brankovic, D. Litvinov, R. Carpenter, N. Gokemeijer	National Science Foundation/GOALI	2008-2011	$ 450,000	Phase Separated Ferromagnetic Metal-Metal Oxide/Hydroxide Nanomaterials as a Transformative Concept for Magnetic Field Sensors
S.R. Brankovic	ASC-Petroleum Fund	2008-2010	$ 50,000	Structure – Property Relation of Monolayer Catalysts Obtained by Galvanic Displacement of Underpotentially Deposited Monolayers
S.R. Brankovic, P. Ruchhoeft	Department of Defense	2007-2008	$ 97,397	Single Ferromagnetic Nanocontact Based Devices as Magnetic Field Sensors
S.R. Brankovic	National Semiconductor Corporation	2008-2010	$ 130,000	Stress Control in Electrodeposited NiFe Alloys
S.R. Brankovic	Texas Center for Superconductivity (Seed)	2008-2009	$ 20,000	Electrodeposition of Exchange Spring Magnet Nanomaterials
S.R. Brankovic, P. Sharma	Grant to Enhance and Advance Research (GEAR), University of Houston	2007-2008	$ 46,970	Guided Self-assembly Based Fabrication of Nanostructures, their Properties and Emergent Applications in Energy and Sensing
J. Bear, E.J. Charlson, et al.	National Science Foundation	2005-2011	$ 3,022,500	Alliance for Graduate Education and the Professorate (Rice/UH)
J. Chen	Food and Drug Administration	2006-2008	$ 121,000	The Development of Two Human Subject EM CAD models
J. Chen	RIM	2006-2008	$ 80,000	SAR Modeling in Wireless Communications
J. Chen	National Science Foundation	2007-2008	$ 10,000	Center for EMC Research
J. Chen	NASA	2007-2008	$ 25,000	Parallel MPI Code
J. Chen, D.R. Jackson	Tubel Technology	2008-2009	$ 38,000	Wireless Power Transfer
J. Chen	St. Jude Medical System	2008-2010	$ 160,000	MRI Safety for Implantable Device
J. Chen	Cyberonics	2008-2009	$ 60,000	MRI Safety for Gradient Coil
J. Chen	Huawei Technology	2008-2009	$ 80,000	Wireless Filter Modeling Tool
Y. Chen	National Science Foundation	2007-2010	$ 298,897	CRI:IAD: Reconfigurable Optical Burst Switching Research Testbed Acquisition and Development
Y. Chen	Texas Higher Education Coordinating Board	2008-2010	$ 149,800	Latency and Jitter Control for Telesurgery and Telemedicine Using Asymmetric WDM Burst Switching
F. Claydon, S.A. Long	Texas Workforce Commission	2007-2009	$ 300,000	University of Houston Youth in Technology Project
F. Claydon, S.A. Long	National Science Foundation	2007-2010	$ 497,997	RET Site at the University of Houston: "Innovations in Nanotechnology"
F. Claydon, S.A. Long	Texas Workforce Commission	2007-2008	$ 62,302	Peer Mentoring, Scholarships and Work Study Support
F. Claydon, S.A. Long	National Science Foundation	2007-2010	$ 318,687	The University of Houston Research Experience for Undergraduate, "Innovations in Nanotechnology"
F. Claydon, S.A. Long	Texas Higher Education Coordinating Board	2006-2008	$ 274,889	Step Forward: Preparing Low-Income High School Students for Academic Success in ECE at UH
F. Claydon, S.A. Long	National Science Foundation	2003-2008	$ 435,530	RET Site: Research Experiences for Greater Houston High School Science and Math Teachers
Z. Han	National Science Foundation	2008-2010	$ 216,000	Collaborative Research: Trusted Cooperative Transmission: Turning a Security Weakness into a Security Enhancement
Z. Han (Co-PI)	Air Force Office of Scientific Research	2008-2009	$ 100,000	Reconfigurable Electronics and Non-Volatile Memory Research
Z. Han	University of Houston	2008-2009	$ 6,000	
T.J. Herbert	Burdine Endowment, Texas Medical Center	2007-2008	$ 42,000	Extracting Functional Information from Gated Myocardial Perfusion Image Sequences
B.H. Jansen	Grant to Enhance and Advance Research (GEAR), University of Houston	2007-2008	$ 50,000	Neuro-engineering Technologies for Imaging Brain Function
B.H. Jansen	UH-IBIS (travel grant)	2007-2008	$ 5,800	Functional Brain Imaging: Joint Methods Development and Application to Neuropsychiatric Disease

Principal Investigator	Agency	Period of time	Amount Awarded	Title
V.A. Kalatsky	Human Frontier Science Program (HFSP)	2006-2009	$ 750,000	Spatial and Temporal Dynamics of Plasticity in Adult Visual Cortex: High Resolution Imaging Study
V.A. Kalatsky	Grant to Enhance and Advance Research (GEAR), University of Houston	2007-2008	$ 24,832	Fast Intrinsic Signals and their Utility for Optical Imaging of Brain Function
V.A. Kalatsky	IBIS	2008-2009	$ 2,000	Travel Grant to Establish Collaboration with WMC
D. Litvinov, K. Larin (PI)	Health Resources and Services Administration	2008-2009	$ 615,722	Acquisition of Core Equipment to Support NanoHealth-Related Biomedical Research in the Greater Houston Area
D. Litvinov (PI), F. Claydon, P. Sharma, H. Rifai, S. Long	National Science Foundation	2008-2010	$ 199,998	NUE: Development of the NanoEngineering Minor Option (NEMO) at the University of Houston
D. Litvinov (PI), M. Ferrari, D. McKay, A. Jacobson, A. Ignatiev	National Science Foundation	2008-2010	$ 380,000	MRI: Consortium Proposal: Acquisition of a Dual Beam Focused Ion Beam System to Support Transformative Device and Materials Research in the Greater Houston Area
D. Litvinov (PI), P. Ruchhoeft	Texas Advanced Research Program	2008-2010	$ 149,981	Nanoscale Patterned Magnetic Recording Medium: Device Physics and Fabrication of Imprint Templates
S. Brankovic (PI), D. Litvinov, R. Carpenter	National Science Foundation	2008-2011	$ 449,793	GOALI: Phase Separated Ferromagnetic Metal-Metal Oxide/ Hydroxide Nanomaterials as a Transformative Concept for Magnetic Field Sensors
D. Litvinov (PI), S. Khizroev	National Science Foundation	2007-2010	$ 361,561	GOALI: Dynamics and Manipulation of Logic States in Couples Nanomagnetic Arrays
D. Litvinov (PI), R. Willson, J.C. Wolfe	National Institutes of Health	2005-2008	$ 891,000	Development of Nanomagnetic Sensor Array for High Throughput Molecular Screening
D. Litvinov (PI), J.C. Wolfe	Office of Naval Research	2006-2008	$ 150,000	Design and Scalability Physics of Nanomagnetic Device Structures for Magnetoelectronics, Magnetic Field Sensors, and Biosensor Applications
D. Litvinov (PI), R. Lee, D. Weller, C.G. Willson, J.C. Wolfe	National Science Foundation	2004-2008	$ 1,099,808	NIRT: Nanomanufacturing Strategy and System Design for Nanoscale Patterned Magnetic Recording Medium
C. Liu	Texas Department of Transportation	2008-2009	$ 50,000	Ground and Air Coupled FCC Compliant GPS Systems
C. Liu	13 Oil and Service Companies	2007-2008	$ 350,000	Well Logging Projects
C. Liu	Oil and Service Companies	2007-2008	$ 51,000	API Calibration Facility
C. Liu	Texas Department of Transportation	2007-2009	$ 210,000	Laser Texture Measurement Device
S.A. Long, F. Claydon, D. Roberts, R. Herman, C. Waight	National Science Foundation	2003-2008	$ 1,511,236	STEP-AHEAD: Access to Higher Education through Academic Retention and Development at the University of Houston
S.A. Long, F. Claydon	National Science Foundation	2008-2013	$ 598,568	S-STEM: A Pathway to Success for Academically Promising Low-Income Engineering Students at an Urban University
H. Ogmen	Disruptive Technology Office (DTO) via intuVision Inc.	2006-2008	$ 63,398	Cognitive Concepts for Video Content
S.S. Pei	Center for Advanced Materials	2007-2009	$ 100,000	Nano-tube and Nano-wre for Optoelectronic Applications
S.S. Pei	National Institute of Justice	2007-2008	$ 977,356	Continue Support of the Southwest Public Safety Techonlogy Center
S.S. Pei	National Science Foundation	2006-2009	$ 120,000	Large Scale Synthesis of Horizontally Aligned SiC Nanowires for Devices
S.S. Pei	Harris County	2007-2009	$ 216,000	Houston Ship Channel Security
P. Ruchhoeft, R. Willson (PI), R. Atmar	Western Regional Center for Biodefense and Emerging Infectious Diseases	2008-2009	$ 228,234	Towards the Development of a Syndrome-Specific Diagnostic Tool
P. Ruchhoeft, R. Willson, R. Atmar	Western Regional Center for Biodefense and Emerging Infectious Disease	2006-2008	$ 280,007	A Highly-Sensitive, Low-Labor Pathogen Detector Based on Retroreflector-Linked Immunosorbent Assay
P. Ruchhoeft, R. Willson	State of Texas Advanced Research Program	2006-2008	$ 100,000	Development of Implantable Glucose Monitor Technology Using Self-Assembling Micro-Re troreflectors

Principal Investigator	Agency	Period of time	Amount Awarded	Title
P. Ruchhoeft (PI), R. Willson	University of British Columbia	2008-2009	$ 30,000	Fabrication and Suspension of Biologically Active Micro-Retroreflectors
B.R. Sheth	National Alliance for Autism Research	2006-2009	$ 120,000	Dynamic Topography of Somatosensory and Motor Systems in Individuals with Autism
L.S. Shieh, G. Song (PI), H. Malki, Y.L. Mo, H. Hutchins	National Science Foundation	2007-2010	$ 316,000	Development of an Innovative Multi-Functional Smart Vibration Platform
L.S. Shieh, X. Chen, J. Li, R. Liu (PI)	Texas Department of Transportation	2006-2008	$ 240,000	Laser Texture Measurement Devices
L. Trombetta	AFRL/VS, BAA	2007-2009	$ 60,000	Reduction in Susceptibility of MOS Devices to Radiation- and Electrically-Induced Defects
D.R. Wilton	Well Logging Laboratories	2008	$ 52,500	Well Logging Consortium
J.C. Wolfe	Axcelis Technologies	2005-2009	$ 397,000	Surface Wave Plasma Ashing Studies
J.C. Wolfe (PI), V. Donnelly, D. Economou, D. Litvinov, P. Ruchhoeft	National Science Foundation	2005-2008	$ 298,336	MRI: Development of an Energetic Atom Beam Lithography System for Nanosystem Prototyping and Manufacturing
J. Wosik	NIH/UPenn	2005-2010	$ 486,000	Structural MRI of Trabecular Bone for Therapy Response Monitoring
J. Wosik	TcSUH	2008-2009	$ 125,000	Rf Sensors for Biomedical Applications
J. Wosik	UT/NIH	2006-2008	$ 32,500	Development of Quantitative Perfusion Techniques for Both Spinal Cord and Brain
J. Wosik, Z.Z. Shi	IBIS	2008-2009	$ 75,000	Radio Frequency Induced Destruction of Cancer Cells
W. Zagozdzon-Wosik, J.H. Miller	ARP	2008-2009	$ 110,000	Physical Mechanisms of Biological Rotary Motors

Ph.D. Dissertations Completed

Student	Dissertation Title	Advisor
Joseph, Clement	Solid State Integrated Optoelectronic Biochemical Sensor for Multivariable Analysis	E.J. Charlson, A. Bensaoula
Song, Yang	Design and Development of a Ferroelectric Micro Photo Detector for the Bionic Eye	A. Ignatiev
Dong, Weixin	Phase and Group Delays for Circularly-Polarized GPS Microstrip Antennas	D.R. Jackson, J.T. Williams
Jung, Ilmo	Cross-layer Congestion Control for Video Streaming over 3G Wireless Networks	N. Karayiannis
Wang, Yang	Laser Multi-Spectral Polarimetric Diffuse-Scatter (LAMPODS) Imaging	H.Q. Le
Smith, Darren	A Study of Switching Field Distribution in Bit Patterned Media Fabricated by Ion Beam Lithography	D. Litvinov
Tang, Yumei	Modeling and Inversion of Multicomponent Induction Logs in a Biaxial Anisotropic Formation	R. Liu
Ruiz, Ariel	Fabrication of Annular Nanostructures Using Ion Beam Proximity Lithography	P. Ruchhoeft
Madsen, J.M.	Digital PID Control of Hybrid Multivariable Systems with Multiple Time Delays	L. S. Shieh
Craver, Barry	Neutral Particle Lithography	J.C. Wolfe
Darne, Chinmay	High Frequency Characterization of Single-Walled Carbon Nanotubes	W. Zagozdzon-Wosik, J. Wosik

(Full abstracts can be found at www.egr.uh.edu/ece/research/?e=dissertation.)

Student	Field	Tentative Title	Advisor	Exp. Comp.
Pillai, Rajeev	Microelectronics/ Optoelectronics	Single Chip-Intergrated Multi-Band Photodrode Structures Based on III-Nitrides Grown on Silicon	A. Bensaoula	2009
Gokcen, Dincer			S. Brankovic	2010
Bhaskaran, Shivakumar	Solid State	Deposition and Characterization of Polycrystalline Doped Diamond by Hot Filament Chemical Vapor Deposition	E.J. Charlson	2009
Radhakrishnan, Gokul	Solid State	Epitaxial Growth of III-v Nanowires on Silicon for PV Applications	E.J. Charlson	2009
Troha, Don	Microelectronics		E.J. Charlson	2009
Wu, Yanmin		Wireless Telemetry System Development	J. Chen	2010
Shen, Jianxiang	Computer Engineering	Bioelectromagnetic Modeling	J. Chen	2011
Wang, Minshen		Bioelectromagnetic System Modeling	J. Chen	2012
Hames, Kevin	Computer Engineering	Fault Tolerant Circuit Designs for Radiation Hardened Circuits	J. Chen	
Shete, Vikram	Computer Engineering	Asymmetric Optical Burst Switching	Y. Chen	2010
Wang, Lei	Computer Engineering	Providing Quality-of-Service in Optical Burst Switching Networks	Y. Chen	2010
Zha, Yiyong	Computer Engineering	Concurrent Multi-Mode WDM Switching	Y. Chen	2012
Reynolds, Dustin	Biomedical Signal Analysis	A System for the Detection of Epileptic Seizure in Neonatal EEG	J. Glover	2012
Meng, Jia	Signal Processing	Compressive Sensing and its Applications	Z. Han	2010
Yu, Boyuan	Wireless Security	Cooperation and Competition in Wireless Physical Layer Security	Z. Han	2011
Gallardo, Victor	Video Processing	Real-time Processing of Video Data from an Adaptive Optics Retinal Imaging System	T.J. Hebert	2011
Komanduri, Varadarajan	Applied Electromagnetics	Analysis of Periodic Leaky Wave Antennas using the MPIE Method	D.R. Jackson, J.T. Williams, D.R. Wilton	2008
Celepcikay, Ferhat T	Applied Electromagnetics	Efficient Computation of Periodic Green's Functions in Layered Media	D.R. Jackson, D.R. Wilton	2009
Dang, Lien	Applied Electromagnetics	High Power Reduced Lateral Wave Antenna	D.R. Jackson, J.T. Williams	2009
Huynh, Phuc	Applied Electromagnetics	Reduced Lateral Wave Dielectric Resonator Antennas	D.R. Jackson, S.A. Long	2009
Zhou, Nan	Electromagnetics		D.R. Jackson	2013
Bonala, Bharat	Neuro-Engineering	P300 Modeling	B.H. Jansen	2009
Du, Xioafei	Neuro-engineering	Modeling of Sensory Gating	B.H. Jansen	2009
Gerber, David	Neuro-Engineering	Spatio-temporal Evoked Potential Analysis	B.H. Jansen	2009
Zhu, Xi	Neuro-engineering	fMRI Analysis of Sensory Gating	B.H. Jansen	2010
Hu, Bian	Optical sensor	Microscopic Multispectral Laser Diffuse-Scatter Imaging	H.Q. Le	2009
Chang, Long		Magnetic Recording Physics of Bit-Patterned Magnetic Recording Medium	D. Litvinov	2011
Wang, Yi-Ju		Biomagnetic Sensors for Medical Diagnostics	D. Litvinov	2011
Cai, Yu	Sensor Technology	Application of RFID System and Point Laser System in Highway Maintenance	R. Liu	2009
Naseri, Hamid	Well Logging	Relay-Based Wireless Telemetry System for LWD Systems	R. Liu	2009
Zhou, Jinjuan	Well Logging	3-D FDM for Solution of Logging Problems Using Potential Equations	R. Liu	2009
Ren, Wei	Sensor Technology		R. Liu	2011
Wang, Huaping			R. Liu	2011
Xing, Yinan			R. Liu	2012
Liu, Ziting			R. Liu	2013

Student	Field	Tentative Title	Advisor	Exp. Comp.
Hu, Guoyu	Electromagnetics		R. Liu	
Li, Jing	Well Logging		R. Liu	
Wu, Min	Subsurface Sensing	Fast Image Processing Algorithms for CCD Image Processing	R. Liu	
Xie, Jiabin	Sensor Technology	Extracting Skid Number from Texture Laser data	R. Liu	
Zhang, Zhijuan			R. Liu	
Wu, Wei	Microelectronics	Aligned Nano-wires and Nano-tubes for Optoelectronic Applications	S.S. Pei	2012
Nasrullah, Azeem	Microelectronics	Fabrication of Micro-Structured Immersion Lens Arrays for Nanopantography and Suspended Nanoparticles with Optimized Extinction Properties	P. Ruchhoeft	2011
Sherlock, Timothy	Microelectronics	Development of Highly Sensitive, Low-Labor Pathogen Detector Based on Retroreflector-Linked Immunosorbent Assays	P. Ruchhoeft	2011
Wu, WeiWei			B.R. Sheth	2012
Coskun, Mehmet Akif	Signal/Images Processing		B.R. Sheth	
Cofie, Penrose	Control Systems	Self-Tuning Control of Nonlinear Systems	L.S. Shieh	2009
Wu, Jian	Control Systems	Nonlinear Control Systems	L.S. Shieh	2009
Olmi, Claudio	Control Systems	Vibration Control Systems	L.S. Shieh, G. Song	2010
Guo, Hong-jie	Microelectronics	Development of a High Brightness Source for Neutral Particle Lithography	J.C. Wolfe	2009
Roy, Ananya	Microelectronics	Shot Noise in iIon/Neutral Beam Nanolithography	J.C. Wolfe	2009
Vemula, Sri	Advisor Microelectronics	Process Studies for the Removal of High Dose Implanted Resist	J.C. Wolfe	2009
Liu, Rui	Bio-Engineering	The Development of Quantitative Perfusion Techniques on the 7T Scanner for Spinal Cord and Brain	J. Wosik, P. Narayana (UT)	2009
Ip, Flora	Bio-Engineering	4-Elements HTS Phased-Array for Micro-MRI of Bone Structure	J. Wosik, J. Williams	2009
Padmaraj, Divya		Microfulidic System for Applications to Bioimpedance Measurements of cells	W. Wosik	2010
Pande, Rohit		BioMEMS in Electrical Measurements of Cells	W. Wosik	2011
Lancaster, Keith	Signal/Image Processing		G. Zouridakis	
Skewes, Aaron	Signal/Image Processing	Analysis of the Frequencies of Short DNA Subsequences in Bacterial Genomes	G. Zouridakis	

Master Theses Completed

Student	Title	Advisor
George, Jinnie	Critical Parameters of Solution Design for Electrodeposition of Soft 2.4T CoFe Alloys	S. Brankovic
Qian, Zhen	Development of a CAD Adult Female Anatomical Model for Electromagnetic Application	J. Chen
Thaker, Mona	Packet Sequencing in Optical Burst Switching Network	Y. Chen
Pore, Madhurima	Interconnection Networks for System on Chips	Y. Chen
Zhai, Zhi	Exploring Wireless Sensor Network Configurations for Prolonging Network Lifetime	Y. Chen
Shrestha, Barsha	Wireless Access in Vehicular Environments Using Bit Torrent and Bargaining	Z. Han
Lau, Anthony	Investigation of Fields from Broadband over Power Line Communications	D.R. Jackson, J.T. Williams
Shete, Vikram	Miniaturization of Reduced Surface Wave Antennas	D.R. Jackson, J.T. Williams
Viswanathan, Deepa	The Effect of Stimulus Expectancy on Dishabituation	B.H. Jansen
Manapuram, Ravi Kiran	Development of a High-Speed Phase Stabilized Low-Coherence Interferometer for Biomedical Research	K. Larin
Ogirala, Rajesh Siva Sai	A Low Cost 3D Ladar For Automobiles Surrounding Awareness	H.Q. Le
Bhardwaj, Ashutosh	1-D Inversion of Tri-axial Induction Logs in Anisotropic Medium	R. Liu
Zhong, Li	Response of Induction and LWD Tools in Cylindrically Layered Media	R. Liu
Chopra, Pankaj	Study of Laser Triangulation Distance Sensors	R. Liu
Ragoonanan, Yasoda	Feature Attribution in Human Vision: The Role of Form and Distance	H. Ogmen
Singla, Mithun	Advanced Control of Piezoceramic Devices	L.S. Shieh, G. Song
Padmaraj, Divya	Dielectric Characterization of Micro and Nano Scaled Particles delivered by means of Dieletrophoresis on Silicon Structures	W. Wosik
Pendhakar, Amit	Coverage Problems in Cooperative Active Sensing for Wireless Structural Health Monitoring	R. Zheng
Gide, Milind	Assessment of Language Laterality Using Independent Component Analysis of MEG Evoked Activity	G. Zouridakis

Master E.E. Completed

Student	Student	Student
Batista, Rafael	Johnson, Genevieve	Peng, Kai
Bhamidimarri, Srikanth	Kangal Shrinivas	Rangarajan, Vasudha
Dufresne, Joseph	Kasireddygari, Kriti	Rao, Pujitha
Eldaya, Alaa	Koduru, Raja	Rawat, Ankur
Gopagari, Ravi Teja	Kumar, Amit	Sathyamurthy, Srinath
Guerra, Omar	Mohd, Abdul	Shafi, Tarek
Hansen, Daniel	Moormann, Kevin	Sonmez, Ahmet
Hill, Eric	Nagaraja, Tusheeth	Yu, An-Li
Hulett, Brett	Nguyen, Tuyen	
Ismailov, Emil	Patnam Abdul, Abdul Gaffoor	

M.S. Student Roster

Student	Field	Tentative Title	Advisor	Exp. Comp.
Vijayraghavan, Siddharth	Microelectronics	Synthesis of Boron Oxyitride, A Low K Dielectric, for Use in High Temperature Capacity Application	A. Bensaoula	2009
Oliver, Brian			E. Bering	
Kagajwala, Burhanuddin			S. Brankovic	
Thomas, Joel Caleb			S. Brankovic	
Boinapally, Praneeth	Microelectronics	A VLSI Vehicle Control System	E.J. Charlson	Aug. 2009
Bhatt, Anaruddh Nar	Microelectronics	A VLSI Control for an Electronic Curve Tracer	E.J. Charlson	Aug. 2009
Gupta, Aditya	Microelectronics	Analog and Digital Curve Tracer	E.J. Charlson	May 2009
Gheewala, Mufaddal	Microelectronics		E.J. Charlson	Aug. 2010
Kanuganti, Ashwini	Microelectronics		E.J. Charlson	Aug. 2010
Karnati, Ravi Theja	Microelectronics		E.J. Charlson	Aug. 2010
Kota, Rekha	Microelectronics		E.J. Charlson	Aug. 2010
Pamu, Abhishek Reddy	Microelectronics		E.J. Charlson	Aug. 2010
Ray, Kuntal	Microelectronics		E.J. Charlson	Aug. 2010
Rajaraman, Sai Karthik			E.J. Charlson	
Surapaneni, Satyanarayana	Microelectronics		E.J. Charlson	Aug. 2010
Venkateswaran, Dhanya	Computer Engineering		E.J. Charlson	Aug. 2010
Sreedharan, Mangesh	Microelectronics		E.J. Charlson	Aug. 2010
Mendoza, Alexandra	Computer Engineering	GPU Accelerated FDTD Simulations	J. Chen	2009
Lin, Li	Computer Engineering	MIMO SAR Modeling	J. Chen	2009
Latifzai, Emal		Large Scale EM modeling	J. Chen	2010
Jiao, Guohua		Time Reversal for MISO System	J. Chen	2009
Huang, Hao		EM Models	J. Chen	2010
Rungta, Mukesh		Time Reversal for MIMO System	J. Chen	2009
Joshi, Shilpa		Dynamic Burst Assembly in Optical Burst Switching Networks	Y. Chen	Aug. 2009
Orosco, Enrique		Content Aware Burst Assembly in Optical Burst Switching Network for Telesurgery and Telemedicine	Y. Chen	May 2009
Marathe, Rahul	Power Systems	Electronic Automatic Voltage Control (AVC) for Synchronous Generators	O. Crisan	May 2009
Gullipalli, Ravi Kumar	Power Systems	Voltage Stability Definition for Large Power Systems	O. Crisan	
Annabattula, Chaitanya	Power Systems	Implementation of the New Renewable Wind Energy Sources (WES) to the Existing Power Systems	O. Crisan	May 2009
Gogineni, Jalaja	Power Systems	Wind Power Plants (WPP) Implementation to the present Power Grid	O. Crisan	Dec. 2009
Narayanan, Navaneeth	Power Systems	Wide Area Measurement System (WAMS) Implementation to Large Power Grids	O. Crisan	Dec. 2009
Salunkhe, Kunal Rajemdra	Power Systems	Wide Area Measurement System (WAMS) Implementation to Large Power Grids	O. Crisan	Dec. 2009
Mone, Aadish S.	Power Systems	Wind Power Plants (WPP) Implementation to the present Power Grid	O. Crisan	
Stewart, Nicole	Biomedical Signal Analysis	Detection of Pseudosinusoidal Epileptic Seizure in Neonatal EEG	J. Glover	May 2010
Raghavendra Rajatha	Wireless Networking	Crystallized Power Control for OFDMA Networks	Z. Han	2010
Sridharan, Shrividya	Wireless Networking	Routing in Cognitive Radio Network	Z. Han	May 2010
Martinez, Rebecca	Data Compression	Predictive Encoding of Seismic Trace Data	T.J. Hebert	May 2009
Prabhu, Rahul	Medical Imaging	Extracting Functional Information from Gated Myocardial Perfusion Image Sequences	T.J. Hebert	May 2009
Mahajan, Mayuri		Tracking Dual Audio Signatures in Recorded Audio	T.J. Hebert	Aug. 2009

Student	Field	Tentative Title	Advisor	Exp. Comp.
Maur, Gaganjot	Video Processing Algorithms	Real-Time High Resolution Video Imaging at Low Light Level	T.J. Hebert	Dec. 2009
Karulkar, Shruti	Medical Imaging	Analysis of Right Ventricular Function from SPECT Data	T.J. Hebert	Aug. 2010
Chadalapaka, Sai Chakrapani	Medical Imaging	Parametric Time-varying Deformable Models for Imaging of the Heart	T.J. Hebert	Dec. 2010
Erdem, Mehmet			D.R. Jackson	
Holland, Charles		Broadband Antennas for Borehole Applications	D.R. Jackson, J.T. Williams, S.A. Long, R. Liu	May 2009
Pan, Shiji	Applied Electromagnetics	Analysis of Coupled Coils for Pipeline Power Transfer and Communications	D.R. Jackson, J. Chen	May 2009
Wadadekar, Trupti			I. Kakadiaris	
Manne, Venu Gopal Reddy	Biomedical Optics	Development of Spectral Domain OCT for Biomedical Research	K. Larin	2009
Sudheedran, Narendran			K. Larin	
Premi, Vyom		Optical Stand-Off Networked Sensing System for 3-D Target Surveillance and Identification	H.Q. Le	Dec. 2009
Kasturi, Jaya Krishna		Optical sensors	H.Q. Le	May 2010
Deolankar, Rathin	Nanomagnetics	Micromagnetic Modeling of Magnetic Arrays	D. Litvinov	May 2009
Zheng, Zhen	Nanofabrication	Self-Limiting Ion Milling	D. Litvinov	May 2010
Collins, Mark	Well Logging	Response of MWD Resistivity Tools in Eccentric Cylindrically Layered Media	R. Liu	2009
Patel, Ravi			R. Liu	
Shehab, El Emir Fouad			R. Liu	
Nandedkar, Sayali			H. Malki	
Wang, Han			H. Malki	
Chitnis, Tejas	Neuroengineering	Figural Dynamics in Anorthoscopic Perception	H. Ogmen	Aug. 2010
Pingali, Venkata Sidhartha	Neuroengineering	Non-retinotopic Masking in Anorthoscopic Perception	H. Ogmen	Aug. 2009
Shooner, Christopher	Neuroengineering	The Role of Sensory Memory in the Perception of Multiple Object Motion	H. Ogmen	Aug. 2009
Bendele, Travis			B.R. Sheth	
Mani, Abigail			B.R. Sheth	
Palaparthy, Krishna			B.R. Sheth	
Sawant, Manas		Digital Control Systems	L.S. Shieh	2009
Patil, Harshal		Time-Delay Control Systems	L.S. Shieh	2009
Suseanu, Costin		Anti-Windup Control Systems	L.S. Shieh	2009
Patel, Sonal			W. Shireen	
Annangi, Mahu Sudan			L. Trombetta	
Mukherjee, Subhajit	Microelectronics	Characterization of Negative-Bias Temperature Instabilities in MOS Devices	L. Trombetta	Dec. 2009
Mathew, Roshiny		Development of Multielectrode Cuffs	J.C. Wolfe	2010
Chikani, Zulfiqar			W. Wosik	
Zubair, Asadullah	Microelectronics/MEMS	BioMEMS – Simulation, Fabrication, and Testing	W. Wosik	Dec. 2009
Viswanath, Prashanth			G. Zouridakis	

Department of Electrical & Computer Engineering
N308 Engineering Bldg 1, Houston, TX 77204-4005
713-743-4400 | www.egr.uh.edu/ece | ece@egr.uh.edu