

CURRICULUM VITAE

PERSONAL DATA

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EDUCATION

Ph.D ELECTRICAL ENGINEERING, December 1994, University of California, Berkeley.
Thesis: Modeling of electron-phonon scattering in nanoscale semiconductor devices.

M. S. ELECTRICAL ENGINEERING, June 1989, University of California, Davis.
Thesis: Experimental and analytical investigation of optical properties of polymeric thin films.

B. S. PHYSICS, March 1986, University of California, Davis.

ACADEMIC HONORS

- Howard Hughes Doctoral Fellowship (1991-1994)
- Electrical Engineering and Computer Science Department Scholarship, University of California, Berkeley (1989-1990)

TEACHING EXPERIENCE

Since Fall 1999 ASSISTANT PROFESSOR: Department of Electrical and Computer Engineering, University of the Pacific.

Summers 2000 - 2002 ADJUNCT PROFESSOR: Department of Electrical Engineering, Santa Clara University.

- ▶ Taught logic design.

1999 VISITING PROFESSOR: Department of Electrical Engineering, Santa Clara University.

- ▶ Taught logic design (theory/lab) and introduction to analog circuit theory.

1994-95 UNIVERSITY LECTURER: Department of Electrical Engineering, University of California, Berkeley.

- ▶ Taught advanced electromagnetics (theory/lab) and introduction to digital & analog circuit design. Developed lectures, examinations, class assignments and demonstrations.

1992-93 TEACHING ASSISTANT: Department of Electrical Engineering, University of California, Berkeley.

- ▶ Taught senior level electromagnetics laboratory.

1986-89 TEACHING ASSISTANT: Department of Electrical Engineering, University of California, Davis.

- ▶ Taught introduction to analog circuit theory, intermediate analog IC laboratory, and advanced microwave fields and circuits (design, fabrication and measurement).

1987 LABORATORY DESIGNER: Department of Electrical Engineering, University of California, Davis.

- ▶ Developed new experiments and faster, more reliable fabrication processes for advanced microwave circuits labs in agreement with ABET standards.

This work was reported by G. R. Branner, *IEEE Trans. Educ.* 33, 145 (1990).

RESEARCH EXPERIENCE

1996-98 POST-DOCTORAL RESEARCH ASSOCIATE

Department of Physics, University of Florida, Gainesville, under Prof. C. J. Stanton.

Working on theory and numerical simulation of:

- ▶ Electrical and optical properties of GaN as a material for flat panel display technology.
- ▶ Femtosecond spectroscopy experiments for GaN.
- ▶ Ultrafast electrical and optical processes in semiconductors and dilute magnetic semiconductors.
- ▶ Electron transport and relaxation in nanoscale semiconductor devices.

1990-94 GRADUATE STUDENT RESEARCHER

Department of Electrical Engineering, University of California, Berkeley, under Prof. T. K. Gustafson.

Ph.D. dissertation work:

- ▶ Simulation of the electron-phonon interaction in ultrafast nanoscale semiconductor carrier transport.
- ▶ Developed quantum dynamical model for electron-phonon interactions in nanoscale devices.

1987-89 GRADUATE STUDENT RESEARCHER

Department of Electrical Engineering, University of California, Davis, under Prof. A. Knoesen

Master's dissertation work:

- ▶ Theory/experimental studies of surface plasmons for optical characterization of thin polymer films.

INDUSTRY/CONSULTING EXPERIENCE

Since 2004 TEXT BOOK CONSULTANT John Wiley & Sons Publishing, Inc.

- ▶ Contributor of new text material for the Summer 2005 release of "Introduction to Electric Circuits", 7th Edition", by Dorf and Svoboda, John Wiley & Sons
- ▶ Contributor and evaluator of John Wiley & Sons *Electronic Resource Library* pilot project.

2004 TECHNICAL CONSULTANT Electronics Inventory Exam (EIE) for ABET assessment, M. Herniter, M. Simoni and B. Ferguson, Rose-Hulman Institute of Technology

- ▶ Contributor and evaluator of the first EIE to be available Fall 2004. Developed and tested exam questions.

Summer 1991 RESEARCH ENGINEER Hughes Research Laboratory, Malibu, CA.

- ▶ Investigator of fabrication techniques and the electrical & optical properties of semiconductor quantum wires.

1988-1992 TEXT BOOK CONSULTANT John Wiley & Sons Publishing, Inc.

- ▶ Co-author of solution manual to the 1st and 2nd editions of "Introduction to Electric Circuits", by Richard C. Dorf, John Wiley.

Summers 1984-86 (SEED) ENGINEER Hewlett Packard Company, Santa Rosa, CA.

- ▶ Developer of test automation software and quality control testing procedures for microwave circuit components.

PEER REVIEWED JOURNAL PUBLICATIONS

- [8] Julie A. Kenrow,
“A TCAD-based Lab Sequence for Undergraduate Semiconductor Device Courses,” submitted for publication in *IEEE Transactions on Education*, Summer 2004.
- [7] Julie A. Kenrow,
“Characterization and Analysis of OFET Devices based on TCAD Simulations,” submitted for publication in *IEEE Transactions on Electron Devices*, Summer 2004.
- [6] Y. D. Jho, D. S. Kim, A. J. Fischer, J. J. Song, J. A. Kenrow, K. El Sayed, C. J. Stanton, E. J. Shin, D. Kim, and Ki-Soo Lim,
”Femtosecond Coherent and Incoherent Spectroscopies on GaN,” *Phys. Rev. B* 68, p. 165325, (2003).
- [5] J. A. Kenrow, K. El Sayed and C. J. Stanton,
”Probing semiconductor carrier kinetics with ultrashort nonlinear Faraday rotation”,
Phys. Rev. B 58, 13399, (1998).
- [4] K. El Sayed, J. A. Kenrow and C. J. Stanton,
“Femtosecond relaxation kinetics of highly excited electronic wave packets in semiconductors”
Phys. Rev. B 57, 12369, (1998).
- [3] J. A. Kenrow, K. El Sayed and C. J. Stanton,
“Interaction Induced Electron Self-Interference in a Semiconductor: The Phonon Staircase Effect,”
Phys. Rev. Lett. 78, 4873–4876, (1997).
- [2] J. A. Kenrow,
“A Quantum Kinetic Study of the Electron-LO Phonon Interaction in a Semiconductor,”
Phys. Rev. B 55, 7809 (1997).
- [1] J. A. Kenrow and T. K. Gustafson,
“Schrödinger’s Equation as a Model Approach to Short Time-Scale Quantum Kinetics in a Semiconductor,” *Phys. Rev. Lett.* 77, 3605–3608, (1996).

PEER REVIEWED CONFERENCE PROCEEDINGS

- [5] Julie A. Kenrow,
”Integrating professional TCAD simulation tools in undergraduate semiconductor device courses,”
Proceedings of the 2004 ASEE Conference.
- [4] Y.D. Cho, D.S. Kim, A.J. Fischer, J.J. Song, J. Kenrow, K. El Sayed and C.J. Stanton, “Femtosecond Coherent and Incoherent Spectroscopies on a GaN Epilayer”, *Proceedings of the International Conference on the Physics of Semiconductors*, 1999.
- [3] Julie A. Kenrow,
“Quantum Dynamical Transport in Ultra-small Semiconductor Devices,” *Proceedings of the NATO Advanced Study Workshop on Quantum Transport in Ultrasmall Devices*, July 1994.
- [2] J. A. Kenrow,
“Modeling the Quantum Kinetics of electron-LO and -SO phonon interactions in semiconductor electron transport”, *Proceedings of the 3rd International Workshop on Computational Electronics*, May 1994.
- [1] J. A. Kenrow, J. Hefti, and T. K. Gustafson,
“A model for the dynamical treatment of electron-phonon scattering in quantum confined structures”,
Proceedings of the 2nd International Workshop on Computational Electronics, May 1992.

OTHER TECHNICAL PUBLICATIONS

- J. A. Kenrow,
“Analysis of an electron wave interference filter in the presence of an applied electric field using optical plane wave analogies”, *Electronics Research Laboratory Report*, UC Berkeley, UCB/ERL M91/19, 1991.

INVITED TALKS

- “Modeling Electronic Scattering Processes in Semiconductors on Ultrafast Timescales”, Hewlett Packard Labs, Palo Alto, CA, July 1998.
- “Novel Quantum Kinetic Behavior of Interactions in Confined Semiconductors: The Phonon Staircase Effect”, Quantum Theory Project Seminar, University of Florida, Gainesville, May, 1998.
- “Quantum Kinetic Models for Ultrafast Processes in Semiconductors”, Intel Corporation, Santa Clara, CA, April 1998.
- “Quantum Kinetic Models of the Electron-phonon Interaction in Semiconductors”, *March Meeting Of the American Physical Society*, Los Angeles, CA, 1998.
- “Coupled Electron-Phonon Dynamics in GaAs”, Mikroelektronik Centret, Technical University of Denmark, Lyngby, Denmark, April 1995.

CONFERENCE PRESENTATIONS

- (14) "Integrating TCAD tools in undergraduate semiconductor device courses", Julie Kenrow, *2004 Annual ASEE Conference*, Salt Lake City, UT, June 21-24, 2004 (contributed talk).
- (13) "Simulation of Ultrafast Nonlinear Optical Spectroscopy in GaN", J.A. Kenrow, K. El Sayed, C.J. Stanton, *Centennial Meeting of the American Physical Society*, Atlanta, GA, March 1999. (contributed talk).
- (12) "Probing Semiconductor Carrier Kinetics with Ultrafast Nonlinear Faraday Rotation", C.J. Stanton, J.A. Kenrow, K. El Sayed, *Centennial Meeting of the American Physical Society*, Atlanta, GA, March 1999. (contributed talk).
- (11) "Femtosecond Coherent and Incoherent Spectroscopies on a GaN Epilayer", Y.D. Jho, D.S. Kim, A.J. Ficsher, J.J. Song, J.A. Kenrow, K. El Sayed, C.J. Stanton, *Centennial Meeting of the American Physical Society*, Atlanta, GA, March 1999. (contributed talk).
- (10) "Ultrafast Nonlinear Faraday Rotation Spectroscopy of Diluted Magnetic Semiconductor Quantum Wells", K. El Sayed, J.A. Kenrow, C.J. Stanton, *March Meeting of the American Physical Society*, Los Angeles, CA, 1998 (contributed talk).
- (9) "Interference in Confined Semiconductors: The Phonon Staircase Effect", J.A. Kenrow, K. El Sayed, C.J. Stanton, *APS March Meeting*, Kansas City, MO, 1997 (contributed talk).
- (8) "Simulation of the Phonon Staircase Effect in GaInAs Quantum Wells in Quantizing Magnetic Fields", K. El Sayed, J.A. Kenrow, C.J. Stanton, *APS March Meeting*, Kansas City, 1997 (contributed talk).
- (7) "Quantum Dynamical Transport in Ultra-small Semiconductor Devices", J.A. Kenrow and T.K. Gustafson, *Workshop on Quantum Transport in Ultrasmall Devices*, NATO Advanced Study Institute, Il Ciocco, Italy, July, 1994 (contributed poster).
- (6) "Modeling the Quantum Kinetics of the electron-LO and SO phonon interaction in semiconductor electron transport", J.A. Kenrow and T.K. Gustafson, *Third International Workshop on Computational Electronics*, Portland, OR, May, 1994 (contributed poster).
- (5) "Early time kinetics of an electron interacting with a non-equilibrium polar-optical phonon mode distribution in a quantum wire", J.A. Kenrow and T.K. Gustafson, *March Meeting of the American Physical Society*, Pittsburgh, PA, 1994 (contributed talk).
- (4) "Time Dependent Electron Transport in a Semiconductor Mesoscopic System: Influence of Electron-Polar Optical Phonon Interactions", J.A. Kenrow, J. Hefti and T.K. Gustafson, *Industrial Liaison Program (ILP) Conference*, University of California, Berkeley, CA, March, 1992 (contributed talk).
- (3) "Quantum mechanical treatment of the electron-LO-phonon interaction in GaAs using the Split-beam method", J.A. Kenrow, J. Hefti and T.K. Gustafson, *March Meeting of the American Physical Society*, Seattle, WA, 1993 (contributed talk).
- (2) "Using the split-beam propagation method to model early-time dynamics of electron-phonon scattering in quantum confined structures", J.A. Kenrow, J. Hefti and T.K. Gustafson, *Second International Workshop on Computational Electronics*, University of Illinois, Urbana-Champaign, IL, May, 1992 (contributed poster).
- (1) "Electron Transport in Quantum Confined Structures", J.A. Kenrow and T.K. Gustafson, *Industrial Liaison Program (ILP) Conference*, University of California, Berkeley, CA, March, 1992. (contributed talk).

ATTENDED CONFERENCES/WORKSHOPS

- 2004 ASEE Pacific West Section Conference, University of the Pacific, Stockton, CA, 2004.
- 2002 IEEE International SOI Conference, Williamsburg, VA.
- 2001 IEEE Nuclear and Space Radiation Electronic Conference, Vancouver, BC.
- 2000 International Symposium on Compound Semiconductors, Monterey, CA.
- 2000 IEEE International Electron Device Meeting, San Francisco, CA.

JOURNAL REFEREE/CONFERENCE CHAIR ACTIVITIES

- Technical paper referee for *IEEE Transactions on Education*
- Session chair for the 2004 ASEE PWS Conference, University of the Pacific.

INTERNALLY FUNDED PROJECTS

- Eberhardt Research Fellowship, 2001. Project: Investigating semiconductor device cross-talk in mixed signal ICs using TCAD tools.

PROFESSIONAL SERVICE

University Activities:

- Co-Director, Engineering Physics Program (since 2000)
- Chair, School of Engineering and Computer Science Council (2004-2005)
- Vice Chair, School of Engineering and Computer Science Council (2003-2004)
- Vice chair, School of Engineering Council (2001-2002)
- Member, ad-hoc child care committee (2000-2001)
- Member, Program Review committee for Engineering Physics, 2000-2001.
- Invited Speaker: Gender and Science "Is Science Sexy?", sponsored by Gender Studies, ASUOP, Fall 2003".

Outreach and K-12 activities:

- IEEE USA Pre-College Education Committee (PEC) member (2000-present).
- IEEE Santa Clara Valley K-12 Committee member (2001-present).
- Expanding Your Horizons (EYH) workshop presenter (2000-2004).
- Technical Judge: INTEL International Science Fair (2001), Synopsis Silicon Valley Science Fair (2001-2004).
- Panel Speaker, "Careers in Higher Education at a Private University", sponsored by the Office of Graduate Studies at UC Davis, (Spring 2003).
- IEEE representative in the NASA sponsored workshop on technical literacy standards in K-12 organized by the International Technology Education Association (ITEA), 2001.
- Silicon Valley Workforce member (2001-2002).

SOCIETY MEMBERSHIPS

- American Physical Society - (since 1991)
- Institute of Electrical and Electronics Engineers (IEEE) - (since 1987)
- IEEE Electron Device Society - (since 2000)
- American Association of Engineering Education - (since 2002)