

2005-2006 :: B.S. in Electrical Engineering

1. Mission Statement:

The mission of the Department of Electrical Engineering is to provide education in the theory and practice of modern electrical engineering. We prepare our graduates to have rewarding and successful careers in a diverse range of electrical engineering fields, including materials, devices, circuits, digital systems, signal/speech/image processing, and communications.

2. Objectives:

2.1 Apply knowledge to development of eng. systems: Apply knowledge of mathematics, science, and engineering to the development of engineering systems.

2.1.1 Related General Education Outcome Item(s): 1. Communication; 2. Mathematics; 3. Quantitative Methods; 10. Foundational Knowledge in Discipline(s)

2.1.2 Related Strategic Plan Item(s): II-1 The Education of Leaders

2.1.3 Related Institutional Priority Item(s):

SP-4 Tell UTD's Story Better; SP-7 Enhance Graduation Rates; COM-3 Sustain Progress toward Tier One Status in terms of programs, research and faculty quality

2.1.4 Standards and Associations:

The Accreditation Board for Engineering and Technology (ABET, <http://www.abet.org/>) is the professional accrediting organization that accredits undergraduate engineering programs. UT Dallas has four Engineering and Computer Science Undergraduate Programs that are ABET accredited. Related Criteria: a) An ability to apply knowledge of mathematics, science and engineering h) The broad education necessary to understand the impact of engineering in a global and societal context i) A recognition of the need for, and an ability to engage in life-long learning j) A knowledge of contemporary issues

2.1.5 Student Related Objective: Yes - This is a student related objective.

2.2 Communicate concepts: Communicate technical concepts in both written documents and oral presentations.

2.2.1 Related General Education Outcome Item(s): 1. Communication

2.2.2 Related Strategic Plan Item(s): II-1 The Education of Leaders

2.2.3 Related Institutional Priority Item(s):

SP-4 Tell UTD's Story Better; SP-7 Enhance Graduation Rates; COM-3 Sustain Progress toward Tier One Status in terms of programs, research and faculty quality

2.2.4 Standards and Associations:

The Accreditation Board for Engineering and Technology (ABET, <http://www.abet.org/>) is the professional accrediting organization that accredits undergraduate engineering programs. UT Dallas has four Engineering and Computer Science Undergraduate Programs that are ABET accredited. Related Criteria: d) An ability to function on interdisciplinary teams f) An understanding of professional and ethical responsibility g) An ability to communicate effectively h) The broad education necessary to understand the impact of engineering in a global and societal context j) A knowledge of contemporary issues

2.2.5 Student Related Objective: Yes - This is a student related objective.

2.3 Function as member of engineering design team: Function as a member of an engineering design team.

2.3.1 Related General Education Outcome Item(s): 1. Communication

2.3.2 Related Strategic Plan Item(s): II-1 The Education of Leaders

2.3.3 Related Institutional Priority Item(s):

SP-4 Tell UTD's Story Better; SP-7 Enhance Graduation Rates; COM-3 Sustain Progress toward Tier One Status in terms of programs, research and faculty quality

2.3.4 Standards and Associations:

The Accreditation Board for Engineering and Technology (ABET, <http://www.abet.org/>) is the professional accrediting organization that accredits undergraduate engineering programs. UT Dallas has four Engineering and Computer Science Undergraduate Programs that are ABET accredited. Related Criteria: b) An ability to design and construct experiments, as well as to analyze and interpret data c) An ability to design a system, component or process to meet desired needs d) An ability to function on interdisciplinary teams e) An ability to identify, formulate and solve engineering problems f) An understanding of professional and ethical responsibility g) An ability to communicate effectively

2.3.5 Student Related Objective: Yes - This is a student related objective.

3. Measures & Findings:

3.1 In-class assessment:

In all Fall 06 courses, outcomes a, h, i or j were assessed on a scale of 1 (worst) to 5 (best).

3.1.1 Success Criteria:

Goal will be met if an average of 3.5 or higher is recorded in every class that measures outcomes a, h, i or j.

3.1.2 Related Objective(s):

Apply knowledge to development of eng. systems

3.1.3 Results Related To Success Criteria:

PLG1 was assessed in all core courses offered in Fall06. The overall rating reported was 3.83, which exceeded the set expectation.

3.1.4 Achievement Level:

Met

3.1.5 Further Action:

No

3.2 Alumni survey:

The Alumni Survey is conducted every year and is spearheaded by a focus group meeting and survey distributions. This process allows UTD to collect both quantitative and qualitative data.

3.2.1 Success Criteria:

Average of responses for outcomes a, h, i and j is at least 4.5 (on a scale of 1-6 used by the alumni survey instrument).

3.2.2 Related Objective(s):

Apply knowledge to development of eng. systems

3.2.3 Results Related To Success Criteria:

The alumni survey (2005-2006) resulted in the following outcomes:

For outcome "a" average response was:5.07

For outcome "h" average response was:3.93

For outcome "i" average response was:5.27

This amounts to an overall rating of 4.75, which meets our expectation.

3.2.4 Achievement Level:

Met

3.2.5 Further Action:

No

3.3 In-class assessment:

In all core courses (with exception of EE3302, EE3310, EE3341, EE3350, EE4301, and EE4360), presentations, oral examinations, outcomes d, f, g, h, or j were assessed on a scale of 1 (worst) to 5 (best).

3.3.1 Success Criteria:

Goal will be met if an average of 3.0 or higher is recorded in every class that measures outcomes d, f, g, h, or j.

3.3.2 Related Objective(s):

Communicate concepts

3.3.3 Results Related To Success Criteria:

PLG2 was assessed in all core courses (with exception of EE3302, EE3310, EE3341, EE3350, EE4301, and EE4360) offered in Fall06. The overall rating reported was 3.87, which exceeded the set expectation.

3.3.4 Achievement Level:

Met

3.3.5 Further Action:

No

3.4 Alumni Survey:

The Alumni Survey is conducted every year and is spearheaded by a focus group meeting and survey distributions. This process allows UTD to collect both quantitative and qualitative data.

3.4.1 Success Criteria:

Average of responses for outcomes b, c, d, e and g is at least 4.5 (on a scale of 1-6 used by the alumni survey instrument).

3.4.2 Related Objective(s):

Communicate concepts

3.4.3 Results Related To Success Criteria:

The alumni survey (2005-2006) resulted in the following outcomes:

For outcome "b" average response was:4.58

For outcome "c" average response was:4.4

For outcome "d" average response was:4.41

For outcome "e" average response was:4.85

For outcome "g" average response was:4.53

This amounts to an overall rating of 4.54, which meets our expectation.

3.4.4 Achievement Level:

Met

3.4.5 Further Action: No**3.5 In-class assessment:**

In all core courses (with exception of EE3301, EE3320, EE3310, EE3341, EE3350, EE4301, EE4302, and EE4340) offered in Fall06, outcomes b, c, d, e, f or g were assessed on a scale of 1 (worst) to 5 (best).

3.5.1 Success Criteria:

Goal will be met if an average of 3.5 or higher is recorded in every class that measures outcomes b, c, d, e, f, or g.

3.5.2 Related Objective(s): Function as member of engineering design team**3.5.3 Results Related To Success Criteria:**

PLG3 was assessed in all core courses (with exception of EE3301, EE3320, EE3310, EE3341, EE3350, EE4301, EE4302, and EE4340) offered in Fall06. The overall rating reported was 3.98, which exceeded the set expectation.

3.5.4 Achievement Level: Met**3.5.5 Further Action:** No**3.6 Alumni Survey:**

The Alumni Survey is conducted every year and is spearheaded by a focus group meeting and survey distributions. This process allows UTD to collect both quantitative and qualitative data.

3.6.1 Success Criteria:

Average of responses for outcomes b, c, d, e, f and g is at least 4.5 (on a scale of 1-6 used by the alumni survey instrument).

3.6.2 Related Objective(s): Function as member of engineering design team**3.6.3 Results Related To Success Criteria:** The alumni survey (2005-2006) resulted in the following outcomes:

For outcome "b" average response was:4.58

For outcome "c" average response was:4.4

For outcome "d" average response was:4.41

For outcome "e" average response was:4.85

For outcome "f" average response was:4.04

For outcome "g" average response was:4.53

This amounts to an overall rating of 4.47, which is fairly close to our expectation.

3.6.4 Achievement Level: Met**3.6.5 Further Action:** No**5. Closing the Loop:****5.1 Senior Design:** Monitor the progress of the newly implemented Senior Design policy**5.1.1 Related Objective(s):**

Apply knowledge to development of eng. systems; Communicate concepts; Function as member of engineering design team

5.1.2 Related Measure(s): In-class assessment; In-class assessment; In-class assessment**5.1.3 Responsible Person:** John Hansen**5.1.4 Target Date:** 8/31/07**5.1.5 Priority:** Medium Priority**6. Analysis:****6.1 Program/Unit Strengths:**

6.1.1 Objectives/Outcomes Exceeded or Met: The assessment process revealed a number of key strengths of the EE program. First, the EE courses meet the overall expectations set by the program in all three learning goal categories. Second, the alumni survey underscored the importance of the learning goals, set by the program, to the EE alumni in terms of developing a successful career in the field of electrical engineering. More specifically, the survey revealed a reasonable correlation between the EE program's learning goals and the importance of those goals to the career of the EE alumni.

6.2 Program / Unit Weaknesses:

6.2.1 Objectives / Outcomes Partially or Not Met: The assessment process revealed an issue regarding senior design project. It was determined that, although senior design projects in general were of reasonably high quality,

the documentation regarding the outcomes of the course was lacking. Steps were taken (such as implementation of a uniform proposal submission, evaluation, and documentation process, among others) to remedy the situation. To date, this problem has been largely rectified. A process is also implemented to monitor this key course in the EE program every semester.

7. Report:

7.1 Executive Summary:

An assessment of courses was conducted in Fall 2006. The following are detailed outcomes of the process:

- Specific Data Available From Assessment (Ms. Linda Wilson, (972)883-6630, llw051000@utdallas.edu maintains the data repository)

For each core as well as majority of special topics courses, the following materials were collected (the items below are available in the course folder for each course):

- Instructor's self assessment of the class using rubrics which are pertinent to the program learning goals
- Comment section of student course evaluation forms
- Industrial Advisory Board comments regarding BSEE curriculum
- Course-update form, which is filled out by the individual course owner and other stakeholders (teachers of the course).
- Evidence the assessment data were reviewed by faculty and appropriate administrators.

On Jan. 19, 2007, a meeting was held at Erik Jonsson School of Engineering and computer science, where folders for the BSEE courses were reviewed by the faculty of the EE department. Furthermore, each course owner, along with other members of the faculty involved with teaching the course, filled out and signed a course update form. The signed course-update forms may be found in the course folders. Ms. Linda Wilson ((972)883-6630, llw051000@utdallas.edu) maintains the data repository. Furthermore, Prof. Kiasaleh (Kamran@utdallas.edu, (972)883-2990) reviewed the outcomes of the individual course assessments provided by instructors to draw conclusions regarding the BSEE program assessment. EE department head, John Hansen ((972)883-2190, jxh052100@utdallas.edu), was appraised of the result of the assessment process.

- Evidence of Improvements.

As a result of the assessment process, it was determined that a formal procedure for evaluation of Senior Design project course was lacking. Given that this course is a capstone course in the EE program and of critical importance to the overall mission of the BSEE program, a procedure was instituted whereby students are required to submit their proposals and design concepts before a project is approved. The guidelines which every proposal must adhere to as well as the final reporting requirements are published online (<http://www.ecs.utdallas.edu/students/senior-design-06/index.html>).

The newly instituted process regarding Senior Design has led to the implementation of a formal procedure for evaluation of the Senior Design projects. Specifically, the proposals submitted in Fall 2006 and Spring 2007 were evaluated by a selected group of core faculty to determine compliance with the new evaluation guidelines. Ms. Linda Wilson ((972)883-6630, llw051000@utdallas.edu) maintains a repository for samples of student work.

Furthermore, the self-assessment revealed a lack of active participation of IAB in shaping the BSEE curriculum. Subsequently, IAB meetings were held in 2006, and comments regarding the BSEE curriculum were solicited from the IAB members. The comments were forwarded to the EE faculty to assist the faculty in performing their course self-assessments.

7.2 Top 3 Program/Unit Accomplishments: Awards and Grants received by the EE faculty in 2006:

- N. Al-Dhahir, The IEEE 2006 Donald G. Fink Award for most outstanding review journal paper published in all IEEE Transactions and journals.
- P. Balsara, 2nd Best Entry Award at the Chip Design Contest, 19th IEEE International Conference on VLSI Design (VLSI '06), Hyderabad, India, January 3-7, 2006.
- R. M. Wallace, *et. al.*, "High-k Gate Dielectrics: Current Status and Materials Properties Considerations," Journal of Applied Physics, 89 (2001) 5243 (>1400 citations). This paper was recognized in 2005 by the Semiconductor Research Corporation as the top ranked "influential research paper" for the semiconductor industry sponsored by the SRC based upon peer citations. The work was selected among the 45 high impact Applied Physics Review papers for the 75th Anniversary of the American Institute for Physics.

- B. Frensley and J. Hansen, Elected as Fellows of IEEE
- J. Hansen, Distinguished Lecturer 2005-2006 – Signal Processing Society.
- P. Balsara, Second Prize in the VLSI Chip design contest at the 19th IEEE Intl. Conf. on VLSI Design, Jan. 2006
- N. Al-Dhahir, Interference Cancellation for Mobile OFDM Receivers, Texas Instruments Inc., 4/2006 to 4/2008, \$70,000.
- N. Al-Dhahir, Novel OFDM Interference Mitigation Architecture and Algorithms, Semiconductor Research Corporation (SRC), 6/2006 to 6/2007, \$50,000.
- P. Balsara, "Digital Radio Processor Research," Texas Instruments, Inc. 2006-2007, \$80,000.
- P. Balsara, "Digital Radio Processor," Texas Instruments, 2005-2006, \$96,000.
- J. Fonseka, Trellis Phase Communications Inc., Amount: \$25K, period 2006-2008.
- B. Frensley, "Predictive Modeling for Intersubband Quantum Devices Grown by MBE," AFOSR-STTR Phase II program in collaboration with Intelligent Epitaxy and PhotoDigm, \$113,009, Sep. 1, 2006 through Aug 31, 2008.
- B. Gnade, Electronic Textiles, Military Tech, \$276,000, 10/2006 – 10/2007.
- B. Gnade, Electronic Textile Sensors for Stress Measurement in Soldiers, AFOSR (SPRING), \$149,000, 10/2006 – 09/2008, Co-PI with R. Jafari
- B. Gnade, SWAN – Nanometrology, Nanoelectronics Research Consortium, \$300,000, 11/2006 – 10/2009, Co-PI with M. Kim
- B. Gnade, Multi-faceted Scientific Strategies Toward Better Solid State Lighting with Phosphorescent OLEDs, Dept. of Energy, \$541,364, 09/2006-08/2009, subcontract from UNT
- B. Gnade, Limits of Organic TFTs for RFID Applications, Texas Instruments, \$25,000, 07/2006-01/2007
- MJ Goeckner, Development of a Plasma Exciter - Part 1
Verity Instruments, 20,100 3/07-6/07, Upon completion of part 1
Title: Development of a Plasma Exciter - Part 2 Verity Instruments, \$126,570 6/07-5/08
- W. Hu, \$250K, Moncrief Foundation, Dallas, "Nanotubular Capsules for Ultra-sensitive Breast Cancer Detection", PI (multi-PI with JM. Gao), 10/06-open.
- W. Hu, \$150K (+\$30K UT Dallas matching), AFOSR/Spring Program, "High-density nanoscale organic light emitting diodes by nanoimprint technology for near-field biosensing", PI, 10/06-4/08.
- W. Hu, \$100K (+\$33K UT Dallas matching), Texas Advanced Research Program, "Controlled cell growth on biomimetic multi-level nanoscale polymer scaffolds", PI (with K. Luebke), 06/06-05/08
- W. Hu, \$15K, UT Dallas-UT Arlington collaboration fund, "Advanced DNA Microarray Technologies based on Homologous Strand Exchange and Magnetic Nanomanipulation", Co-PI (with S. Levene and P. Liu), 04/06-04/07.
- N. Kehtarnavaz, Overexposure Correction for Images Captured by Cell-phone Cameras, Texas Instruments \$30,000.
- N. Kehtarnavaz, Low-power Video Coding, Texas Instruments \$15,000.
- P. Loizou, N. Kehtarnavaz, M. Torlak, H. Lee, A. Sharma, Open Architecture Research Interface for Cochlear Implants, NIH Contract \$1,300,000 (2006-2009)
- N. Kehtarnavaz, Digital Camera Imagepipe Improvement, Texas Instruments \$120,000 (2004-2007)
- N. Kehtarnavaz and I. Panahi, LabVIEW-based Educational/Research Program in Signal and Image Processing, National Instruments \$150,000 (2004-2007)
- K. Kiasaleh, Poras Balsara, and Dinesh Bhatia, A Software-Defined Emergency Radio," submitted to National Institute of Justice, \$394,103.00 (requested), \$199,907 (granted for the first year, the second year subject to approval), start date: Sep. 2006, 12 months.
- K. Kiasaleh, "Novel Architectures for QAM modulation with Phase Errors," Restricted Research Gift from Texas Instruments, start date: 9/2006, 12 months, \$30,000: Co-PI: Murat Torlak
- J. Kim, Development of Core Technology for 50nm MOSFET Fabrication COSAR (Consortium Of Semiconductor Advanced Research) (subcontract from Hanyang U.), \$120,523 (EJS Match: \$80,000), 9/2005 -8/2007
- J. Kim and M. Kim, "Stand-Alone Nanotube Device Technology," CNMT (Center for Nano-Materials and Technology) (subcontract from Kookmin U.), \$190,000 (EJS Match: \$ 50,000) 10/2005 – 2/2007, (\$160,730)
- M.J. Kim, "GOALI: Nanoscale characterization and development of ultra low-k dielectric xerogel films," NSF (subcontract from UNT), 08/2004-07/2007, \$245,227.
- M.J. Kim, "Characterization of Nanoscale Lattice Strain in CMOS Devices with Advanced TEM Techniques," SRC, 07/2004-06/2006, \$70,000.
- B.E. Gnade, R.M. Wallace and M.J. Kim, "Role of Microstructure on Metal Gates," SRC, 07/2004-06/2007, \$105,000.
- M.J. Kim, "KATECH-UTD International Collaboration on Nanotechnology," KATECH, 09/2004-06/2006, \$286,980.

- M.J. Kim, "Development of electron beam lithography-based nanowires," KETI, 07/2005-06/2007, \$439,560.
- M.J. Kim, "Integration and Defect Analysis: CdTe/Si System," Army-NVESD, 09/2005-08/2006, \$25,000.
- M.J. Kim, "Nanocharacterization of Si CMOS Devices with STI Structure: Phase I," Micron Technologies, Inc., 10/2005-03/2006, \$5,000.
- M.J. Kim, "International Research Collaboration on Nanotechnology," KATECH, 09/2005-08/2007, \$300,000.
- M.J. Kim, "Stand-alone Nanotube Device Technology," CNMT (subcontract from Kookmin Univ.), 10/2005-03/2008, \$180,000.
- H. Lee (UTD) and Shashank Priya (UTA), UTD-UTA Joint Institutional Seed Research Program, \$20,000 4/15/2006-4/14/2007, "Human Powered Wireless Sensor Network,"
- H. Lee, Texas Instruments Inc. \$40,000, 01/01/2006-12/31/2006 "High-Performance Power Management Integrated Circuits"
- H. Lee, Texas Instruments Inc. \$21,000, 01/01/2006-12/31/2006 "High-Speed High-Efficiency Switched Regulator for Cellular Handset Power Amplifiers,"
- J. B. Lee, Imaging islets in implantable microcapsules, UTSW/NIH (National Institute of Health) 10/1/06 – 9/30/09, \$ 250,000 (a subcontract from UTSW, a total award of \$ 750,000 awarded to UTSW)
- J. B. Lee, NIRT: Active Nanostructure Enabled On-Chip Spectroscopy System for Cancer Detection CU-Boulder/NSF, 9/1/06 – 8/31/10 \$ 339,963 (a subcontract from CU-Boulder)
- R. Lehmann, Received recognition in *Who's Who Among America's Teachers* for teaching at UTD.
- J. Liu, DARPA (Subcontract from Zyvex, Corp.), \$280,591, 04/01/2006-3/31/2007, Ultra Low-Power Implantable Wireless Nerve Firing Sensor
- J. Liu, Texas Instruments, Inc., \$60,000, 01/01/2006-12/31/2006 High-Speed Data Communication Circuit Design
- J. Liu, UTD-UTA Joint Institutional Seed Research Program, \$10,000, 4/1/2006-3/31/2007 Low-Cost RF Components for Reconfigurable Wireless Sensors
- P. Loizou, Optimizing speech coding strategies for noise and music, National Institutes of Health, \$280K (April 2006-April 2007) – 2nd year of support (total award: \$1.5M)
- A. Nosratinia, National Science Foundation: Methods and algorithms for resilient packet header, compression" (PI), 9/15/2006 to 9/15/2008, \$165,000
- A. Nosratinia, National Science Foundation: NeTS-NR: Protocols and algorithms for cooperative wireless networks" (PI), 10/1/2004 to 9/30/2008, \$450,000.
- A. Nosratinia, National Science Foundation: Methods and algorithms for resilient packet header compression," 9/15/2006 to 9/15/2008, \$165,000
- G.S. Lee, D. J. Yang and L. Overzet, "KITECH Local lab." Korean Institute of Industrial Technology (KITECH) \$72,137. 12/05 – 11/07.
- G.S. Lee, D. J. Yang and L. Overzet, "Continuous Growth and Harvesting of Carbon Nanotubes." Korean Institute of Industrial Technology (KITECH) \$900,000. 10/06 – 9/10.
- A. A. Milani and G. Kannan, "Flight Path of a Turboprop Airplane", International Student Challenge Problem, Acoustic Society of America, May 2006. The paper won the 2nd place (Announced on Dec 8, 2006).
- I. Panahi, National Instruments Inc, Austin, TX, (01/01/04 to 01/01/07), \$25K for 2006, (Total: \$75K, \$25K/Year)
- I. Panahi, UTSW Medical Center, Dallas, TX, (09/01/05 to 09/01/06), \$62.5K, Noise Reduction in fMRI environment - Gulf War Illness Research Program
- I. Panahi, National Instruments, Inc. Austin, TX, (01/01/07 to 01/01/10), \$75,000, \$25K/Year, "LabVIEW-based Educational/Research Program in Signal and Image Processing".
- I. Panahi, University of Texas Southwestern Medical Center, US Dept. of VA (01/01/07 to 01/01/09), \$200K, \$100K/Year, Noise Reduction in fMRI environment - Gulf War Illness Research Program, US Dept. of VA.
- R. Sangireddy, IRIS Technologies, US\$ 15,000.00, 2006-2007.
- R. Sangireddy, Research in Computer Systems Architecture, IRIS Technologies, US\$ 12,000.00, 2006-2007.
- Design of Vertical Handoff Decision Algorithm in Multiple Wireless Networks
- M. Saquib, Gift Proposal, SNRLabs, Richardson, TX, \$7,500, Emergency Beacon for First Responder Radios
- M. Saquib, Q. Liang (UT-Arlington) and M. Saquib, Collaborative UTA - UTD Joint Institutional, 1 Year; \$20,000 (UT-Dallas Share: \$10,000)
- E. Vogel, "Metrology for Extreme CMOS Devices" National Institute of Standards and Technology, 09/2006 – 09/2009, \$348,159

- Bruce Gnade and Robert Wallace, Assemblers for Nanotechnology Applications and Manufacturing: Enabling the Nanotechnology Era, NIST (subcontract from Zyvex), \$275,000 10/2003 -12/2006
- R.M.Wallace, "Diffusion of Gate Stack Constituents," Semiconductor Research Corporation, 4/2004 – 4/2006. (\$160,730)
- W.Kirk (UTA) and R.M.Wallace (UTD), "Mobility Degradation Mechanisms in Advanced High-k CMOS Devices," Texas Advanced Technology Program (\$190,037/2years – UTD portion: \$64,237) 1/2004 – 8/2006
- R.M.Wallace and B.E.Gnade, "Hf-based metal gate stack stability research," Semiconductor Research Corporation, 7/2004 – 7/2007 (\$105,000/3 years + EJS match \$105,000/3years)
- B.E.Gnade, R.M.Wallace and M.J.Kim, "Role of Microstructure in Metal Gates," Semiconductor Research Corporation, 7/2004-7/2007 (\$105,000/3 years + EJS match \$105,000/3years)
- R.M.Wallace, "Atomic Probe Microscope," Von Ehr Foundation (\$536,830)
- R.M.Wallace and B.E.Gnade, "Hydrogen barrier studies for FeRAM devices," Semiconductor Research Corporation, (\$105,000/3 years + EJS match \$123,000/3years)7/2005-7/2008.

7.3 Research Activities or Publications: N. Al-Dhahir

"Novel Full-Diversity High-Rate Space-Time Block Codes for 2 and 4 Transmit Antennas"

S. Das, N. Al-Dhahir, and A.R.Calderbank

IEEE Communications Letters, (March 2006) 171-173

"Optimal Training Signals for MIMO OFDM Channel Estimation"

H. Minn and N. Al-Dhahir

IEEE Transactions on Wireless Communications, (April 2006) 1158-1168

"Optimum DCT-Based Multi-Carrier Transceivers"

N. Al-Dhahir, H.Minn, and S. Satish

IEEE Transactions on Communications, (May 2006) 911-921

"Optimal Training Signals for MIMO OFDM Channel Estimation in the Presence of Frequency Offset and Phase Noise"

H. Minn, N. Al-Dhahir, and Y. Li

IEEE Transactions on Communications, (October 2006) 1754-1759

Space-Time Coding for Wireless Communications : Principles and Practice

N. Al-Dhahir , A.R. Calderbank, and S. Diggavi

In MIMO Communications Book Edited by E. Biglieri

Cambridge University Press, (2006) 140-185

"Single-Carrier Frequency Domain Equalization for Broadband Cooperative Communications"

M. Uysal, H. Mheidat, and N. Al-Dhahir

IEEE Wireless Communications and Networking Conference (WCNC)

(March 2006) 1578-1584

"Design and Performance of a DCT-MCM Transceiver for Broadband Communications"

S. Satish, N. Al-Dhahir, H. Minn

IEEE SECON Conference

(March 2006) 175-180

"Pilot Designs for Consistent Frequency Offset Estimation in OFDM Systems"

H. Minn, Y. Li, N. Al-Dhahir, and A.R. Calderbank

IEEE International Conference on Communications (ICC)

(June 2006) 4566-4571

"Time-Reversal Space-Time Equalization for Amplify-and-Forward Relaying"

H. Mheidat, M. Uysal and N. Al-Dhahir

IEEE International Conference on Communications (ICC)

(June 2006) 1705-1711

"Distributed Space-Time Block Coded OFDM for Relay-Assisted Transmission"

H. Mheidat, M.Uysal, and N. Al-Dhahir

IEEE International Conference on Communications (ICC)

(June 2006) 4513-4519

System with Multiple Antennas"

M. Islam, M.Saquib, N.Al-Dhahir

IEEE International Conference on Communications (ICC)

(June 2006) 5451-5456

"New Diversity-Embedding STBC Constructions"

S. Das, N. Al-Dhahir

IEEE Signal Processing Advances in Wireless Communications (SPAWC) Workshop

(June 2006)

"New Full-Diversity High-Rate Space-Time Block Codes Based on Selective Power Scaling"

S.Das, N. Al-Dhahir, A.R. Calderbank, J. Chui

EUSIPCO Conference

(September 2006)

"OFDM Interference Mitigation Algorithms for Doubly-Selective Channels"

S. Lu, R. Kalbasi, and N. Al-Dhahir

IEEE Vehicular Technology Conference (VTC)

(September 2006)

"Mobile OFDM Receiver Design with Application to DVB-H"

R.Kalbasi, S. Lu, and N. Al-Dhahir

IEEE Vehicular Technology Conference (VTC)

P. Balsara

IIP2 and DC Offsets in the Presence of Leakage at LO Frequency

I. Elahi, K. Muhammad & P. T. Balsara

IEEE Transactions on Circuits and Systems-II, vol. 53, No. 8, Aug. 2006, pp. 647-651.

A Non-Redundant Ternary CAM Circuit for Network Search-Engines

M. J. Akhbarizadeh, M. Nourani, Deepak-Sarathi V. & P. T. Balsara

IEEE Transactions on VLSI Systems, vol. 14, No. 3, March 2006, pp. 268-278.

1.3V 20ps Time-to-Digital Converter in 90nm CMOS

R. Staszewski, S. Vemulapalli, P. Vallur, J. Wallberg & P. T. Balsara

IEEE Transactions on Circuits and Systems-II, vol. 53, No. 3, March 2006, pp. 220-224.

I/Q Mismatch Compensation Using Adaptive Decorrelation in a Low-IF Receiver in 90nm CMOS Process

Elahi, K. Muhammad & P. T. Balsara

IEEE Journal on Solid-State Circuits, vol. 41, No. 2, February 2006, pp. 395-404.

A Fixed-Point Implementation for QR Decomposition

C. Singh, S. Honnavara Prasad and P.T. Balsara

Proceeding of the 5th IEEE Dallas Circuits and Systems Workshop (DCAS '06),

Richardson, Texas. Oct. 29-30, 2006, pp. 75-78.

Phase Noise Reduction in High Speed Frequency Divider

R. Prakash, S. Akhtar and P.T. Balsara

Proceeding of the 5th IEEE Dallas Circuits and Systems Workshop (DCAS '06),

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A Transient-Enhanced Low-Quiescent Current Low-Dropout Regulator with Buffer Impedance Attenuation

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H. Minn

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H. Minn, N. Al-Dhahir, and Y. Li
IEEE Transactions on Communications, **54** 10 (Oct. 2006) 1754-1759.
7. Optimal Periodic Training Signal for Frequency Offset Estimation in Frequency-Selective Fading Channels
H. Minn, X. Fu, and V. K. Bhargava
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H. Minn and P. Tarasak
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N. Al-Dhahir, H. Minn, and S. Satish
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Glasgow (June 24-28, 2007)
MIMO OFDM Frequency Offset Estimator with Low Computational Complexity
Y. Jiang, H. Minn, X. Gao, and X. You
accepted in *IEEE International Conference on Communications (ICC 2007)*
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Synchronization in MB-OFDM-based UWB Systems
T. Jacobs, Y. Li, H. Minn, and R. M. A. P. Rajatheva
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Glasgow (June 24-28, 2007)
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D. Wang, H. Minn, and N. Al-Dhahir
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Honolulu (Apr. 15-20, 2007)
Consistent Pilot Designs for Frequency Offset Estimation in MIMO OFDM Systems
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Frequency Offset Estimation for MB-OFDM-based UWB Systems in Time-Variant Channels
Y. Li, H. Minn, and M. Z. Win

accepted in *IEEE Wireless Communications and Networking Conference (WCNC 2007)*

Hong Kong, (Mar. 11-15, 2007).

A Distributed Opportunistic Access Scheme for OFDMA Systems

D. Wang, H. Minn, and N. Al-Dhahir

IEEE Global Communications Conference (Globecom 2006)

San Francisco, (Nov. 27 – Dec. 1, 2006).

8. Two Novel Iterative Joint Frequency-Offset and Channel Estimation Methods for OFDMA Uplink

X. Fu, H. Minn, and C. D. Cantrell

IEEE Global Communications Conference (Globecom 2006)

San Francisco, (Nov. 27 – Dec. 1, 2006).

9. Line Search Based Iterative Joint Estimation of Channels and Frequency Offsets for Uplink OFDMA Systems

Y. Na and H. Minn

IEEE Global Communications Conference (Globecom 2006)

San Francisco, (Nov. 27 – Dec. 1, 2006).

10. Robust Pilot Design for Consistent Carrier Frequency Offset Estimation

Y. Li, H. Minn, N. Al-Dhahir, and R. Calderbank

IEEE Military Communications Conference (MILCOM 2006)

Washington D.C., (Oct. 23-25, 2006).

11. An Exact Error Probability Analysis of OFDM Systems with Frequency Offset

P. Dharmawansa, R. M. A. P. Rajatheva, and H. Minn

IEEE Military Communications Conference (MILCOM 2006)

Washington D.C., (Oct. 23-25, 2006).

Pilot Designs for Consistent Frequency Offset Estimation in OFDM Systems

H. Minn, Y. Li, N. Al-Dhahir, and R. Calderbank

IEEE International Conference on Communications (ICC 2006),

Turkey, **10** (June 11-15, 2006) 4566-4571.

13. Frequency Offset Estimation for MB-OFDM-based UWB Systems

Y. Li, T. Jacobs, and H. Minn

IEEE International Conference on Communications (ICC 2006)

Turkey, **10** (June 11-15, 2006) 4729-4734.

14. A DCT-Based Broadband Multicarrier Transceiver

S. Satish, N. Al-Dhahir, and H. Minn

IEEE Southeast Conference (SECON 2006)

Reston VA, (Mar. 31-Apr. 2, 2006) 175-180.

A. Nosratinia

H. Shah, A. Hedayat, and A. Nosratinia,

"Performance of concatenated channel codes and orthogonal space-time block codes

7.4 Instructional/Training Activities (presented or received):

The following courses in BSEE were taught in 2006.

Spring 2006

EE 1102 INTRO. TO EXPERIMENTAL TECHNIQUE

EE 2110 INTRO TO DIGITAL SYSTEMS LAB 1

EE 2110 CV HONORS: INTRO DIGITAL SYS LAB 1

EE 2300 LINEAR ALGEBRA

EE 2310 INTRODUCTION TO DIGITAL SYSTEMS 3

EE 2310 INTRODUCTION TO DIGITAL SYSTEMS 3

EE 3101 ELECTRICAL NETWORK ANALYSIS LAB 1

EE 3102 SIGNALS AND SYSTEMS LABORATORY 1

EE 3110 ELECTRONIC DEVICES LABORATORY 1

EE 3310 ELECTRONIC DEVICES 3

EE 3320 DIGITAL CIRCUITS 3

EE 3341 PROBABILITY THEORY AND STAT 3

EE 3350 COMMUNICATIONS SYSTEMS 3
EE 4301 ELECTROMAGNETIC ENGINEERING I 3
EE 4310 SYSTEMS AND CONTROLS 3
EE 4330 INTEGRATED CIRCUIT TECHNOLOGY 3
EE 4340 ANALOG INTEGRATED CIRCUIT 3
EE 4360 DIGITAL COMMUNICATIONS 3
EE 4361 INTRO TO DIGITAL SIGNAL PROC. 3
EE 4365 INTRO TO WIRELESS COMMUNICATION 3
EE 4367 TELE SWITCHING & TRANSMISSION 3
EE 4368 RF CIRCUIT DESIGN PRINCIPLES 3
EE 4381 MOBILE COMM SYS DESIGN PROJECT I 3
EE 4382 INDIV SUPERVISD SNR DESIGN PROJ I 3
EE 4384 MOBILE COMMUN SYST DESIGN PRJ II 3
EE 4386 DSP-BASED DESIGN PROJ II 3
EE 4387 INDIV SUPERV SR DES PROJ II 3
EE 4390 INTRO TO TELECOM NETWORKS 3
EE 4V95 ENGINEERING ECONOMY 3
EE 4V97 INDEP. STUDY IN ELEC. ENGINEER 1-9

Summer 2006

EE 2110 INTRO TO DIGITAL SYSTEMS LAB 1
EE 2300 LINEAR ALGEBRA 3
EE 3101 ELECTRICAL NETWORK ANALYSIS LAB 1
EE 3102 SIGNALS AND SYSTEMS LABORATORY
EE 3110 ELECTRONIC DEVICES LABORATORY 1
EE 3300 ADV. ENGINEERING MATHEMATICS 3
EE 3301 ELECTRICAL NETWORK ANALYSIS 3
EE 3302 SIGNALS AND SYSTEMS 3
EE 3310 ELECTRONIC DEVICES 3
EE 3341 PROBABILITY THEORY AND STAT 3
EE 4301 ELECTROMAGNETIC ENGINEERING I 3
EE 4304 COMPUTER ARCHITECTURE 3
EE 4365 INTRO TO WIRELESS COMMUNICATION 3
EE 4367 TELE SWITCHING & TRANSMISSION 3
EE 4382 INDIV SUPERVISD SNR DESIGN PROJ I 3
EE 4390 INTRO TO TELECOM NETWORKS 3
EE 4V95 INTRO TO PHOTOTONICS 1-9
EE 4V95 PLASMA TECHNOLOGY 3

Fall 2006

EE 2110 INTRO TO DIGITAL SYSTEMS LAB 1
EE 2300 LINEAR ALGEBRA FOR ENGINEERS 3
EE 2310 INTRODUCTION TO DIGITAL SYSTEMS 3
EE 3101 ELECTRICAL NETWORK ANALYSIS LAB 1
EE 3102 SIGNALS AND SYSTEMS LABORATORY 1
EE 3110 ELECTRONIC DEVICES LABORATORY 1
EE 3111 ELECTRONIC CIRCUITS LABORATORY 1
EE 3120 DIGITAL CIRCUITS LABORATORY 1
EE 3150 COMMUNICATION SYSTEMS LABORATORY 1
EE 3300 ADV. ENGINEERING MATHEMATICS 3
EE 3301 ELECTRICAL NETWORK ANALYSIS 3
EE 3302 SIGNALS AND SYSTEMS 3
EE 3310 ELECTRONIC DEVICES 3
EE 3311 ELECTRONIC CIRCUITS 3

EE 3320 DIGITAL CIRCUITS 3
 EE 3341 PROBABILITY THEORY AND STAT 3
 EE 3350 COMMUNICATIONS SYSTEMS 3
 EE 4301 ELECTROMAGNETIC ENGINEERING I 3
 EE 4302 ELECTROMAGNETIC ENGINEERING II 3
 EE 4304 COMPUTER ARCHITECTURE 3
 EE 4310 SYSTEMS AND CONTROLS 3
 EE 4340 ANALOG INTEGRATED CIRCUIT 3
 EE 4360 DIGITAL COMMUNICATIONS 3
 EE 4361 INTRO TO DIGITAL SIGNAL PROC. 3
 EE 4365 INTRO TO WIRELESS COMMUNICATION 3
 EE 4367 TELE SWITCHING & TRANSMISSION 3
 EE 4368 RF CIRCUIT DESIGN PRINCIPLES 3
 EE 4380 MICROPROCESSOR DESIGN PROJECT I 3
 EE 4381 MOBILE COMM SYS DESIGN PROJECT I 3
 EE 4382 INDIV SPERVISD SNR DESIGN PRO I 3
 EE 4385 DSP-BASED DESIGN PROJECT I 3
 EE 4390 INTRO TO TELECOM NETWORKS 3
 EE 4V95 TOPICS:ELECTRICAL ENGINEERING 3
 EE 4V95 INTRO TO MATERIALS SCIENCE 3

7.5 Public Service: N. Al-Dhahir

Editor for IEEE Transactions on Communications (Area : Wireless Communications).

P. Balsara

General Chair, 5th IEEE Dallas Circuits and Systems Workshop, Dallas, TX, Oct. 29-30. 2006.

Program Committee, First International Workshop on Interconnect Design and Variability, Bangalore, India, Dec. 28-29, 2006

D. Bhatia

Program Committee, IEEE International Conference on Field Programmable Technology, Kitakyushu, Japan, December 2007.

Program Committee, 17th International Conference on Field Programmable Logic, Amsterdam, Holland, August 2007.

Activities Chair and Member of Executive Committee, IEEE Dallas Chapter, 2007.

Program Committee, IEEE 2nd International Workshop on Reconfigurable Computing Education, Porto Allegre, Brasil, May 2007.

Publicity Chair, Fifth IEEE Dallas Circuit and Systems Workshop, Dallas, October 29-30 2006.

Program Committee, Fourteenth International Conference on Advanced Computing & Communications (ADCOM 2006), Suratkal, India, December 2006.

Program Committee, IEEE International Conference on Field Programmable Technology, Bangkok, Thailand, December 2006.

Program Committee, 16th International Conference on Field Programmable Logic, Madrid, Spain, August 2006.

C. Cantrell

Expert witness for Winstead, Sechrest & Minick

K. Cho

Editor, conference organizer, etc. (**2 journal editorial boards**)

Editorial Board Member of Computer Modeling in Engineering & Science (2002-present)

Editorial Board Member of Journal of Computational and Theoretical Nanoscience (2003-present).

Consulting on Nanomaterials Modeling to Nanostellar Inc.

J. Fonseka

Reviewer for IEEE Transactions on Communications, IEEE Transactions on Vehicular Technology, IEEE Communication Letters, and IEE Proceedings-Communications

Member, Undergraduate Curriculum Committee

Member, Committee on Effective Teaching

B. Gnade

Proposals Reviewed

- a) R.B. van Dover, "Complex Amorphous Oxides", NSF proposal # 0604909 (January 2006).
- Bruce Gnade – 2006 Annual Report of Professional Activities and Accomplishments
12
- b) H. Baumgart, "Investigation of High Dielectric Constant ZrO₂ Ultra Thin Films Grown by Atomic Layer Deposition", NSF Proposal # 0606401 (reviewed January 2006)
- c) T. Gustasson, "Structural Studies of Thin Films for Applications in Microelectronics", NSF proposal # 606126 (Feb. 2006).
- d) David Gidley "GOALI:" characterization of Porosity at the Nanoscale", NSF proposal # 604819 (March 2006).
- e) T. Gustasson, "Pan American Advanced Study Institute on Materials for Micro- and Nanoelectronics", NSF proposal # 617426 (March 2006).
- f) S. E. Pavlovich, "Elements of field emission video screens", CRDF proposal ISTC #3490 (May 2006).
- g) D. Burton, "SBIR/STTR Phase II: High Thermal Conductivity Carbon Composite for Electronics Cooling", NSF proposal #646434 (October 2006).
- h) W. Nachtrab, "SBIR/STTR Phase II: A New production Method for Ta fibers for Use in Electrolytic Capacitors with Improved Performance and Packaging Options", NSF proposal #646417 (October 2006).
- i) T. Xiao, "SBIR/STTR Phase II: Nanomagnetic Paste for Miniaturized Ultrahigh Frequency DCto-DC Converter", NSF proposal #646436 (October 2006).
- j) H. Hu, "SBIR/STTR Phase II: Nanoporous Catalytic Mixed Oxide Membranes for Removal of Hazardous Air Pollutants", NSF proposal #646426 (October 2006).
- k) W.N. Thurmes, "SBIR/STTR Phase II: Bistable FLCs using Siloxanes", NSF proposal #646465 (October 2006).
- l) S.C. Tan, "SBIR/STTR Phase II: Millimeter Wave Planar Structure and Antennas Fabricated from a Novel Polymer System", NSF proposal #646449 (October 2006).
- m) I.M. Tiginyanu, "Enforcing the infrastructure of the National Center for Materials Study and Testing in Moldova with technological facilities for micro- opt- and nano electronic device fabrication: the purchase of a mask alignment and UV exposure lithography system", CRDF proposal #060616 (November 2006).
- n) V.P. Berzan, "Devices for scientific research of the energy conversion efficiency of the renewable energy sources in climate environment of the Republic of Moldova", CRDF proposal #060620 (November 2006).
- o) C. Turta, "Gamma-resonance spectroscopy – Mossbauer Spectroscopy", CRDF proposal #060615 (November 2006).
- p) S.C. Railean, "New equipment for scientific researches", CRDF proposal #060628 (November 2006).

f) consultant activities

Nanolumens, Inc. Atlanta GA

M. Goeckenr

Reviewed submissions for J. Vac. Sci. Technol.

Reviewed submissions for Plasma Sources Science and Technology.

Reviewed submissions for RSI.

Reviewed proposals to NSF program in Plasma Science

Local Organizing Committee - ICFM Conference 2006.

Program Committee AVS Plasma Science Division (2006 conference)

Consultant activities:

On design of oil well tools (Local company)

W. Hu

Panelist of National Science Foundation's program: Nanoscale Interdisciplinary Research Teams (NIRT), 2006.

Paper review service for *IEEE Transaction on Nanotechnology*

Paper review service for *Journal of Vacuum Science & Technology*

Paper review service for *Surface and Coating Technology*

Paper review service for *Nanotechnology*

B. Hunt

Associate Editor of System and Control Letters

Referee for IEEE Conference on Decision and Control (1 paper)

Incoming Faculty Sponsor for TSPE Student Chapter

N. Kehtarnavaz

Coeditor-in Chief, Journal of Real-Time Image Processing

Initiated the establishment of this new journal published by Springer

Resolved various issues to bring it into publication status

Dallas Chapter Chair, IEEE Signal Processing Society

Sponsored 10 seminars held at UTD, one being Signal Processing Society

Distinguished Lecturer

Updated and maintained webpages for the Dallas Chapter

Conference Chair, SPIE Real-Time Image Processing Conference, Jan 2006

Reviewed and organized all the submitted papers

Program Committee Member, IEEE Symposium on Image Analysis and

Interpretation, March 2006 – Reviewed papers

Steering Committee Member, IEEE Symposium on Computer-Based Medical Systems, June 2006

Program Committee Member, IEEE Conference on Systems, Man, and Cybernetics, Oct 2006 – Reviewed papers

Program Committee Member, 10th World Multi-Conference on Systemics, Cybernetics, and Informatics, July 2006 – Reviewed papers

SPIE Fellow and IEEE Senior Member

Provided three reference letters for faculty promotion at other schools

Listed in Who's Who in America, 2006

Served as a consultant to Kettering University and Humboldt State University

K. Kiasaleh

Reviewed manuscripts for

- Optical Engineering
- IEEE Photonics Technology Letters

Served as an expert on National Science Foundation (NSF) panel for evaluating phase I SBIR proposals

J. Kim

Editorial Board, Electronic Materials Letters (2005 – Present)

Member: Materials Research Society, American Vacuum Society,

Electrochemical Society, IEEE, Korean Institute of Metals and Materials, Korean

Ceramic Society, Korean Materials Research Society

Papers Reviewed – 2006

Journal of Vacuum Science and Technology

1. # 31423 (Nov. 2006) "Etch Induced Sidewall Damage Evaluation in Porous Low-k MSQ Films," by B.Kong, T.Choi, S.Sirard, D.Kim, N.Lee
Advanced Functional Materials

1. Manuscript number adfm.200600877 (Oct. 2006)

"Nanoparticle Coating for Advanced Optical, Mechanical and Rheological Properties", Hakim et al.

Microelectronics Engineering

1. MEE-D-06-00271 (Nov. 2006)

"Growth and Structural Properties of Crystalline LaAlO₃ on Si (001)", Ahn

et al.

2. MEE-D-06-00274 (Nov. 2006)

“High-quality high-k HfON formed with plasma jet assisted PVD process and application as tunnel dielectric for flash memories,” T.P. Ma et al

M. Kim

Served as an instructor: High Resolution Electron Microscopy (HREM) Annual Winter School at Arizona State University – a week long intensive course for training of graduate students and technical professionals.

Provided technical support to the following faculty for their research programs (not resulted in joint-publication:

Prof. J. Duggan, Physics, University of North Texas

Prof. A. Neogi, Physics, University of North Texas

Mr. R. Croley, OSP, University of North Texas

Prof. M. Johnson, Physics, University of Oklahoma

Prof. R. Kovacevic, Manufacturing, Southern Methodist University

Papers reviewed:

“CuO Nanoparticle Filled Vinyl-Ester Resin Nanocomposites: Fabrication, Characterization and Property Analysis,” Z. Guo, X. Liang, T. Pereira, R. Scaffaro and H.T. Hahn, *Composites Science and Technology*.

“X-ray Metrology for High-k Atomic Layer Deposited Hf_xZr_{1-x}O₂ films,” D.H. Triyoso, M. Raymond, J.J. Gallegos, *Microelectronic Engineering*.

“Growth and Structural Properties of Crystalline LaAlO₃ on Si (001),” J.W. Reiner, A. Posadas, M. Wang, T.P. Ma and C.H. Ahn, *Microelectronic Engineering*

Proposals reviewed:

UTD-UTA Presidential Joint Research Program Review Panel

Committee member:

Microscopy Society of America, Undergraduate Education Committee

H. Lee

Technical committee co-chair of IEEE Solid-State Circuits Society-Dallas Chapter 2006

Technical program committee member of IEEE International Symposium of Circuits and Systems, 2006

Chair of lecture session “Bandgap References” for IEEE International Symposium of Circuits and Systems, 2006

Review committee member of IEEE International Symposium of Circuits and Systems, 2006

Reviewer of IEEE International Symposium of Circuits and Systems, 2006

Reviewer of IEEE Journal of Solid-State Circuits, 2006

Reviewer of IEEE Transactions on Circuits and Systems I, 2006

Reviewer of IEEE Transactions on Circuits and Systems II, 2006

J. B. Lee

Serving as a technical program committee member for IEEE Sensors Conference

Serving as a technical program committee member for SPIE’s International Symposium on Microtechnologies for the New Millennium Conferences

Served as a conference chair for the TEXMEMS 2006 Conference

Served as a session chair for the 2006 International Conference on Nano Science and Nano Technology

Served as a member of editorial board of Transactions on Electrical and Electronic Materials

Served as a reviewer for Journal of Micromechanics and Microengineering

Served as a review panel member for NSF SBIR programs two times

Samsung Telecommunications America, Richardson, TX, Served as a consultant for their interests in MEMS for cell phone applications

J. Liu

Associate Editor of IEEE Transactions on Circuits and Systems II, 2004 - present

Proposal Reviewer for National Sciences and Engineering Research Council of Canada, 2006

Member of Technical Program Committee and Session Chair (Analog Signal Processing) for IEEE International Symposium on Circuits and Systems, 2005 - present

Reviewer for IEEE Journal of Solid-State Circuits, IEEE Transactions on Circuits and Systems II, IEEE Transactions on Microwave Theory and Techniques, IEEE Circuits and Systems Magazine

P. Loizou

Associate Editor of *IEEE Signal Processing Letters*, 2006-

Member of IEEE Speech Technical Committee, 2006-

Regular member of NIDCD/NIH Study Section (AUD) for R01 applications, 2006-

Invited member of a NIDCD/NIH Study Section for R03 and R01 applications, April and Nov 2005.

Associate Editor of *IEEE Transactions of Speech and Audio Processing*, 1999-2002

Member of Industrial Technology Track technical committee for ICASSP conference, 2001-2205

Member of North Texas Cochlear Implant Group at Callier Center/UTD

.Served as a reviewer for numerous IEEE publications, including *IEEE Signal Processing*

Letters and *IEEE Transactions on Speech and Audio Processing*. Also served as a

reviewer for the *Journal of Acoustical Society of America*, and *Ear and Hearing* journals.

H. Minn

(1) Editor for the IEEE Transactions on Communications.

(2) Technical Program Committee Member in IEEE WCNC 2005, IEEE VTC (Fall) 2005, ICCAS 2005, IEEE GLOBECOM 2005, IEEE IWCMC 2006 (MIMO Systems & Networks Symposium), ICUWB 2006, IEEE Globecom 2006, IEEE WCNC 2007, IEEE ICC 2007, IEEE Globecom 2008.

(3) Reviewer in IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Vehicular Technology, IEEE Communications Letters, IEEE Signal Processing Letters, IEEE Globecom, ICC, VTC, WCNC, ICCAS, ICCS.

(4) Session Chair

in IEEE WCNC 2005, New Orleans; IEEE VTC 2005, Dallas; IEEE GLOBECOM 2005, St. Louis; ICICS 2005, Thailand; ICC 2006, Turkey; IEEE GLOBECOM 2006, San Francisco.

(5) Technical Committee Member in

IEEE Technical Committee on Communications Theory

IEEE Technical Committee on Personal Communications

IEEE Technical Committee on Radio Communications.

A. Nosratinia

Associate Editor of IEEE Transactions on Image Processing.

Associate Editor of IEEE Transactions on Wireless Communications

Associate Editor of IEEE Signal Processing Letters

Associate Editor IEEE Wireless Communications

Active Student Recruitment. Continued operation of a highly successful web-based graduate student recruitment system. This system has increased the quality of potential graduate students available to us. I both recruit my own students, as well as help other faculty with their recruitment.

Reviewed articles for various technical journals

M. Nourani

NSF Panel: Served as a member of NSF grant review panel.

Technical Program Committee Member: International Design and Test Workshop (IDT-2006), International Conference on Information Technology (ICT-2006), Computer Society of Iran Conference (CSICC-2006).

Journal Referee: Transactions on Computer Aided Design of Integrated Circuits and Systems, Transactions on Very Large Scale Integration Systems, Transactions on Reliability, Transactions on Networking, Transactions on Computers, Transactions on Design Automation of Electronic Systems and Journal of Electronic Testing, IEEE Design & Test Magazine, IEEE Micro Magazine and IEE Proceedings.

Conference Referee: Design Automation Conference (DAC), International test Conference (ITC), VLSI Test Symposium (VTS), Design Automation and Test in Europe (DATE), International Conference on Computer Design (ICCD), International Conference on Communication (ICC), International Conference on Computer Communications and Networks (ICCCN), International Symposium on Circuits and Systems (ISCAS), Midwest Symposium in Circuits and Systems (MWSCAS), Global Telecommunication Conference (Globecom), Iranian Conference on Electrical Engineering (ICEE) and Computer Society of Iran Conference (CSICC).

L. Overzet

Reviewed article submissions for various Journals (examples: Appl. Phys. Lett., J. Vac. Sci. Technol., Plasma Sources Science Technol., IEEE Transactions on Plasma Science, Thin Solid Films and The Journal of the Electrochemical Society.)

Reviewed research proposals for a variety of funding agencies.

Executive Committee member of the GEC (Gaseous Electronics Conference).

Program committee member for Dry Process Symposium (Japan).

Plano Science fair judge.

Wrote numerous letters supporting research proposals, green card applications, Senior member upgrades (IEEE) and Professional Engineering applications.

I. Panahi

Co-Founder of the IEEE-Dallas Chapter of Engineering in Medicine and Biology Society (EMBS), Aug. 2006.

Vice-Chair of the IEEE-Dallas Chapter of Engineering in Medicine and Biology Society (EMBS), 2006, 2007.

Program-Chair of the IEEE-Dallas Chapter of Signal Processing Society, 2006.

Reviewer for the IEEE Transactions on Signal Processing, Communication, Circuits and Systems.

Member. IEEE Societies: Signal Processing (SPS), Engineering in Medicine and Biology (EMBS), LEOS.

Received the "2005 Outstanding Service Award" of the IEEE Dallas Section.

B. Pervin

Served as Secretary of the Dallas Chapter of the IEEE-Computer Society; appointed Secretary of the Dallas Chapter of the IEEE-Signal Processing Society

P. K. Rajasekaran

Reviewed articles for IEEE-SPS, and other speech conferences.

R. Sangireddy

Member of Technical Program Committee, The IEEE International Workshop on Next Generation Wireless Networks 2006 [6]. IEEE WoNGeN '0

Member of Technical Program Committee, 5th International Trusted Internet Workshop 2006 [TIW-2006].

Technical paper reviewer, IEEE Transactions on Parallel and Distributed Systems, August 2006

Technical paper reviewer, IEEE Communications Letters, October 2006

M. Saquib

10/2004 - present

Associate editor, IEEE Transactions on Wireless Communications (EDICS: Wireless Communications - Cross-layer protocols, UWB, MIMO channel, Wireless Techniques and Fading, Interference Suppression, etc.)

10/2002 - present

Associate editor, IEEE Communications Letter (EDICS: Wireless Communications - UWB, MIMO channel, Wireless Techniques and Fading, Interference Suppression, etc.)

Technical program co-chair, Signal Processing for Communications Symposium, IEEE Global Telecommunications Conference

Technical program co-chair, First International Conference on Next-Generation Wireless Systems (ICNEWS 2006)

Technical program committee member, Wireless Communications Symposium, IEEE International Conference on Communications

Technical program committee member, Phy/MAC Symposium, IEEE Wireless Communications and Networking Conference

NSF panelist, Theoretical Foundation (TF) Cluster Review Panel,

Reviewer for IEEE Transactions on Communications, Vehicular Technology, Information Theory, Signal Processing and Wireless Personal Communications, Systems and Control Letters, and others

Reviewer for various conferences, including IEEE International Conference on Communications, IEEE Vehicular Technology Conference, IEEE Military Communications Conference, IEEE International Symposium on Circuits and Systems, and IEEE International Symposium on Information Theory

L. Tamil

Member, MTBC SIG on RFIDs

Member, Organizing committee on 'RFID Symposium' a collaborative effort of UTD SoM and EJSoECS.

Consulted for Lighthouse Capital Partners on Technical feasibilities of ideas for Investment decisions. Consulted for Mr. Tom Lardner on Technical matter relating to inveting.

E. Vogel

Program Committee - IEEE International Reliability Physics Symposium (2006)

Ex-Officio Chair - IEEE Semiconductor Interface Specialists Conference (2006)

Program Committee - Dielectrics - Workshop on Dielectrics in Microelectronics (2006)

Co-organizer - FIAP Focus Session on Emerging Research Devices and Materials for the Microelectronics Industry
- American Physical Society Spring Meeting (2007)

Senior Member of the Institute for Electrical and Electronics Engineers

Member: Materials Research Society, American Physical Society

Papers Reviewed

1. "Impact of High K Gate Dielectrics on the Device and Circuit Performance of Nanoscale FinFETs," IEEE Elec. Dev. Lett., V. Ramgopal Rao et al
2. "Electron Detrapping Characteristics in PBT-Stressed nMOSFETs with Ultrathin HfSiON Gate Dielectrics," IEEE Elec. Dev. Lett., A. Nakajima et al.
3. "High-k Al₂O₃-HfTiO Nanolaminates with less than 0.8 nm equivalent oxide thickness," IEEE Elec. Dev. Lett, V. Mikhelashvili et al.

R. M. Wallace

Elected Executive Committee, Electronic Materials and Processing

Division, AVS (2005-2007)

Program Committee – Advanced Gate Stacks – International Conference

on Solid State Devices and Materials, Kobe, Japan (2005) Continued on the Editorial Board - Journal of Materials Science:

Senior Member of the Institute for Electrical and Electronics Engineers

Member: Materials Research Society, American Vacuum Society,

Electrochemical Society, American Society for Testing and Materials

Papers Reviewed – 2006

Applied Physics Letters

"High Temperature Stability of Lanthanum Silicate Dielectric on Si (001)"

by Jur, et al (12/2006)

"Formation of Low-leakage-current Ultra-thin SiO₂ Films Using Lowtemperature

Neutral Beam Oxidation" by Samukawa, et al. (11/2006)

"Post-metal deposition annealing of TaN/Hf_{1-x}Si_xO₂/Si/GaAs gate stacks,"

by Zhang et al (9/2006)

"Electron energy barriers at interfaces of GaAs(100) with LaAlO₃ and

Gd₂O₃," by Afans'ev, et al. (6/2006)

"Effects of defects near the HfO_xNy/Si(100) interface on carrier lifetime in

silicon and electrical characteristics of metal-oxide-semiconductor devices,"

by Cheng, et al. (4/2006)

Electron Device Letters

"Impact of the Nitrogen Content in Thin PVD-TaN Gate Electrode Films in

Poly-Si/TaN/HfO₂/SiO₂ Transistors", by Kazuhiko Yamamoto, et al (3/2006)

"All-Implanted GaAs MOSFETs with Directly-Deposited HfO₂ Gate

Dielectrics", by Koester et al. (11/2006)

"Thermal stability of metal electrodes and its impact on gate dielectric

characteristics", by Park et al. (12/2006)

Journal of the Electrochemical Society

"High-Temperature Stability Of Lanthanum Silicate Gate Dielectric MIS

Devices With Ta And TaN Electrodes," by Lichtenwalner, et al. (4/2006)

Electrochemical and Solid State Letters

"Sub-nanometer Equivalent Oxide Thickness Zirconium doped Hafnium

Oxide High-k Gate Dielectric," by Kuo , et al. (12/2006)

"Dependence of electrical properties on interfacial layer thickness of Ta₂O₅

films," by Myoung, et al. (8/2006)

"Improved Dielectric and Interfacial Properties of Low Temperature

Processed Hf rich Hf-Ti-O Gate Dielectrics," by Ramani, et al. (9/2006)

Thin Solid Films

"Interfacial microstructure of NiSi_x/HfO₂/SiO_x/Si gate stacks" by Gribelyuk,

et al. (4/2006)

IEEE Transactions on Electron Devices

“Characterization of high-k hafnium oxide gate dielectric by LI-ALD” by Taechakumput, et al. (4/2006).

Microelectronics Engineering

“Compositionally graded Hf-silicate high-k gate dielectric for 50nm DRAM with high thermal stability,” by Hyun, et al (11/2006).

“Thermal and Plasma Enhanced Atomic Layer Deposition Ruthenium and Electrical Characterization as a Metal Electrode,” by Park, et al. (11/2006).

Electrochemical and Solid-State Letters

“Sub-nanometer Equivalent Oxide Thickness Zirconium doped Hafnium Oxide High-k Gate Dielectric,” by Yan, et al. (12/2006)

“Improved Dielectric and Interfacial Properties of Low Temperature Processed Hf rich Hf-Ti-O Gate Dielectrics,” by Ramani (9/2006)

“Dependence of electrical properties on interfacial layer thickness of Ta₂O₅ films,” by Lee et al. (8/2006)

R.M.Wallace – 2006 Annual Report of Professional Activities and Accomplishments
Solid State Electronics

“InGaAs channel layers with record mobility exceeding 12,000 cm²/Vs for use in high-k,” by Droopad et al. (5/2006)

Materials Today

Gate Stack technology for Nano Scale Devices: Current and Future Challenges, by Lee, et al. (3/2006)

7.6 Other External Activities: Lectures abroad

M.J. Goeckner, *A short study of Plasma Science (4 total lectures)*, Sungkyunkwan University (SKKU) Suwon, Korea, December 2006

M.J. Goeckner, S. Sant, C. Nelson, E. Joseph, B. Zhou and L.J. Overzet, *In-situ studies of gas-phase chemistry in CF₄/C₄F₈ plasmas in the modified Gaseous Electronics Conference (mGEC) system*, Sungkyunkwan University, Suwon, Korea, May 2006

L. Tamil, "Body Area Sensor Network," Indian Institute of Technology, Nanyang Technological University, Singapore, May 30, 2006.

L. Tamil, "Body Area Sensor Network," Indian Institute of Technology, Chennai, India, June 12, 2006.

L. Tamil, "Body Area Sensor Network," Indian Institute of Science, Bangalore, India, June 17, 2006.

L. Tamil, "Body Area Sensor Network," Tech Mahendra, Bangalore, India, June 18, 2006.

L. Tamil, "Body Area Sensor Network," Indian Institute of Technology, Mumbai, India, June 19, 2006.

L. Tamil " Multi-terabit Photonic Switching and Routing," Indian Institute of Technology, Chennai, July 18, 2006.

L. Tamil "Body Area Sensor Network," Institute for Infocomm, Research, ASTAR, Singapore, July 27, 2006.

7.7 Contributions to UTD:

The mission of the Department of Electrical Engineering is to provide education in the theory and practice of modern electrical engineering. We prepare our graduates to have rewarding and successful careers in a diverse range of electrical engineering fields, including materials, devices, circuits, digital systems, signal/speech/image processing, and communications. The mission of the EE program is aligned with the UTD's mission in providing an educational environment that is responsive to local as well as national needs. To that end, the EE department continues to educate students in areas of Electrical Engineering, critical to the economical interests of the community at large.

In 2006, the EE program continued to award a large number of Baccalaureate degrees in Electrical Engineering. This fact, coupled with the proximity of UTD to one of the largest concentration of high-tech industries in Texas, allows EE program to be an active participant in the economical development of the local community, thereby contributing in a substantial manner to the mission of the university.

7.8 Top 3 Program / Unit Challenges: The challenges for the EE program are as follows:

- Increased funding to support an expanding student and faculty base
- Maintaining a steady growth in student population majoring in Electrical Engineering