

CURRICULUM VITAE

FRED LACY, PH.D.

CONTACT INFORMATION

Southern University and A&M College
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DEMOGRAPHIC INFORMATION

Date of Birth:
Place of Birth:
Citizenship: United States
Ethnic Background: African-American
Sex: Male

FORMAL EDUCATION

Ph.D.	Electrical Engineering	Howard University	Washington, DC
	August 1990 – December 1993		66 credit hours
	<i>Ph.D. Dissertation Title:</i> "Distinguishing Between Activated and Non-activated Eosinophils Using a Microelectrode; Theoretical Investigations of Bulk and Surface Polaritons in Magnetic Multilayers"		
M.S.E.	Electrical Engineering	Johns Hopkins University	Baltimore, MD
	September 1988 – December 1989		39 credit hours
B.S.E.E.	Electrical Engineering	Howard University	Washington, DC
	August 1983 – December 1987		141 credit hours

ADDITIONAL EDUCATION / TRAINING

Postdoctoral	Biomedical Engineering	University of California, San Diego
	La Jolla, CA	June 1994 – July 1998

HONORS / AWARDS

Research Honors / Awards

Best Conference Paper Award [Int. Journal of Arts & Sci.]	2009
WCECS / ICEEA Conference Paper Certificate of Merit	2007
SMART Research Award [SU / NSF]	2004
Outstanding Service Award (Honors Thesis Research) [SU]	2003 - 2004

Teaching Honors / Awards

Outstanding Faculty Award [SU]	2014 – 2015
Outstanding Faculty Award [SU]	2013 – 2014
Outstanding Faculty Award [SU]	2011 – 2012
Outstanding Faculty Award [SU]	2010 – 2011
Outstanding Faculty Award [SU]	2008 – 2009

Student Honors / Awards

The National Dean's List	1992 - 1994
Howard University Trustees Fellowship	1991 - 1992
Graduate Degrees in Engineering for Minorities (GEM) Fellowship	1988 - 1989
Co-operative Educational Achievement Award	1987
Schlumberger Collegiate Award	1987
Award of Merit from Proctor and Gamble	1986
Outstanding Electrical Engineering Freshman [HU]	1984
National Action Council for Minorities in Engineering (NACME) Scholarship	1983 - 1987

Miscellaneous Honors / Awards

Presidential Who's Who in America	2010
Marquis Who's Who in America	2009

PROFESSIONAL MEMBERSHIPS

Golden Key National Honor Society
Tau Beta Pi (DC Alpha Chapter)

PROFESSIONAL EMPLOYMENT / ACTIVITY

Chair, Electrical Engineering Department, School of Engineering, Southern University, Baton Rouge, LA, August 2014 – present, (leader and administrator of department affairs)

Professor, Southern University, School of Engineering, Electrical Engineering Department, Baton Rouge, LA, August 2013 – present, (teaching: electronics, electrical circuits, sensors; research: sensors)

Electrical Engineer, Neany, Inc. / Department of Defense, Advanced Development Branch, Jamming Techniques Optimization Group, Point Mugu Naval Air Station, Point Mugu, CA, June 2011 – August 2011, (characterization of noise quality from electronic warfare equipment)

Adjunct Professor, Southern University, Environmental Toxicology Program, Baton Rouge, LA, April 2011 – present, (directing Ph. D. research and serving as member on dissertation committees)

Associate Professor, Southern University, School of Engineering, Electrical Engineering Department, Baton Rouge, LA, August 2007 – August 2013, (teaching: electronics, electrical circuits, sensors; research: sensors)

Graduate Studies Faculty, Southern University, Office of Graduate Studies, Baton Rouge, LA, January 2004 – present, (teaching graduate courses, directing master's theses, serving as member on thesis/dissertation committees).

Assistant Professor, Southern University, School of Engineering, Electrical Engineering Department, Baton Rouge, LA, August 2002 – August 2007, (teaching: electronics, electrical circuits, sensors; research: sensors)

Research Associate, Louisiana State University/Center for Advanced Microstructures and Devices (CAMD), Baton Rouge, LA, August 2001 – August 2002, (design, fabrication, and testing of biomedical sensors/bioMEMS devices).

Manager/Supervisor, Food and Drug Administration, Center for Devices and Radiological Health, Office of Device Evaluation, Rockville, MD, May 2001 – July 2001, (assignment to serve as the Chief of the Chemistry and Toxicology II Branch).

Electrical Engineer, Food and Drug Administration, Center for Devices and Radiological Health, Office of Device Evaluation, Rockville, MD, August 1998 – May 2001, (performs scientific review of medical devices before they are marketed).

Electrical Engineer, Food and Drug Administration, Center for Devices and Radiological Health, Office of Science and Technology, Rockville, MD, October 1999 – April 2001, (researches the effect of electromagnetic radiation on medical devices and humans).

Instructor, TESST College of Technology, Electronics, Computer & Telecommunications Department, Beltsville, MD, February 1999 – June 1999, January 2000 – May 2000, [12 hours/week], (taught digital and analog electronics courses).

Evening School Administrator, TESST College of Technology, Electronics, Computer & Telecommunications, and Office Computer Applications Departments, Beltsville, MD, July 1999 – December 1999, [12 hours/week], (liaison between staff and students; ensured proper classroom instruction; enforced school rules; counseled students).

Postgraduate Research Bioengineer, Department of Bioengineering, University of California, San Diego, La Jolla, CA, June 1996 – July 1998, (designed devices / techniques to measure oxygen free radicals in blood plasma).

Postdoctoral Research Associate, Department of Bioengineering, University of California, San Diego, La Jolla, CA, June 1994 – June 1996, (designed devices / techniques to measure oxygen free radicals in blood plasma).

Postdoctoral Research Associate, Department of Electrical Engineering, Howard University, Washington, DC, January 1994 – June 1994, (measured electrical properties of white blood cells after drug interactions).

Graduate Research Associate, Department of Electrical Engineering, Howard University, Washington, DC, August 1990 – December 1993, (designed electrode to measure electrical properties of white blood cells; performed calculations to determine electromagnetic propagation in magnetic materials).

Electrical Engineer, Research and Development Department, Naval Surface Warfare Center, White Oak, MD, January 1990 – August 1990; January 1988 – August 1988, (designed electrical circuits that were used in explosives test measurements).

Electrical Engineer, Satellite Communications Group, The Johns Hopkins University/Applied Physics Lab, Laurel, MD, May 1989 – August 1989, (designed and repaired equipment used in satellite communications).

Research Apprentice, Research and Development Department, Naval Surface Warfare Center, White Oak, MD, June 1983 – December 1987, (built and repaired electrical equipment that was used in explosives test measurements; wrote computer programs to analyze field test data).

Research Apprentice, Underwater Testing Department, Naval Surface Warfare Center, White Oak, MD, June 1981 – August 1982, (aided scientists in testing underwater sonar equipment).

EDITED BOOK CHAPTERS

Fred Lacy. “Using Theoretical and Computational Models to Understand How Metals Function as Temperature Sensors”, In IGI Global book titled “Handbook of Research on Computational Simulation and Modeling in Engineering”, edited by F. Miranda and C. Abreu, p. 668, 2015.

Fred Lacy, “Limitations of Thin Film RTDs for Temperature Sensing”, In CMOSSET book titled “Industrial Sensors: Devices and Applications”, edited by K. Iniewski, Boca Raton FL, CRC/Taylor & Francis, p. 195, 2013.

Fred Lacy, “Characterizing Nanometer Sized Platinum Films for Temperature Measurements”, In Current Themes in Engineering Technologies, edited by S.-I. Ao, M. A. Amouzegar, and S.-S. Chen, New York, AIP, p.128, 2008.

REFEREED JOURNAL PUBLICATIONS

Philip Jones, Sakiko Sugino, Shohei Yamamura, Fred Lacy, Vasudevanpillai Biju, “Impairment of cell and genomic DNA by environmentally transformed engineered nanomaterials”, Nanoscale 5, p. 9511, 2013

Fred Lacy, “An Examination and Validation of the Theoretical Resistivity-Temperature Model for Conductors”, Int. J. of Electrical Sci. and Eng. 7(4), p. 869, 2013.

Fred Lacy, “Developing a Theoretical Relationship between Electrical Resistivity, Temperature, and Film Thickness for Conductors”, Nanoscale Research Letters 6:636, 2011.

Fred Lacy, “Evaluating the Resistivity-Temperature Relationship for RTDs and other Conductors”, IEEE Sensors Journal 11, p. 1208, 2011.

Fred Lacy, "Using Nanometer Thin Films as Temperature Sensors (Constraints from Experimental, Mathematical, and Finite-Element Analysis)", IEEE Sensors Journal 9, p.1111, 2009.

Fred Lacy, Mala T. Kailasam, Daniel T. O'Connor, Geert W. Schmid-Schonbein, Robert J. Parmer, "Plasma Hydrogen Peroxide Production in Human Essential Hypertension: Role of Heredity, Gender, and Ethnicity", Hypertension 36, p.878, 2000.

Allen Swei, Fred Lacy, Frank A. DeLano, Dale A. Parks, and Geert W. Schmid-Schönbein, "A Mechanism of Oxygen Free Radical Production in the Dahl Hypertensive Rat", Microcirculation 6, p.179, 1999.

Fred Lacy, David A. Gough, and Geert W. Schmid-Schönbein, "Role of Xanthine Oxidase in Hydrogen Peroxide Production", Free Radic. Biol. Med. 25, p.720, 1998.

Fred Lacy, Daniel T. O'Connor, and Geert W. Schmid-Schönbein, "Plasma Hydrogen Peroxide Production In Hypertensives and Normotensive Subjects At Genetic Risk Of Hypertension", J. Hypertens. 16, p.291, 1998.

Allen Swei, Fred Lacy, Frank A. DeLano, Benjamin W. Zweifach, and Geert W. Schmid-Schönbein, "Oxidative Stress in the Dahl Hypertensive Rat", Hypertension 30, p. 1628, 1997.

Fred Lacy, Muswamba Kadima-Nzuji, Floyd J. Malveaux, and Ernest L. Carter, Jr., "Distinguishing Between Activated and Non-activated Eosinophils By AC Impedance Measurements", IEEE Trans. Biomed. Eng. 43, p.218, 1996.

REFEREED CONFERENCE PROCEEDING PUBLICATIONS / PRESENTATIONS

X. Chen, P. Carriere, and F. Lacy, "Stochastic Optimization of Space-Time Constellations", SPIE conference 2014

X. Chen, F. Lacy, and P. Carriere, "An Exact Computational Method for Performance Analysis of Sequential Test Algorithms for Detecting Network Intrusions", SPIE conference 2014

Fred Lacy, "Preparation and Assessment of Thin Films for Use as Ammonia Sensors ", Proceedings of the World Congress on Engineering and Computer Science 2013, Vol. II, 2013

Jiecai Luo, Fred Lacy, Pradeep Bhattacharya, Perry Daniels, "Test Engineering Course in the Electrical Engineering Department at Southern University", Proceedings of the 2009 ASEE Annual Conference, 2009

Justin Boone, Alen Jones, Fred Lacy, "Initial Characterization of Thin Film Temperature Sensing Thermistors", American Canadian Conference for Academic Disciplines, International Journal of Arts and Sciences, 2009.

Jiecai Luo, Fred Lacy, "Preliminary Engineering Mathematics Course in the Department of Electrical Engineering at Southern University", Proceedings of the 2009 ASEE Gulf-Southwest Annual Conference, 2009

Neeharika Davuluri, Fred Lacy, Pradeep Bhattacharya, "Development of Miniature Li-Ion Battery for Multi-Sensor Chip", Proceedings of the 2009 ASEE Gulf-Southwest Annual Conference, 2009

Fred Lacy, "Investigating Thin Films for Use as Temperature Sensors", Proceedings of the World Congress on Engineering and Computer Science 2007, p. 441, 2007

Pradeep Bhattacharya, Zhengmao Ye, Ernest Walker, Fred Lacy, Madhusmita Banerjee, "Systematic Approach on Modeling and Identification for Nanobattery Prototyping", NSTI-Nanotech Conference Proceedings, p.515, 2006

Joseph Boone Jr., Pradeep Bhattacharya, Fred Lacy, Ernest Walker, Zhengmao Ye, "Design, Fabrication and Integration of a Multi Sensor Chip", Proceedings of the 2006 ASEE Gulf-Southwest Annual Conference, 2006

Nikhil Modi, Fred Lacy, "Piezoelectric Microcantilevers of Nanoscale Thickness for Detection of Cells", NSTI-Nanotech Conference Proceedings, p. 501, 2005

Nikhil Modi, Fred Lacy, Pradeep Bhattacharya, "Virtual Silicon Environment for Enhanced Visualization of the Silicon Crystal Structure", Proceedings of the 2005 ASEE Gulf-Southwest Annual Conference, 2005

Fred Lacy, Ernest L. Carter, Jr., and Steven L. Richardson, in Magnetic Ultrathin Films, Multilayers and Surface/Magnetic Interfaces-Physics and Characterization, edited by C. Chappert et al., Mater. Res. Soc. Symp. Proc. 313, Pittsburgh, PA, 1993, p. 65.

CONFERENCE ABSTRACTS / PRESENTATIONS

Fred Lacy, "Lone Star Challenge Design Competition (Overview and Lessons Learned)", Minority Leaders Program Review, Air Force Research Laboratories Conference (2011).

Nikhil Modi, Fred Lacy, "Fabrication of Piezoelectric Microcantilevers for Detection of Cells", Louisiana Materials Research and Development Conference, (2003).

Camille J. Vogt, Fred Lacy, Dale A. Parks, and Geert W. Schmid-Schönbein, "Hydrogen peroxide and xanthine dehydrogenase/xanthine oxidase levels in glucocorticoid-induced hypertension", FASEB Journal 13 (4): A116, Part 1, Suppl. S (1999).

Fred Lacy, Lisa M. Sheeter, Michelle Lumicao, Benjamin Wang, Robert L. Sah, Geert W. Schmid-Schönbein, "Reactive oxygen species in rheumatoid arthritis", FASEB Journal 12 (4): 48, Part 1, Suppl. S (1998).

Erik B. Kistler, Tony Hugli, Fred Lacy, Geert W. Schmid-Schönbein, "Serine protease inhibition in splanchnic arterial occlusion shock in the rat", FASEB Journal 12 (4): 178, Part 1, Suppl. S (1998).

Fred Lacy, David A. Gough, Benjamin W. Zweifach, and Geert W. Schmid-Schönbein, "Xanthine Oxidase is a Source of Hydrogen Peroxide in Human Blood Plasma", Annals of Biomedical Engineering 25 Suppl. 1 (1997).

Erik B. Kistler, Fred Lacy, Richard Suzuki, Alan M. Lefer, Geert W. Schmid-Schönbein, and Benjamin W. Zweifach, "In Vitro Chemiluminescence Measurements of Plasma Superoxide Production by Pancreatic Activating Factor(s)", *Annals of Biomedical Engineering* 25 Supp. 1 (1997).

Allen Swei, Fred Lacy, Frank A. DeLano, and Geert W. Schmid-Schönbein, "The Role of Xanthine Oxidase Derived Oxygen Free Radicals in the Dahl Hypertensive Rat", *Annals of Biomedical Engineering* 25 Supp. 1 (1997).

Fred Lacy, Erik B. Kistler, Mike M. Lee, David A. Gough, and Geert W. Schmid-Schönbein, "Oxygen Free Radical Measurements in Blood Plasma", *Microcirculation* 4(1) (1997).

Allen Swei, Fred Lacy, Frank A. DeLano, Benjamin W. Zweifach, and Geert W. Schmid-Schönbein, "Oxidative Stress in the Dahl Hypertensive Rat", *Microcirculation* 4(1) (1997).

Fred Lacy, Daniel T. O'Connor, David A. Gough, and Geert W. Schmid-Schönbein, "The Measurement of Hydrogen Peroxide in the Blood Plasma of Hypertensives and Normotensives Using an Electrode Technique", *Annals of Biomedical Engineering* 24 Supp. 1 (1996).

Yemsrach Hailemariam, Fred Lacy, and Steven L. Richardson, "Confinement of Surface State Electrons within a Finite Quantum Corral on a Metal Surface", *Bull. Am. Phys. Soc.* 39, 739 (1994).

Fred Lacy, Ernest L. Carter, Jr., and Steven L. Richardson, "Theoretical Investigations of Bulk and Surface Magnetic Polaritons in an Antiferromagnetic Superlattice in an Applied Field", *Bull. Am. Phys. Soc.* 38, 672 (1993).

Steven L. Richardson, Fred Lacy, and Nawej Mwez, "Model Studies of Surface States of a Semi-Infinite Superlattice with Position-Dependent Effective Masses", *Bull. Am. Phys. Soc.* 38, 183 (1993).

Fred Lacy, Ernest L. Carter, Jr., and Steven L. Richardson, "Reciprocal Magnetostatic Surface Mode Propagation in Semi-Infinite Magnetic Superlattices", *Bull. Am. Phys. Soc.* 37, 500 (1992).

RESEARCH FUNDING

U.S. Department of Energy	\$2,160,000	October 2010 – September 2015
Ernest Walker, Fred Lacy, Jiecai Luo, Patrick Carriere, Xinjia Chen, "Detection and Sensing of Environmental and Chemical Substances using Ad-hoc Wireless Sensor Networks"		

Texas Instruments	\$51,077	March 2010 – December 2010
Fred Lacy, Jiecai Luo, Pradeep Bhattacharya, "Enhancing the Test Engineering Course in the Electrical Engineering Department at Southern University (a Collaboration with Texas Instruments)"		

Clarkson Aerospace Corporation	\$31,700	September 2008 – June 2009
Fred Lacy, "Materials and Manufacturing Research – Lone Star Challenge Design Competition"		

Louisiana Space Consortium	\$10,000	August 2008 – May 2009
Fred Lacy, Alen Jones, Justin Boone, "Fabrication of Thin Film Thermistors"		

Louisiana Optical Network Initiative	\$40,000	April 2007 – April 2009
Fred Lacy, "Using Computational Software and Laboratory Hardware to Characterize Micro/Nano Materials"		
National Science Foundation	\$500,000	January 15, 2007 – December 31, 2010
Yvette P. Weatheron, Edgar R. Blevins, Fred Lacy, Karen E. Crosby, Patrick F. Mensah, "Scholarships Creating Opportunities for Retention in Engineering (SCORE)"		
U.S. Department of Energy	\$2,012,624	September 2005 – August 2010
Ernest Walker, Fred Lacy, Pradeep Bhattacharya, Jiecai Luo, Patrick Carriere, "Detection and Sensing of Environmental and Chemical Substances using Ad-hoc Wireless Sensor Networks"		
SUBR College of Engineering Support Fund	\$131,000	March 2004 – February 2005
Fred Lacy, Pradeep Bhattacharya, Walter Craig, Ravinder Diwan, "Foundation for a Microfabrication Cleanroom"		
Business and Industry Cluster Grant	\$4,840	February 2005 – January 2006
Fred Lacy, "Educational Enhancement Using a Microfabrication Cleanroom"		
Chancellor's SUBR Start-Up Grant	\$3,000	February 2004 – January 2005
Fred Lacy, "Start-up Funding for Biomedical Sensors Research"		
The Charles H. and Anna S. Stern Foundation	\$43,500	June 1997 – May 1998
Fred Lacy, Robert L. Sah, and Geert W. Schmid-Schönbein, "Hydrogen Peroxide: A Sensitive Indicator and Pathogenic Mediator in Rheumatoid Arthritis?"		

GRADUATE STUDENTS DIRECTED

Uday Manthena	Master of Engineering	November 2015
Project: Home Automation using Internet of Things		
Sourya Annamaneni	Master of Engineering	November 2015
Project: Android Game for Robot Coordination Problem		
Richard Turner	Master of Engineering	November 2013
Project: Application of Electro-Mechanical Transducer Within a Non-Destructive Test Environment		
Philip Jones	Doctor of Philosophy	March 2013
Dissertation: Photoinduced Toxicity of Engineered Nanomaterials		
Eddie Patrick	Master of Engineering	December 2012
Thesis: Characterization of Polyaniline / Metal Oxide Composite Films for Sensing Ammonia		
Rukhaya Singleton	Master of Engineering	December 2011
Project: Hardware and Software Test Circuit Design for ADS1112		

Adaryll White	Master of Engineering	July 2010
Thesis: Chemical Electrodeposition Solar Cells		
Tarik Singleton	Master of Engineering	July 2009
Thesis: Toward the Design and Fabrication of Nanowires		
Jonathan Hebert	Master of Engineering	March 2008
Thesis: Takaya and ICT Test Component Verifications using Fabmaster		
April Page	Master of Engineering	May 2007
Thesis: Investigations of Platinum Thin Film Resistance Temperature Detectors		
Nikhil Modi	Master of Engineering	January 2006
Thesis: Design, Fabrication, and Computational Analysis of Piezoelectric Microcantilevers for Detection of Cells		
Lalitha Dabbiru	Master of Engineering	December 2005
Thesis: Design, Fabrication and Characterization of a Microelectrode Array		

RESEARCH INTERESTS

Electronics Based Sensors
 Electronic Transport in Conductors
 Thin Films
 Biosensors and Bioelectrodes
 Microelectromechanical Systems (MEMS)
 Oxygen radical measurements
 Measurement of the electrical properties of cells and tissues
 Effects of electromagnetic radiation on biological materials
 Computer modeling and computer analysis of biological systems
 Nanotechnology

TEACHING INTERESTS

Electronic sensor / Biosensor Technology and Design
 Microelectronic fabrication
 Electronic Circuits
 Electromagnetic Theory
 Computer modeling with applications to biological systems

COURSES TAUGHT

Electrical Circuits I (ELEN 208)
 Electrical Circuits II (ELEN 209)
 Electrical Circuits Lab I (ELEN 210)

Electrical Circuits Lab II (ELEN 211)
Electrical Properties of Matter (ELEN 212)
Digital Logic Design Lab (ELEN 305)
Intro to Microprocessors (ELEN 304)
Microprocessor Lab (ELEN 306)
Electronics I (ELEN 312)
Electronics II (ELEN 313)
Electronics I Lab (ELEN 314)
Electronics II Lab (ELEN 315)
Electrical Engineering Fundamentals (ELEN 352)
Advanced Topics in Electrical Engineering (ELEN 417) {sensors}
Advanced Topics in Electrical Engineering (ELEN 417) {Test Engineering Lecture}
Probability & Statistics (ELEN 450)
Electronics Design Project (ELEN 490) {Test Engineering Laboratory}
Solid State Physics (ELEN 526)
Physics of Semiconductor Devices (ELEN 536)
Special Topics in Electronic Materials (ELEN 589) {solid state physics}
Special Topics in Electronic Materials (ELEN 589) {sensors}

REFERENCES

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