Faculty Office:
Vanderbilt University
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Education

Ph. D., Solid State Physics, Purdue University, West Lafayette, IN, May 1984
Thesis: *Experimental Study of Low-Frequency Excess (1/f) Noise in Metal Films*
Advisor: Nicholas J. Giordano
MS, Experimental Physics, Purdue University, West Lafayette, IN, August 1981
BS with Distinction, Physics (Honors) and Applied Mathematics, Purdue University, West Lafayette, IN May 1980

Employment History

Vanderbilt University:

Professor of Electrical Engineering (1999-present)
Appointed Professor of Physics (2000), secondary
Appointed Landreth Chair of Engineering (2009-present)
Chair of Electrical Engineering and Computer Science Department (2003-2020)
~ 35 tenured/tenure-track faculty; ~ 15 administrative staff.
~ 200 graduate students; ~ 600 undergraduate students; two large research institutes with > 50 professional research faculty and staff (combined).
EECS research funding increased from ~ $ 9M per year in 2002-2003 to ~ $ 25M per year in 2020; publications increased from ~ 100 in 2003 to > 300 in 2020.
Associate Dean for Research (½ time), Vanderbilt University School of Engineering, VUSE (2001-2003)
~ 85 tenure/tenure-track faculty.
VUSE research funding increased from ~ $16.7M in 2001 to ~ $30 M in 2003; it is now > $70M.

Previous Employment:

Sandia National Laboratories, Albuquerque, NM, Member/Distinguished Member of Technical Staff, Radiation Technology & Assurance Dept. (MTS 1984 - 1990, DMTS 1990 - July 1999).

Purdue University, Research Assistant (1981-1984), Tutor (1981-1983), Graduate Teaching Assistant (1980-1981), Undergraduate Teaching Assistant (1978-1980), Physics Department

Research Interests/Years of Experience

Effects of ionizing radiation on microelectronic devices & materials - 41 yrs.
Novel microelectronic materials and devices, including silicon-on-insulator - 39 yrs.
Charge trapping in silicon dioxide, and Si/SiO_2 interface-trap generation - 41 yrs.
Highly reliable electronics for high-radiation and high-temperature environments - 41 yrs.
Origin(s) of 1/f noise in semiconductors, semiconductor devices, and metals - 46 yrs.
Standard test methods to assess and assure radiation hardness and reliability of electronic devices - 40 yrs.
Defects, reliability, radiation response of SiC, GaN, and other compound semiconductor devices – 25 yrs.
Thermally stimulated current methods to profile defects in insulators - 13 yrs.
Co-invented and assisted in development of novel protonic nonvolatile memory - 6 yrs.
Quantum Information Science and Engineering, 5 years

Professional Honors, Awards, Appointments, and Memberships

Professional Society

2009 IEEE NPSS Merit Award – this is the highest individual technical award given by IEEE NPSS, for lifetime achievement

Fellow of the National Academy of Inventors, 2024
Fellow of the American Association for the Advancement of Science, 2020
Fellow of The American Physical Society, 2001
Fellow, IEEE (Member 1987, Senior Member 1990, Fellow 1997, Life Fellow 2024)

Best Paper Award, *IEEE Transactions on Nuclear Science* (2025), for the article, D. M. Fleetwood, E. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "Radiation effects in AlGaN/GaN HEMTs," *IEEE Trans. Nucl. Sci.*, vol. 69, no. 5, pp. 1105-1119, May 2022.

IEEE Confs. on Nuclear and Space Radiation Effects Conference Paper Awards (**26**): Outstanding (O)/Meritorious (M) Student (S: as co-author): 2025(O) 2021(S); 2020(M); 2019(S); 2017(O); 2015(S); 2013(O+S); 2012(S); 2002(O+2M); 2001(M); 1998 (O); 1997(O+2M); 1996(O+M); 1995(O+M); 1994(2M); 1993(M); 1988(O); and 1985(O). Out of ~80-110 papers, per year.

Conferences on Hardened Electronics and Radiation Technology Conference Paper Awards (**4**): 2004(M), 1995(O), 1990(O), 1988(O). Out of ~80 papers, per year.

RADECS (RADiation and its Effects on Components and Systems) Conference (**2**): 2021 (O+S)

Other Paper/Presentation Awards: Outstanding Student Paper (co-author), 2017 International Workshop on Reliability of Micro- and Nano-Electronics in Harsh Environment, Chengdu, China, May 22-24, 2017. 2015 GOMAC Outstanding student poster award; 1997 Outstanding Radiation Effects Data Workshop Presentation; 1995 Outstanding Oral Presentation, IEEE NSREC.

Member, Phi Beta Kappa (National Honorary), Sigma Pi Sigma (National Physics Honorary), Phi Kappa Phi (National Honorary)
Member, American Society for Engineering Education, continuous since 2002

Other Professional Awards and Honors

2025: Excellence in Undergraduate Research Mentoring Award, Vanderbilt University

2014-2019: Honorary Professor, Institute of Microelectronics, Chinese Academy of Sciences
2011-2019: Honored Professor of the Shanghai Institute for Microsystem and Information Technology, Chinese Academy of Sciences
2013: Guest Professor, Harbin Institute of Technology, June 2013
2013: Honorary Professor, Xinjiang Institute of Physics & Chemistry, Chinese Academy of Sciences
2009: American University of Cairo, Egypt, Distinguished Visiting Professor, October 2009
2007: Purdue University, College of Science, Distinguished Alumni Award

2002: Chancellor's Research Award, for achievement in research and scholarship (with Ron Schrimpf, and Sokrates Pantelides). This was presented for work on 1/*f* noise and identification of structures for the O vacancy in SiO_2.

2000: Recognized as an original member of the Top 250 most highly cited researchers in Engineering (1981-1999), by Inst. for Scientific Information.

Discover Magazine (1998), *R&D Magazine* "R&D 100" (1997) and *Industry Week* "Technology of Year" (1997) Awards, for co-invention of protonic nonvolatile field effect transistor memory (patent issued 11/3/1998)

1995-1999: Sandia National Labs Awards for Excellence, and Meritorious Achievement Award
1990: Named Distinguished Member of Technical Staff, Sandia National Laboratories
1984: Lark-Horovitz Award, Purdue University, for excellence in graduate research.
1982-1984: David Ross Graduate Fellow, Purdue Univ; 1980-1982: Purdue Univ Graduate Fellow

PUBLICATIONS (665 total – 586 refereed)

515 peer-reviewed journal articles
57 refereed conference proceedings papers and book chapters
68 other conference proceedings papers
14 refereed journal articles in restricted access literature; 11 other publications

Citations: ~ **31,165** (Google Scholar, May 2, 2025)
h factor: **94** (at least 94 papers cited at least 94 times)
4 > 400; 23 ≥ 200; 90 ≥ 100; 469 ≥ 10

PRESENTATIONS (> 750 Total; > 125 Invited Talks and Short Courses)

Full lists provided below.

Summary of Sponsored Research

At Vanderbilt University

Contracts and Grants as PI (total ~$3 M)

1. "Development and Evaluation of IC Shielding Overlayers," **$50k**, Vorago Semiconductor, April 2022 to September 2022. Fleetwood, Schrimpf, Warren, Sierawski, Reed.
2. "Modeling-Enhanced Survivability Testing (MEST) Strategy for Microelectronics," **$75k**, Alphacore (Sub to Department of Defense), Dec. 2021 to June 2022. Fleetwood, Reed, Schrimpf, Sierawski, Warren, Alles. (50%)
3. "Radiation Effects in Vertical 2D Heterostructure Tunneling Devices Formed Using Large-Area Synthesized Materials," Feb. 1, 2016 – Jan. 31, 2019, **$720k**, DTRA, Fleetwood, Pantelides, Zhang (40%).
4. "Role of Radiation-induced Defects on the Acceleration of Irradiated GaN HEMT Failure Mechanisms," Sept. 2013 – Oct. 2016, **$126k**, NRO, Fleetwood, Schrimpf (50%).
5. "R, D, T, & E of Radiation Effects Phenomena on Electronic Devices Subjected to Aging Environments," July 2006 – May 2008, **$1.15M**, US Navy, Fleetwood, Schrimpf, Pantelides (50%)
6. "RDT&E (Research, Development, Test, and Evaluation) of Radiation Effects Phenomena of Hydrogen and Electronics Aging Research," Jun 2005 – Dec 2005, **$196k**, Navy/MRC: Fleetwood, Schrimpf, Pantelides. (50 %)
7. "RDT&E of Radiation Effects Phenomena of Hydrogen and Electronics Aging Research," Apr 2005 – Oct 2005, **$180k**, Navy/MRC: Fleetwood, Schrimpf, Pantelides. (40 %)
8. "RDT&E of Enhanced Low Dose Rate Sensitivity (ELDRS) Research," Feb 2004 – Jun 2005, $**156k**, Defense Threat Reduction Agency: Fleetwood, Schrimpf. (50 %)
9. "Neutron Annealing in GaAs," Apr 2004 – Mar 2005, **$50k**, Sandia National Laboratories: Fleetwood. (75 %)

10. "Total Ionizing Dose Research," Apr 2003 – Apr 2004, $**45k**, Defense Threat Reduction Agency: Fleetwood, Schrimpf. (50 %)
11. "Low Frequency Noise Measurements," Jun 2002 – Jun 2003, **$2.5k**, SiCel Corporation: Fleetwood. (75 %)
12. "Radiation Effects Device Physics for RHTCAD Modeling," Nov. 1999 – Dec. 2002, **$478k**, US Navy/MRC: Fleetwood. (75 %)

Contracts and Grants as co-PI (total ~$44 M)

1. "Radiation-Hardened Microelectronics Workforce Development Consortium II." 2024-2027, **$1M**, OSD/NSWC, Alles, Schrimpf, Fleetwood, Massengill, Reed … (10%)
2. "Cryogenic Radiation-Hard Read-out Integrated Circuit Electronics Process Design Kit," **$223k**, Apogee/AFRL, 2023, Ball, Fleetwood, Trippe, Sternberg (40%).
3. "DURIP: Enabling Radiation Testing of Advanced Electronic-Photonic Integrated Circuits," AFOSR, **731k,** 2022, Reed, Schrimpf, Weiss, Zhang, Sternberg, Fleetwood (10%).
4. "Radiation Effects Center of Excellence," **$5M**, Air Force Office of Scientific Research, 2021, Schrimpf, Fleetwood, Ringel, Speck, Pantelides, Zhang. (15%)
5. "Radiation-Hardened Microelectronics Workforce Development Consortium." 2020-2024, **$2M**, OSD/NSWC, Alles, Schrimpf, Fleetwood, Massengill, Reed … (10%)
6. "Physics of Failure and Radiation Effects in Emerging Electronic Materials and Devices in Space Applications," 2017, **$1.5 M**, AFOSR, Schrimpf, Fleetwood, Alles, Reed, Pantelides, Zhang (25%).
7. "Air Force (AF) Ground Based Strategic Deterrent (GBSD) Program Support," 2015, **$150k**, USAF, Schrimpf, Massengill, Alles, Kauppila (10%).
8. "Phase 2.0: Total Ionizing Dose Test Screen of Candidate Devices." 2015, **$148k**, Moog, Witulski, Fleetwood, Schrimpf, Reed, Massengill (20%).
9. "Navy SP27 Model Development and Verification Support," 2014-2015, **$339k**, US Navy, Schrimpf, Alles, Fleetwood, Massengill (20%).
10. "The Impact of Radiation Damage on Mechanical and Electrical Properties of MEM/NEM Structures," 2015-2018, DTRA, **$1.75M**, Alles, Schrimpf, Fleetwood, Weller (25%).
11. "Radiation Effects in Two Dimensional Material/High-K Gate Oxides," 2014-2017, **$655k**, DTRA: Schrimpf, Alles, Reed, Zhang (20%).
12. "Radiation Effects in III-V MOSFETs for sub-10 nm CMOS," 2014-2019, **$744k**, DTRA: Schrimpf, Alles, Fleetwood, Zhang (25%).
13. "Effects of X-ray based PCB Inspection Systems on Transistor Parameters," Aug. 2013 – July 1014, **$60k**, Silicon Valley Community Foundation, Bhuva, Fleetwood, Zhang (20%)
14. "Graphene Memory Device," **$30k**, July 2012 – March 2013, AFRL/Aneeve, Alles, Fleetwood, Schrimpf (30%).
15. "Rad-Hard Power MOSFET Consulting Activity," Aug. 1, 2012 – Dec. 31, 2012, **$42k**, Semicoa Corp: Massengill, Witulski, Schrimpf, Fleetwood (20%).
16. "Investigations of Physical Mechanisms for Radiation-Induced Effects in Non-Silicon Channel CMOS Devices," Jan. 1, 2012 – Dec. 31, 2014, **$1.75M**, DTRA: Reed, Mendenhall, Schrimpf, Weller, Alles, Witulski, Fleetwood, Galloway (10%)
17. "Physical-Mechanisms Based Reliability Analysis for Emerging Technologies," Sept. 2011 – Sept. 2016, **$1.25M**, AFRL: Schrimpf, Fleetwood, Alles (45%)
18. "D5LE Guidance Replacement Support," Jul. 2011 – Dec. 2011, **$281k**, Aero Thermo/US Navy: Schrimpf, Fleetwood, Holman, Massengill, Alles (15%).
19. "Minuteman Guidance Replacement Program Radiation Test Philosophy," Jul. 2011 – Sept. 2011, **$282k**, Department of Defense: Schrimpf, Fleetwood, Holman, Massengill, Weller, Witulski (10%).
20. "Total Dose and Single Event Effects Hardening," Aug. 2011 – Oct. 2011, **$33k**, Semicoa Corp: Rowe, Fleetwood, Massengill, Schrimpf, Alles (20%).
21. "Radiation Studies in GaN Materials and Devices," Feb. 2011 – Jun. 2016, **$625k**, DTRA: Schrimpf, Fleetwood (50%).
22. "Radiation Effects in Carbon Based Electronic Materials," March 2010 – Sept 2014, **$1.2M**, DTRA: Alles, Davidson, Pantelides, Fleetwood (25%)

23. "Rapid-Response Silicon-based Optical Dosimeters for Acute, High Dose Radiation," April 2010 – April 2013, **$714k**, DTRA: Weiss, Fleetwood, Reed, Weller. (20%)
24. "DURIP: Purchase of High-Speed Test/Probe Equipment for Reliability Studies," April 2010 – June 2011, AFOSR, **$366k** (equipment grant): Reed, Schrimpf, Fleetwood (30%)
25. "MURI: Design-for-Reliability Initiative for Future Technologies," May 2008 – Dec 2013, **$1.2M**, ONR: Schrimpf, Fleetwood, Pantelides, Reed. (30%)
26. "Fundamental Studies of the Impact of Complex Material Systems," May 2008 – May 2013, **$1.25M**, DTRA: Reed, Weller, Mendenhall, Massengill, Fleetwood. (10%)
27. "MURI: Radiation Effects on Emerging Electronic Materials and Devices," May 2005 – Apr 2010, **$5.5M**, AFOSR: Schrimpf, Fleetwood, Massengill, Weller, Reed, Mendenhall (and VU Physics, GA Tech, Florida, NC State, Rutgers, Arizona St.). (25 % - VU Engineering, ~ 1.5M over 5 years)
28. "ISDE – Institute for Space and Defense Electronics," Jan 2005 – Dec 2007, **$8M**, Aero Thermal Technology/Navy: Schrimpf, Massengill, Fleetwood, Holman. (10 %)
29. "R, D, T, & E of Rad Effects in Anaog and Mixed Signal Technology (Air Force Minuteman)," Jun 2005 – May 2006, **$445k**: Schrimpf, Massengill, Fleetwood, Weller. (15%)
30. "TCAD Modeling of Particle Radiation Effects in GaN-Based Devices," (2006) **$94.5k**: Schrimpf, Fleetwood. (40%)
31. "RDT&E of Radiation Effects Phenomena of Hydrogen and Electronics Aging Research," Jun 2004 – May 2005, **$175k**, Navy/MRC: Schrimpf, Fleetwood, Pantelides. (40 %)
32. "Radiation Effects in Microelectronics," Jun 2000 – Mar 2005, **$750k**, Defense Threat Reduction Agency: Schrimpf, Fleetwood, Massengill. (33 %)
33. "Radiation Effects Modeling and Simulation," Sep 2003 – May 2005, **$273k**, BAE Systems: Schrimpf, Massengill, Fleetwood, Holman, Galloway. (10 %)
34. "ISDE – Institute for Space and Defense Electronics," Nov 2004 – Dec 2004, **$535k**, US Navy/Draper Labs: Schrimpf, Massengill, Fleetwood, Holman. (20 %)
35. "ISDE Radiation Effects Modeling and Simulation of Electronic Parts and Technologies (RHAP)," Jun 2004 – Dec 2004, **$529k**, CS Draper Labs: Schrimpf, Massengill, Fleetwood, Weller, Robinson, Galloway. (20 %)
36. "ISDE – Institute for Space and Defense Electronics," Oct 2003 – Sep 2004, **$2.56M**, US Navy/Draper Labs: Schrimpf, Massengill, Fleetwood, Holman, Galloway. (20 %)
37. "A Comprehensive Computational Workbench for Application & Development of Radiation Effects Simulation Codes," Sep 2003 – Sep 2004, **$50k**, Arnold Engineering Development Center: Weller, Schrimpf, Fleetwood. (25 %)
38. "Transient Radiation Effects Research," Apr 2003 – Apr 2004, **$91k**, Defense Threat Reduction Agency: Massengill, Schrimpf, Fleetwood, Holman. (5 %)
39. "ISDE – Institute for Space and Defense Electronics," Jan 2003 – Sep 2003, **$1.2M**, US Navy/Draper Labs: Schrimpf, Massengill, Fleetwood, Holman, Galloway. (25 %)
40. "Enhanced Low Dose Rate Sensitivity in Bipolar Devices," Apr 2002 – Mar 2003, **$93k**, Defense Threat Reduction Agency: Schrimpf, Fleetwood. (50%)
41. "New Design Technology for Rad-Hard Microelectronics," Jul 2002 – Mar 2004, **$50k**, Computational Fluid Dynamics Research Corporation: Schrimpf, Fleetwood. (20 %)
42. "Research and Development of Strategic Weapons System Management and Technology Issues in a Declining Industrial Base," Nov 2001 – Oct 2003, **$199k**, US Navy/MRC: Mahaffey, Schrimpf, Fleetwood. (10 %)
43. "Single Event Transients in an Undervoltage Detector," Sep 2000 – Oct 2001, **$10k**, Hughes Electronics: Schrimpf, Massengill, Fleetwood. (20 %)
44. "DURIP: Radiation Sources for Total-Dose Testing of Electronics," Apr 2000 – Jul 2001, **$154k**, AFOSR: Schrimpf, Fleetwood, Massengill. (50%)
45. "DURIP: Precision Semiconductor Parameter Analyzer and Test Fixture," Jan 2000 – Dec 2000, **$47k**, AFOSR: Schrimpf, Fleetwood, Massengill (25%)

<u>Selected Contracts and Grants as a participant (Total: $38 M)</u>

1. "A Predictive Science Center for Advancing the Radiation Resilience of Electronics (CARRE)," **$6.3M,** 2025-2030, Trippe, Reed, Sierawski, Schrimpf, Fleetwood, … (10%)

2. "ASSERT: Model Beam Radiation Interaction with Materials for Single-Event Effects Radiation Testing," **1.7M,** DARPA, 2024-2028, Trippe, Reed, Sierawski, Ball, Fleetwood (10%).
3. "Electronic-Photonic Integrated Circuits for Aerospace University Site Agreement," **$1.25M**, 2021-2026, NSF, 2022, Reed, Schrimpf, Weiss, Zhang, Sternberg, Fleetwood (10%).
4. "Use of TCAD and MRED for dose-rate photocurrent simulations in III-V and Si HBTs," **635k**, 8/20 – 10/25, Sandia National Laboratories, Ball, Schrimpf, Alles, Fleetwood (5%)
5. "Simultaneous Dose-rate and Single-event Effects," **$100k**, Sandia National Laboratories, 2023, Alles, Schrimpf, Ball, Fleetwood (10%).
6. "Radiation Effects in Microelectronic Materials and Devices," **$1.1M**, US Navy, 2022-2025, Alles, Reed, Schrimpf, Sternberg, Zhang, Fleetwood (10%)
7. "Innovative Characterization of Thin-Film and 2D Materials Combining Novel Optical and Electrical Techniques," Oct. 2017 – Sep. 2020, **$3.0M**, DTRA, Alles, Reed, Schrimpf, Massengill, Zhang, Fleetwood (15%)
8. "SSP D5LE Program Support," Jan. 2013 – Dec. 2015, **$2.2M**, Aero Thermo/US Navy, Schrimpf, Massengill, Fleetwood (10%)
9. "USAF Minuteman AIMU Refresh," Jan. 2013 – Nov. 2014, **$1.1M**, Aero Thermo/US Air Force, Schrimpf, Massengill, Reed, Weller, Fleetwood (8%)
10. "Design Science For Radiation Effects Rate Prediction and Development," March 2010 – February 2014, **$450k**, DTRA, Schrimpf, Alles, Reed, Weller, Fleetwood (10%)
11. "ISDE – Institute for Space and Defense Electronics," Jan. 2008 – Dec. 2010, **$5.0M**, Aero Thermo Technology/Navy: Schrimpf, Massengill. Radiation effects on microelectronics (8 %)
12. "IGERT: The Vanderbilt-Fisk Interdisciplinary Research and Education in the Nanosciences," Oct 2003 – Oct 2008, **$2.6M**, NSF: Feldman, Cummings, Collins, Rosenthal, Wittig (role: supported writing of proposal draft; faculty participant). (3 %)
13. "Vanderbilt Scientific Computing Center for Multidisciplinary Research," Sep 2003 – Sep 2008, **$8.3M**, VU Academic Venture Capital Fund (competitively awarded): Moore, Schrimpf, Sheldon (role – faculty participant in center). (2 %)
14. "MURI: Radiation Effects, from Defects to Devices," Jul 1999 – Jun 2004, **$4.2M**, AFOSR: Schrimpf, Pantelides (VU), Lucovsky (NC State), Brillson (Ohio St.), Weber (UC Berkeley), Neifeld (Arizona). (role – principal collaborator with Schrimpf and Pantelides). (25 %)

Externally Sponsored Research at Sandia National Laboratories (partial list): Total $5.4 M

Project	*Funding Source*	*Funding Level & Duration*	*Role*	*Duration*
Advanced Memory Studies	DoD/Intelligence	**325k** (18 mo)	PI 100%	1998-1999
Protonic Nonvolatile Memory Dvlpmt. (W. Warren, PI)	DARPA/ETO	**800k** (24 mo)	Co-PI 25%	1997-1999
Enhanced Low-Dose-Rate Bipolar Gain Degradation	Defense Special Weapons Agency (formerly DNA)	**900k** (60 mo)	PI 60 %	1994-1999
Thermally Stimulated Current in MOS Capacitors	Defense Nuclear Agency (DNA)	**500k** (36 mo)	PI 75 %	1992-1994
Radiation Effects on Electronics & Sensors (P Winokur, PI)	Ballistic Missile Defense Org.	**1.4M** (24 mo)	Co-PI 33 %	1991-1993
Improved MOS Radiation Test Methods (P Winokur, PI)	DNA	**750k** (48 mo)	Co-PI 50 %	1988-1992
Memory Retention Studies	DoD/Intelligence	**300k** (24 mo)	PI 60 %	1990-1992
Transistor Degradation Modeling	DoD/Intelligence	**200k** (24 mo)	PI 50 %	1986-1988
Evaluation of 10-keV X-ray Source (P Winokur, PI)	DNA	**200k** (24 mo)	Co-PI 50 %	1986-1988

Summary of Courses Taught at Vanderbilt University

1. ES 101/ES 1115 – Moore's Law and the Microelectronics Industry (1 h). 25 times. Fall 2000 through present. Freshman seminar on Moore's Law, the Microelectronics Economy, and the Stock Market. *New course developed at Vanderbilt.*

Year	Instructor rating (5 max)	Course rating (5 max)
2000	4.23	3.92
2001	4.86	4.57
2002	4.52	4.24
2003	4.75	4.50
2004	4.37	4.05
2005	4.56	4.19
2006	4.11	4.00
2007	4.50	4.50
2008	4.53	4.30
2009	4.36	4.18
2010	4.57	4.35
2011	4.37	4.12
2012	4.38	4.20
2013	3.91	3.91
2014	4.07	3.69
2015	4.45	4.15
2016	4.48	4.27
2017	4.65	4.45
2018	4.31	3.82
2019	4.55	4.40
2020 (in person/on line)	4.79	4.54
2021	4.50	4.20
2022	4.43	3.94
2023	4.60	4.25
2024	4.61	4.52

2. EECE 6307 – Semiconductor Material and Device Characterization (3 hrs). 3 times. Graduate course. Comprehensive survey of common and specialized methods to characterize the performance of semiconductor devices, with a focus on the defects that limit performance, reliability and radiation tolerance. *New course developed in place of two legacy classes that are not currently being offered (6307/6302).*

Year	Instructor rating (5 max)	Course rating (5 max)
2021	4.80	4.60
2022	4.60	4.00
2024	4.80	4.20

Note: School means are typically ~ 4.1 out of 5.0.

3. EECE 4335/5335 – Fundamentals of Quantum Engineering (3 hrs). An overview of quantum effects in microelectronics and an introduction to quantum computing (QC). Extends current computing paradigms to quantum-enhanced technologies and practical implementations of QC. *New course to Vanderbilt. Taught as special topics (3892/5892) in Spring 2022 and 2023. Added to catalog in 2023-2024.*

Year	Instructor rating (5 max)	Course rating (5 max)
2022	3.75	4.00
2023	4.13	3.88
2024	5.00	5.00
2025	4.00	3.75

4. EECE 304/6304 – Radiation Effects and Reliability (3 hrs). Graduate course, 12 times. Total Ionizing Dose Effects, Single Event Effects, Displacement Damage, Microelectronics Reliability. *New course developed at Vanderbilt.*

Year	Instructor rating (5 max)	Course rating (5 max)
2000	4.69	4.46
2002	4.60	4.50
2004	4.13	4.13
2006	4.25	4.18
2008	4.25	4.06
2009	4.25	4.08
2012	4.55	4.11
2013	4.75	4.25
2015	4.92	4.57
2017	4.80	4.80
2019	4.88	4.88
2021	4.88	4.88
2023	4.40	4.20

5. EECE 233/3233 – Electromagnetics (3 hrs). 12 times. Core EE junior electricity and magnetism course. Vectors and operators, Electrostatics, Magnetism, Maxwell's Eqns. & Plane Wave Solutions, Transmission Lines.

Year	Instructor rating (5 max)	Course rating (5 max)
1999	4.26	3.97
2000	3.84	3.52
2001	4.55	4.05
2002	4.09	3.61
2003	4.31	3.77
2004	4.47	4.13
2005	4.43	4.14
2006	4.34	3.91
2007	3.95	3.27
2008	4.25	3.79
2011	4.00	3.66
2016	4.00	3.55

Summary of Graduate Students Advised: Dan Fleetwood

PhD Graduates (14 as primary advisor; 4 as co-advisor)

Mariia Gorchichko completed her PhD (Electrical Engineering) in December 2021. Her dissertation title is "Total-Ionizing-Dose Effects, Low-Frequency Noise, and Random Telegraph Noise of MOSFETs with Advanced Architectures." MS 2019. ~10 Publications. Mariia received the IEEE NSREC Paul Phelps Award and IEEE NPSS Graduate Student Award. She was supported primarily by teaching assistantships. She is now working at Applied Materials in Santa Clara, CA.

Pengfei Wang completed his PhD (Electrical Engineering) in May 2021. His dissertation title is "High-Voltage-Stress Induced Degradation and Radiation Response of GaN-Based HEMTs." ~10 Publications. Pengfei was supported during his PhD study by AFOSR through the Hi-REV program. Pengfei is working at GlobalFoundries in Burlington, VT.

Simeng (Ellen) Zhao completed her PhD (Electrical Engineering) in December 2020. Her dissertation title is "Radiation Effects and Low-Frequency Noise of III-V/III-N Semiconductor Devices." ~15 Publications. MS 2017. Ellen was supported during her PhD study by AFOSR through the Hi-REV program and by the Defense Threat Reduction Agency's basic research program. She is working at Nokia in Sunnyvale, CA.

Pan Wang completed her PhD (Electrical Engineering) in January 2019. Her dissertation title is "Radiation Effects and Low-Frequency Noise of Microelectronic Devices Based on Two-Dimensional Materials." ~15 Publications. MS 2017. Pan received the IEEE NSREC Paul Phelps Award and IEEE NPSS Graduate Student Award. She was supported by the Defense Threat Reduction Agency's basic research program. She is working at Amazon in Seattle, WA.

Rong Jiang completed her PhD (Electrical Engineering) in January 2018. Her dissertation title is "Bias Dependence of Radiation Response and Reliability of AlGaN/GaN High Electron Mobility Transistors." ~13 publications. Rong was supported by AFOSR through the Hi-REV program and by the Defense Threat Reduction Agency's basic research program through her PhD studies. Rong is working at Intel Corporation, Hillsboro, OR, as a reliability engineer.

Guoxing Duan completed his PhD (Electrical Engineering) in August 2016. His dissertation title is "Radiation effects, negative bias-temperature instability, and low-frequency 1/*f* noise in $SiGe/SiO_2/HfO_2$ *p*MOS Devices." ~8 publications. MS 2014. Guoxing was supported by AFOSR through the Hi-REV program during his PhD studies. Guoxing is now a reliability engineer with Microsoft in Redmond, WA.

Jin Chen completed her PhD (Electrical Engineering) in August 2016. Her dissertation title is "Radiation Response and Reliability of High Speed AlGaN/GaN HEMTs." ~15 Publications. MS 2013. Jin was supported by the Defense Threat Reduction Agency's basic research program during her PhD studies. Jin received the 2014 IEEE NSREC Paul Phelps Award (one of three), the 2015 IEEE NPSS Graduate Student Award (one of four), and the 2015 IEEE NSREC Outstanding Student Conference Paper Award. Jin is now a reliability engineer with Micron Technology in Boise, Idaho.

Cher Xuan Zhang completed her PhD (Electrical Engineering) in April 2013. Her dissertation title is "Reliability and Irradiation Effects of 4H-SiC MOS Devices." > 20 publications: MS 2011. Cher's work was supported by the Air Force Office of Scientific Research and the Defense Threat Reduction Agency. Cher received the 2012 IEEE NSREC Paul Phelps Award (one of three) and the 2012 IEEE NPSS Graduate Student Award (one of four). Cher is now an engineer with Meta Platforms in Redmond, WA.

Sarah Ashley Francis completed her PhD (Electrical Engineering) in October 2011. Her dissertation title was "Aging and irradiation response of 1/*f* noise in metal oxide semiconductor devices." ~10 publications; MS 2008. Ashley's work was funded by the US Navy and AFOSR. She is currently an engineering in the Autani wireless controls division of Enterprise Electric, in Nashville, TN.

Tania Roy completed her PhD (Electrical Engineering) in October 2011. Her dissertation title was "Reliability limiting defects in GaN/AlGaN high electron mobility transistors." ~9 publications. Tania's work was funded by the Office of Naval Research through the DRIFT MURI program. Tania was a postdoctoral research associate at the Georgia Institute of Technology and UC-Berkeley. She is currently an associate professor in the Electrical and Computer Engineering Department at Duke University.

Aritra Dasgupta completed his PhD (Electrical Engineering) in August 2011. His dissertation title was "Radiation response in MOS devices with high-K gate oxides and metal gates." Aritra's work was funded by the Defense Threat Reduction Agency's basic research program. ~8 publications; MS 2009. He is working at Global Foundries (Hopewell Junction, NY) in advanced semiconductor technology development.

Xing J. Zhou completed her PhD (Interdisciplinary Graduate Program in Materials Science) in December 2006. Her dissertation title was "Charge trapping properties of alternative high-K dielectrics in MOS devices." Xing was funded by the US Navy and AFOSR. Xing has authored or co-authored more than 15 journal articles and received the 2006 IEEE NSREC Paul Phelps Award (one of two) and the 2006 IEEE NPSS Graduate Student Award (one of four). Xing is working with Texas Instruments in Richardson, TX.

Hao Xiong completed his PhD (EE) in December 2004. His dissertation title was "Charge trapping and low frequency noise in MOSFETs." Supported by Defense Threat Reduction Agency, AFOSR MURI, and US Navy/Aging program. 10 publications. MS 2003 (spent one year in Materials Science program). Winner of IEEE NPSS Paul Phelps Award and Graduate Student Award, 2004. Hao worked a post-doctoral researcher at the National Institute of Standards and Technology, Bethesda, MD. He completed the MBA program at Yale University, and is now with the Venture Capital Arm of TCL Corporation in Shenzhen, China.

James A. Felix completed his PhD (EE) in December 2003. His dissertation title was "The radiation response and long term reliability of high-K gate dielectrics." Supported by NSF Risk and Reliability IGERT, and the US Navy. 12 publications. MS 2001. Winner of IEEE NPSS Paul Phelps Award, 2001, and Graduate Student Award, 2002. Jim was a Distinguished Member of the Technical Staff at Sandia National Laboratories, Albuquerque, and is now with the Air Force Research Laboratory in Dayton, OH.

Xun Li (PhD co-advisee; principal advisor Enxia Zhang, University of Central Florida): His dissertation was entitled "Irradiation and Bias-Stress Induced Defects and Gate Leakage in GaN-Based HEMTs." Xun's work was supported primarily by the Air Force Office of Scientific Research. He is currently working as an engineer at Micron Technology, Boise, Idaho.

Stefano Bonaldo (PhD co-advisee; principal advisor Alessandro Paccagnella, University of Padova, Italy) complete his PhD in February 2020: His dissertation was entitled "Total Ionizing Dose Degradation Mechanisms in Nanometer-Scale Microelectronic Technologies." Stefano's work was supported primarily by the University of Padova. He was a visiting scholar at Vanderbilt from September 2018 until July 2019. He is currently a post-doctoral researcher at the University of Padova, Italy.

Indranil Chatterjee (PhD co-advisee; principal advisor Bharat Bhuva, EE) completed his PhD (EE) in August 2014. His dissertation was entitled "Geometric Dependence of The Total Ionizing Dose Response of FinFETs." Indranil's work was supported by TSMC and the Naval Research Laboratory. He was a

post-doctoral research associate at University of Bristol, UK, and is now working for Airbus Industries and is designated as: "Expert - discrete and integrated semiconductor devices."

Sriram K. Dixit (PhD co-advisee; principal advisor Len Feldman, Physics) completed his PhD (Interdisciplinary Graduate Program in Materials Science) in May 2008. His dissertation was entitled "Radiation-Induced charge trapping studies of advanced Si and SiC based MOS devices." Sriram joined Intel Corporation as a reliability and product engineer in June 2008.

Other MS Advisees

Jiarui Ding, MSEE, 2021: Co-advised with Enxia Zhang: "Aging effects and latent interface-trap buildup in MOS transistors."

Ioana Danciu, MSEE, December 2011: "1/*f* noise and aging effects on MOS transistors." Ioana was supported by the previous employer, the VU Medical Center, during her MS studies. She is now employed at Oak Ridge National Laboratory.

Rajan Arora, MSEE, May 2009: "Reliability issues in Ge and SiC MOS devices," co-advised with Ron Schrimpf. Work supported by AFOSR MURI. Rajan completed his PhD at Georgia Tech and is now working with Texas Instruments in Dallas, TX.

Dakai Chen (co-advised with Ron Schrimpf) Thesis title: "Total dose irradiation effects on Si and Ge MOS capacitors with alternative gate dielectrics." Funded by AFOSR MURI. MS in EE in December 2007. Dakai founded Zero-G radiation effects consultants in 2019.

Martin Rodgers (co-advised with Ron Schrimpf), MS, May 2006. His thesis was entitled, "The effects of aging on MOS irradiation and annealing response." Martin was supported by the US Navy DTO/Aging program and the AFOSR MURI; he now works with Albany Nanotech, New York.

Xinwen Hu, MS, May 2003: "Mechanisms of proton-induced degradation in AlGaAs/GaAs heterojunction bipolar transistors." Funded by AFOSR/MURI. Working at Spang Corporation.

Quping Hu, MS, Dec. 2000: "1/f noise measurements for bulk and SOI MOS devices." Funded by US Navy/MRC. Left to work at Altera Corporation.

PhD Committees

Xuyi Luo, EE, 2024; Xiaosi Zhang, EE, 2023; Shintaro Toguchi, EE, 2022; Jingchen Cao, EE, 2022; Kan Li, IMS, 2022; Christian Schleich, EE, 2022 (Vienna University of Technology); Hugo Dewitte, EE, 2022 (ISAE, University of Toulouse); Chun-Min Zhang, EE, 2021 (EPFL - Neuchatel); Mohammed Rony, EE, 2021; Mahmud Reaz, IGPMS 2021; Yuchen Zhang, EE, 2020; Tianjiao Wang, EE, 2020; Peng Wang, EE, 2020; Andrew Tonigan, IGMPS, 2020; Huiqi Gong, EE, 2018; Wenjun Liao, EE, 2018; Charles Arutt, EE, 2018; Hangfang Zhang, EE, 2018; Kevin Miller, IGPMS, 2018; Chundong Liang, EE, 2017; Kai Ni, EE, 2016; Tu Hong, EE, 2016: Shubhajit Mukherjee, IGPMS, 2015; Girija Gaur, EE, 2015; Shweta Bhandaru, IGPMS, 2015; Yunhao Cao, EE, 2013; Judson Ryckman, EE, 2013; Yang Jiao, EE, 2013; Farah El-Mamouni, EE, 2012; David Hughart, EE, 2012; Nadia Rezzak, EE, 2012; Sandeepan DasGupta, EE, 2010; Jon Gosnell, IGPMS, 2010; Aditya Kalavagunta, EE, 2009; Christina Howe, EE, 2008; Jonny Pellish, EE, 2008; Jingbo Qi, Physics, 2008; Jeffrey Black, EE, 2008; Aditya Karmarkar, IGPMS, 2005 (co-advisor); Abdulrahman Al-Badri, EE, 2005; Sarit Dhar, IGPMS, 2005; Chris Nicklaw, EE, 2003; Tamas Bakos, Physics, 2003; Xiaowei (Vivian) Zhu, EE, 2002; Zsuzsanna Marka, Physics, 2002; Hugh Barnaby, EE, 2002.

Other MS Committees

Chloe Champagne, EE, 2024; Frank Padgett, Physics (Fisk Univ.), 2021; Pengfei Wang, EE, 2017; Michael McCurdy, EE, 2017; Vishwa Ramachandran (co-advisor, with R. D. Schrimpf), EE, 2006; Ryan Cizmarik, EE, 2004; John Hutson, EE, 2004; John Stacey, EE, 2004; Ajay Raparla, EE, 2001; Yanfeng Li, EE, 2000

Post-doctoral researchers advised

Enxia Zhang, 2008-2010 (now T/TK assistant professor at University of Central Florida)
Xing Zhou, 2006-2008 (now at Texas Instruments, Richardson, TX)
Antoine Touboul (co-advisor, with R. D. Schrimpf), 2006 (faculty member at Univ. Montpellier, France)
Bongim Jun, 2002-2004 (now with NASA/JPL)

Summary of Service

National Service

2007: Chair, APS Pake Prize Committee

2004: Served on Navy SSP Blue Ribbon Panel to review design and progress of Trident Missile/D5LE (D5 Life Extension) at the request of US Navy.

2003: Served on Enhanced Ground Testing panel for Trident Missile/D5LE (D5 Life Extension) at the request of US Navy.

Professional/Society Service

2025, Co-organizer, Symposium on "Radiation Effects in Semiconductors for Extreme Environments," Spring Meeting of the Materials Research Society, April 7-11, 2025

2024, Rad-EDGE Grand Challenge LDRD external advisory board, Sandia National Laboratories

2022, Member, Education Committee, IEEE Nuclear and Plasma Sciences Society (NPSS) AdCom

2022, Liaison for IEEE NPSS to Educational Activities Committee

2021, Co-chair, 4th International Conference on Radiation Effects in Electronic Devices, Xi'an, China, May 27-30 (hybrid: in-person/virtual).

2019, Scientific Committee, 3rd International Conference on Radiation Effects in Electronic Devices, Chongqing, China, May 28-31.

2019, Session Chair, RADECS 2019, Gothenburg, Sweden, July 17-21.

2017, Co-Chair, International Workshop on Reliability of Micro- and Nano-Electronic Devices in Harsh Environment, Chengdu, China, May 22-24, 2017.

2016-2017, Ultra-wide band-gap grand challenge external advisory board, Sandia National Laboratories

2015-Present, Vice-Chair, Publications, IEEE Nuclear and Space Radiation Effects Conference, Radiation Effects Steering Group

2013-Present, Senior Editor, Radiation Effects, *IEEE Transactions on Nuclear Science*

2013-Present, Distinguished Lecturers Chair, IEEE NPSS

2013: Conference publication chair: RADECS 2013, Oxford, UK, Sept. 23-27, 2013

2012-2015, Past Chairman, IEEE Nuclear and Space Radiation Effects Conference, Radiation Effects Steering Group (3 year term)

2009-2012: Chairman, IEEE Nuclear and Space Radiation Effects Conference, Radiation Effects Steering Group (3 year term)

2009: Session Chair, RADECS Conference, Bruges, Belgium, and ISDRS, College Park, MD

2007: Chair, Pake Prize Committee, American Physical Society

2006: Executive Vice-Chair, IEEE Nuclear and Space Radiation Effects Conference, Radiation Effects Steering Group (3 year term)

2006: IEEE NPSS AdCom (4 year term)

2006-2018: Member, Board of Directors, Southeastern Center for Electrical Engineering Education

2005-2006: Chair (2005), Forum on Industrial and Applied Physics (FIAP), The American Physical Society: Chaired FIAP Nomination committee. Past-chair (2006) – served on APS Pake Prize Committee, and served as acting chair of FIAP Fellowship Committee.

2006-2010: ABET Program Evaluator

Served as computer engineering visitor, Fall 2006, 2009, and 2010
EE visitor, Fall 2007 and Fall 2008
Developed and implemented assessment for ABET and SACS for VU EECS.

2005: Co-chair, SPIE International Symposium on Noise in Devices and Circuits III (FN 104), Fluctuations and Noise 2005, Austin TX, May 23-26.

2004: General Chair, IEEE Nuclear and Space Radiation Effects Conference, Atlanta, GA. 575 Attendees.

2004: Chair-Elect, Forum on Industrial and Applied Physics (FIAP), The American Physical Society: Chaired FIAP Fellows committee.

2003: Vice-Chair, Forum on Industrial and Applied Physics (FIAP), The American Physical Society: Responsible for planning the FIAP portion of the March 2004 American Physical Society Meeting, Montreal, Quebec. This involved 10 invited symposia with 4-5 invited talks each, and 20 focus sessions, with 6-13 talks each.

Co-organizer, SPIE International Symposium 5112 on Noise as a Tool for Studying Materials; Fluctuations and Noise 2003, Santa Fe, NM, June 1-4, 2003.

2001-2003: IEEE National Fellows Committee – evaluates Fellow Nominations and makes recommendations to IEEE Board of Directors for candidate recommendations for Fellow Grade.

Co-organizer of Symposia on Defects in Electronic Materials and Defects for the March 2002 American Physical Society meeting, through the Forum on Industrial and Applied Physics.

Vice-chair, Publications, IEEE Nuclear and Space Radiation Effects Conference (NSREC) Steering Committee (1994-1997); Short Course Chair (1999 - Norfolk) & Instructor (1995 - Madison), Technical Prog. Chair (1994 - Tucson), Poster Chair (1991 – San Diego), Steering Group Nominating Comm. (1991 & 94), Awards Comm. (87,88,99,00); Session Chair (1993 and 2001), IEEE NSREC

Tech. Prog. Committee/Session Chair, 1994-96 IEEE Semiconductor Interface Specialists Conference (SISC); Arrangements Chair (1997 – Charleston, SC), Technical Chair (1998 – San Diego, CA), and General Chair (1999 – Charleston, SC) IEEE SISC

Co-chair, Workshop on The Si-SiO_2 and the SiC-SiO_2 Interfaces - Similarities and Differences, Albuquerque, NM (1999);

Short Course Instructor, 1996 Taiwanese Space Program Office (Hsinchu, Taiwan), and 1991 IEEE Nuclear Science Symposium (Santa Fe, NM)

Guest Editor, April 1996 Special Issue on Single Event Effects and the Space Radiation Environment, and December 1988-90 issues of *IEEE Transactions on Nuclear Science*.

1996-Present, Editorial Advisory Board, *Microelectronics Reliability*

Co-chair, Workshop on Radiation and Process Induced Defects in MIS Systems, Research Triangle Park, NC (1991)

Technical Program Committee and Session Chair, 1988-9 Conferences on Space Nuclear Power Systems, Albuquerque, NM

Service internal to Vanderbilt

2021-Present: Adviser, VU EE Class of 2025

2003-2020: Chairman, EECS Department

2016, Member, SACS Quality Enhancement Plan Committee

2014, Chancellor's strategic planning sub-committee for Educational Technologies

2012-2015: Stevenson Chair search committee, VU Physics.

2008-2012: Faculty Associate, Memorial House, Vanderbilt Commons

2008-2011: Faculty and Staff Benefits Committee

2008: Search Committee, College of Arts and Science

2008: Provost Search Advisory Committee

2006-2009: University Promotion and Tenure Committee

2006: Search Committee, Chair of Biomedical Engineering

2003-2005: Chaired University Task Force on Classified Research. Coordinated campus wide town hall meeting, Nov. 30. Proposed revision to University Faculty Manual, III, Ch. 5 – adopted, 2005.

2002-2005: Executive Committee – Vanderbilt Institute for Nanoscale Science and Engineering; Put together Nanotechnology Database for the Vanderbilt University School of Engineering in 2001, which was instrumental in achieving funding for this initiative, awarded through the VU Academic Venture Capital Fund.

2002-2005: University Senate – Business and Nonacademic Affairs Committee – Spring 2003; Academic Policies and Services Committee – Fall 2003-Spring 2005; Nominating Committee, 2004.

1999-2005: Vanderbilt Undergraduate Summer Research Program VUSE representative.

2004: Search Committee – information technology security officer.

2002-2003: University Undergraduate Research Committee

2002-2003: Senior School Leaders Information Technology Committee

2000-2004: VU Community Giving Allocations Committee.

2002-2004: Served on the H. Fort Flowers Chair Search Committee.

2001-2002: Chair, VUSE Consultative Committee on Promotion and Tenure

2001-2002: VU International Affairs Committee

2001-2002: Chair, VUSE Engineering Research Council

2000-2002: EECS ABET Fulfillment Committee

2000-2003: Executive Committee – Interdisciplinary Graduate Program in Materials Science

1999-2002: Academic Advisor to EE undergraduate class of 2002

1999-2001: EECS Representative to Graduate Faculty Delegate Assembly

Selected Service as a student at Purdue

1978-1980: President, Society of Physics Students, Purdue University

1977-1979: Vice-President, Purdue Chess Club

Selected Community and Additional Service

2005-2007: Industrial Advisory Board, ECE Dept., University of Alabama at Huntsville

2003: Lecture on correspondence chess at the Nashville Chess Center, June

2003: Presented keynote speech at the National Honor Society induction ceremony, September, Brentwood, TN.

Selected Personal Awards and Honors

2008: International Correspondence Chess GrandMaster title
International Correspondence Chess Master (1997)/Senior IM (2000)

Bronze medal (team): 14th and 21st International Correspondence Chess Olympics; best score and grandmaster norm on Board 3 of the 14th International Correspondence Chess Olympiad Final

Finished 8th in 18th World Correspondence Chess Championship; currently playing in the 33rd World Correspondence Chess Championship

2011: Received a "Yuri Gagarin First Spaceflight 50th Anniversary" medal from the Cosmonautics Federation of Russia for contributions to promoting international cooperation related to space electronics.

2004: 29th person added to Seymour High School (IN) Wall of Fame, in recognition for career and personal achievements.

2005: Winner, Limerick contest, IEEE Semiconductor Interface Specialists Conference
1994: Winner, Limerick contest, IEEE Semiconductor Interface Specialists Conference
1993: Winner, United States Chess Federation Absolute Correspondence Chess Championship
1982: Honorable mention, Lyric-9 Songwriters Competition for pop and country music divisions
1981: 1st place individual, ACUI Regional Collegiate Chess Championship
1976: Named a Top-20 Hoosier Scholar
1976: National Merit Scholar; Valedictorian – Seymour High School (IN)
1976: National Scholar Athlete Award
1976: All-South Central Conference (SCC) Baseball Team (left-handed pitcher) – pitched perfect no-hitter in SCC tournament, striking out 17 batters of 21 faced (school record performances)
1975: 1st trombone, All-State sight-reading band, Indiana; gold medalist, State solo competition
1975: National Council of Teachers of English Composition Award

PATENTS: Dan Fleetwood

1. W. L. Warren (SNL), K. J. R. Vanheusden (Univ. of New Mexico), J. R. Schwank, **D. M. Fleetwood**, M. R. Shaneyfelt, P. S. Winokur (SNL), and R. A. B. Devine, "Screening Method for Selecting Semiconductor Substrates Having Defects Below a Predetermined Level in an Oxide Layer," US Patent No. 5,786,231, issued July 28, 1998.
2. W. L. Warren (SNL), K. J. R. Vanheusden (UNM), R. A. B. Devine (France Telecom), and **D. M. Fleetwood** (SNL), "Memory Device Using Movement of Protons," US Patent No. 5,830,575, issued Nov. 3, 1998. European Patent No. 97942460.3-2108 filed 9/17/97.
3. W. L. Warren (SNL), K. J. R. Vanheusden (UNM), **D. M. Fleetwood** (SNL), and R. A. B. Devine (France Telecom), "Memory Device Using Movement of Protons," US Patent No. 6,140,157, issued Oct. 31, 2000.
4. W. L. Warren (SNL), K. J. R. Vanheusden (UNM), **D. M. Fleetwood** (SNL), R. A. B. Devine (France Telecom/CNET), L. B. Archer, G. A. Brown, and R. M. Wallace (Texas Instruments), "Memory Device Using Movement of Protons," US Patent No. 6,159,829, issued Dec. 12, 2000.

BOOKS AND SPECIAL ISSUES EDITED

1. D. M. Fleetwood, D. B. Brown, S. Girard, P. Gouker, S. Gerardin, H. Quinn, and H. Barnaby, *Modeling and Simulation of Radiation Effects*, Special Issue: *IEEE Trans. Nucl. Sci.*, pp. 1439-1706, Aug. 2015.
2. D. M. Fleetwood, S. T. Pantelides, and R. D. Schrimpf, *Defects in Microelectronic Materials and Devices* (CRC Press, Boca Raton, FL, 2008), 753 pages.
3. A. A. Balandin, F. Danneville, M. J. Deen, and D. M. Fleetwood, *Noise in Devices and Circuits III*, Vol. 5844, SPIE, The Society for Optical Engineering (SPIE, Bellingham, 2005), 312 pp.
4. R. D. Schrimpf and D. M. Fleetwood, *Radiation Effects and Soft Errors in Integrated Circuits and Electronic Devices* (World Scientific, Singapore, 2004), 350 pp.
5. D. M. Fleetwood and R. Gaillard, *Single Event Effects and the Space Radiation Environment*, Special Issue: April 1996, *IEEE Trans. Nucl. Sci*., pp. 341-704 (1996).

PUBLICATION LIST: Dan Fleetwood

Peer reviewed journal articles

1. J. M. Trippe, B. D. Sierawski, G. Mayberry, H. M. Dattilo, S. T. Pantelides, D. M. Fleetwood, R. D. Schrimpf, L. W. Massengill, and R. A. Reed, "Effectiveness of NIEL as a predictor of single event displacement damage effects in CMOS circuits," *IEEE Trans. Nucl. Sci.*, no. 4, pp. 1384-1394, April 2025. **[Outstanding Paper, 2024 IEEE Nuclear and Space Radiation Effects Conference.]**
2. K. P. Arnold, S. Musibau, H. M. Dattilo, H. J. Sutton, Steven L. Frankowski, M. Berciano, E. X. Zhang, M. W. McCurdy, M. L. Crespillo, K. Hattar, A. Tsiara, D. Linten, K. Croes, J. Van Campenhout, R. D. Schrimpf, D. M. Fleetwood, R. A. Reed, and S. M. Weiss, "Displacement damage and ionization effects on waveguide-integrated germanium-silicon PIN photodiodes," *IEEE Trans. Nucl. Sci.*, vol. 72, no. 4, pp. 1181-1190, April 2025.
3. B. L. Ringel, J. W. Teng, D. Nergui, Z. R. Brumbach, M. Hosseinzadeh, K. Li, E. X. Zhang, D. M. Fleetwood, and J. D. Cressler, "RF performance and TID hardness trade-offs in annular 45-nm RF SOI CMOS devices," *IEEE Trans. Nucl. Sci.*, vol. 72, no. 2, pp. 154-163, Feb. 2025.
4. T. K. Liu, H. Lee, X. Y. Luo, E. X. Zhang, R. D. Schrimpf, S. Rajan, and D. M. Fleetwood, "Temperature dependence of the low-frequency noise in AlGaN/GaN fin field effect transistors," *J. Appl. Phys.*, vol. 138, no. 14, Oct. 2024, Art. no. 145702. (10 pages)
5. I. R. Wynocker, E. X. Zhang, R. A. Reed, R. D. Schrimpf, A. Arreghini, J. P. Bastos, G. Van den Bosch, and D. Linten, and D. M. Fleetwood, "Random telegraph noise and radiation response of 80 nm vertical charge-trapping NAND flash memory devices with SiON tunneling oxide," *IEEE Trans. Nucl. Sci.*, vol. 71, no. 8, pp. 1789-1797, Aug. 2024.
6. Z. Jiang, Z. Guo, X. Luo, M. Sayed, Z. Faris, H. Mulaosmanovic, S. Duenkel, S. Soss, S. Beyer, X. Gong, S. Kurinec, V. Narayanan, H. Amrouch, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, and K. Ni, "Evaluating

the robustness of complementary channel ferroelectric FETs against total ionizing dose towards radiation-tolerant embedded nonvolatile memory," *IEEE Electron Device Lett.*, vol. 45, no. 7, pp. 1165-1168, Jul. 2024.

7. A. O'Hara, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Defect dynamics in the presence of excess energetic carriers and high electric fields in wide-gap semiconductors," *J. Appl. Phys.*, vol. 135, no. 19, May 2024, Art. no. 195701. (13 pages) [**Editor's Pick**.]
8. D. M. Fleetwood, E. X. Zhang, R. D. Schrimpf, S. T. Pantelides, and S. Bonaldo, "Effects of interface traps and hydrogen on the low-frequency noise of irradiated MOS devices," *IEEE Trans. Nucl. Sci*., vol. 71, no. 4, pp. 555-568, Apr. 2024.
9. Z. Guo, E. X. Zhang, A. Chasin, D. Linten, A. Belmonte, G. Kar, R. A. Reed, R. D. Schrimpf, and D. M. Fleetwood, "Total-ionizing-dose effects in IGZO thin-film transistors with SiO_2 oxygen-penetration layers," *IEEE Trans. Nucl. Sci*., vol. 71, no. 4, pp. 461-468, Apr. 2024.
10. X. Luo, J. Montes, S. D. Koukourinkova, B. L. Vaandrager, E. S. Bielejec, G. Vizkelethy, R. D. Schrimpf, D. M. Fleetwood, and E. X. Zhang, "Low-frequency noise and deep level transient spectroscopy in n-p-n Si bipolar junction transistors irradiated with Si ions," *IEEE Trans. Nucl. Sci*., vol. 71, no. 4, pp. 591-598, Apr. 2024.
11. S. Bonaldo, T. Wallace, H. Barnaby, G. Borghello, G. Termo, F. Faccio, D. M. Fleetwood, S. Mattiazzo, M. Bagatin, A. Paccagnella, and S. Gerardin, "Radiation-induced charge trapping in shallow trench isolations of FinFETs," *IEEE Trans. Nucl. Sci*., vol. 71, no. 4, pp. 427-436, Apr. 2024.
12. S. Islam, A. S. Senarath, E. Farzana, D. R. Ball, A. Sengupta, N. S. Hendricks, A. Bhattacharyya, R. A. Reed, E. X. Zhang, J. S. Speck, D. M. Fleetwood, and R. D. Schrimpf, "Single-event burnout in vertical β-Ga_2O_3 diodes with Pt/PtO_x Schottky contacts and high-k field-plate dielectrics," *IEEE Trans. Nucl. Sci.*, vol. 71, no. 4, pp. 515-521, Apr. 2024.
13. C. A. Champagne, B. D. Sierawski, R. L. Ladbury, M. J. Campola, D. M. Fleetwood, "A confidence-based approach to including survivors in a probabilistic TID failure assessment," *IEEE Trans. Nucl. Sci*., vol. 71, no. 4, pp. 690-697, Apr. 2024.
14. T. Kim, G. Ryu, J. Lee, M.-K. Cho, D. M. Fleetwood, J. D. Cressler, and I. Song, "Simple modeling and analysis of total ionizing dose effects on radio-frequency low-noise amplifiers," *Electronics*, vol. 13, no. 8, Apr. 2024, Art. no. 1445 (15 pages).
15. A. S. Senarath, S. Islam, A. Sengupta, M. W. McCurdy, T. Anderson, A. Jacobs, R. Kaplar, D. R. Ball, E. X. Zhang, S. T. Pantelides, R. A. Reed, M. A. Ebrish, D. M. Fleetwood, J. D. Caldwell, and R. D. Schrimpf, "Single-event burnout in homojunction GaN vertical PIN diodes with hybrid edge termination design," *Appl. Phys. Lett.*, vol. 124, no. 13, Mar. 2024, Art. no. 132101 (7 pages).
16. D. M. Fleetwood, X. Li, E. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "Low-frequency noise due to iron impurity centers in GaN-based HEMTs," *IEEE Trans. Electron Devices*, vol. 71, no. 2, pp. 1024-1030, Feb. 2024.
17. X. Li, P. F. Wang, X. Zhao, H. Qiu, M. Gorchichko, M. W. McCurdy, R. D. Schrimpf, E. X. Zhang, and D. M. Fleetwood, "Defect and impurity-center activation and passivation in irradiated AlGaN/GaN HEMTs," *IEEE Trans. Nucl. Sci.*, vol. 71, no. 1, pp. 80-87, Jan. 2024.
18. X. Y. Luo, A. O'Hara, X. Li, P. F. Wang, E. X. Zhang, R. D. Schrimpf, S. T. Pantelides, and D. M. Fleetwood, "Low-frequency noise and defects in AlGaAs/InGaAs/GaAs pseudomorphic high-electron mobility transistors," *J. Appl. Phys.*, vol. 135, no. 2, Jan. 2024, Art. no. 025702 (10 pages).
19. D. O. Nielsen, C. G. Van de Walle, S. T. Pantelides, R. D. Schrimpf, D. M. Fleetwood, and M. V. Fischetti, "First-principles approach to closing the 10-100 eV gap for charge-carrier thermalization in semiconductors," *Phys. Rev. B*, vol. 108, no. 15, Oct. 2023, Art. no. 155203 (20 pages).
20. D. M. Fleetwood, "Low-frequency noise in nanowires," *Nanoscale*, vol. 15, no. 29, pp. 12175-12192, Aug. 2023. [**Invited**.]
21. S. Bonaldo, E. X. Zhang, S. Mattiazzo, A. Paccagnella, S. Gerardin, R. D. Schrimpf, and D. M. Fleetwood, "Total-ionizing-dose effects at ultra-high doses in AlGaN/GaN HEMTs," *IEEE Trans. Nucl. Sci.*, vol. 70, no. 8, pp. 2042-2050, Aug. 2023.
22. S. C. Witczak, R. D. Schrimpf, D. M. Fleetwood, S. R. Messenger, M. S. Langlois, M. W. McCurdy, and J. A. Rodriguez, "Damage separation in proton-irradiated bipolar junction transistors as a function of energy," *IEEE Trans. Nucl. Sci.*, vol. 70, no. 8, pp. 1900-1907, Aug. 2023.
23. Z. Guo, K. Li, X. Li, X. Luo, E. X. Zhang, R. A. Reed, R. D. Schrimpf, D. M. Fleetwood, A. Chasin, J. Mitard, and D. Linten, "Total-ionizing-dose effects in IGZO thin-film transistors," *IEEE Trans. Nucl. Sci.*, vol. 70, no. 8, pp. 2002-2007, Aug. 2023.
24. M. Gorchichko, E. X. Zhang, M. Reaz, K. Li, P. F. Wang, J. Cao, R. M. Brewer, R. D. Schrimpf, R. A. Reed, B. D. Sierawski, M. L. Alles, J. Cox, S. L. Moran, S. S. Iyer, and D. M. Fleetwood, "Low-frequency and random

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PRESENTATIONS: DAN FLEETWOOD

Invited Talks and Short Courses

1. D. M. Fleetwood, "Radiation effects in wide-band-gap semiconductor devices in space environments," Spring Meeting of the Materials Research Society Spring Meeting, Seattle, WA, April 7-11. (Tutorial)
2. E. X. Zhang, X. Li, R. D. Schrimpf, and D. M. Fleetwood, "Voltage-stress- and radiation-induced gate leakage during cryogenic operation of AlGaN/GaN HEMTs," Spring Meeting of the Materials Research Society, Seattle, WA, April 7-11, 2025.
3. M. Fischetti, D. O. Nielsen, C. G. Van de Walle, S. T. Pantelides, L. R. Nichols, R. D. Schrimpf, and D. M. Fleetwood, "An *ab initio* approach to closing the "10-100 eV gap" for charge-carrier thermalization in semiconductors," Spring Meeting of the Materials Research Society, Seattle, WA, April 7-11, 2025.
4. E. Farzana, N. Hendricks, S. Islam, A. Senarath, A. Sengupta, R. Cadena, D. R. Ball, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, and J. S. Speck, "Radiation effects on vertical β-Ga_2O_3 high-power diodes," Spring Meeting of the Materials Research Society, Seattle, WA, April 7-11, 2025.
5. A. O'Hara, H. Pandey, G. M. Mayberry, D. Nagesh, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Defect dynamics in the presence of excess energetic carriers and high electric field in wide-gap semiconductors," Spring Meeting of the Materials Research Society, Seattle, WA, April 7-11, 2025.
6. H. J. Ghadi, E. S. Bielejec, M. Carver, D. M. Fleetwood, J. D. Heile, T. Kasher, M. W. McCurdy, J. F. McGlone, L. Meng, S. Ringel, R. D. Schrimpf, D. S. Yu, and H. P. Zhao, "Effect of electric field on defect generation and migration barriers in high energy proton irradiated β-Ga_2O_3," March Meeting of The American Physical Society, Anaheim, CA, March 16-21, 2025.
7. E. Farzana, N. Hendricks, S. Roy, A. Bhattacharyya, S. Islam, R. Cadena, A. Senarath, A. Sengupta, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. Krishnamoorthy, and J. Speck, "Vertical β-Ga_2O_3 diodes for high-voltage and harsh radiation application," Intl. Workshop on Gallium Oxide and Related Materials (IWGO), Berlin, Germany, May 26-31, 2024.
8. E. X. Zhang, S. Toguchi, Z. X. Guo, M. L. Alles, R. D. Schrimpf, and D. M. Fleetwood, "Charge trapping in irradiated 3D devices and ICs," Intl. Reliab. Phys. Sympos., Dallas, TX, Apr. 14-18, 2024.
9. M. V. Fischetti, D. O. Nielsen, C. Van de Walle, S. T. Pantelides, R. D. Schrimpf, and D. M. Fleetwood, "Thermalization of radiation-induced carriers in insulators and wide bandgap semiconductors," March Meeting of the American Physical Society, Minneapolis, MN, March 3-8, 2024.
10. E. X. Zhang, S. Toguchi, R. D. Schrimpf, M. L. Alles, and D. M. Fleetwood, "Radiation effects and reliability in 3D integrated circuits," IEEE Semiconductor Interface Specialists Conference, San Diego, CA, Dec. 13-16, 2023.
11. D. M. Fleetwood, "Radiation effects in AlGaN/GaN HEMTs and gallium oxide diodes," Device Research Conference, Santa Barbara, CA, June 26-28, 2023.
12. D. M. Fleetwood, "Radiation effects in a post-Moore world," IEEE International Reliability Physics Symposium, Monterey, CA, March 26-27, 2023. (Tutorial)
13. D. M. Fleetwood, "Radiation effects and low-frequency noise in AlGaN/GaN HEMTs," Virtual Workshop on Co-Design for Materials Discovery, Reliability, and Extreme Environments, Sandia National Laboratories, Albuquerque, NM, November 15-17, 2022.
14. D. M. Fleetwood, "Radiation effects in a post-Moore world," Space Qualification 2022 Workshop, virtual, Wollongong, Australia, March 22, 2022.
15. D. M. Fleetwood, "Evolution of total ionizing dose effects in MOS devices with Moore's Law scaling," Space Qualification 2022 Workshop, virtual, Wollongong, Australia, March 22, 2022.
16. D. M. Fleetwood, R. D. Schrimpf, E. X. Zhang, and S. T. Pantelides, "Radiation effects and low-frequency noise in AlGaN/GaN HEMTs," International Meeting for Future of Electron Devices, IMFEDK 2021, Kansai, Japan, Nov. 17-18, 2021. (Keynote, presented virtually).
17. S. Toguchi, E. X. Zhang, D. M. Fleetwood, R. D Schrimpf, R. A. Reed, M. L. Alles, S. Moreau, S. Cheramy, P. Batude, L. Brunet, and F. Andrieu, "Total ionizing dose effects on 3D devices," 17th International School on the Effects of Radiation on Embedded Systems for Space Applications (SERESSA), Nov. 16-19, virtual.
18. P. Wang, E. X. Zhang, D. M. Fleetwood, P. F. Wang, M. W. McCurdy, J.-T. Lin, M. L. Alles, J. L. Davidson, B. W. Alphenaar, and R. D. Schrimpf, "Effects of charge generation and trapping on the X-ray response of strained AlGaN/GaN HEMTs," IEEE 14th International Conference on ASIC (ASICON), Kunming, China, Oct. 26-29, 2021, presented virtually.

19. D. M. Fleetwood, "Radiation effects and defects in AlGaN/GaN HEMTs," 4th International Conference on Radiation Effects in Electronic Devices, Xi'an, China, May 27-30 (Keynote, presented virtually).
20. D. M. Fleetwood, "Radiation effects in a post-Moore world," IEEE Nuclear and Space Radiation Effects Conference, virtual, November 29-30, 2020. (short course)
21. D. M. Fleetwood, P. F. Wang, E. X. Zhang, R. D. Schrimpf, A. O'Hara, and S. T. Pantelides, "Defect dehydrogenation in Si-MOS and compound-semiconductor-based devices," IEEE International Conference on Solid-State and Integrated Circuit Technology, virtual, November 3-6, 2020.
22. B. Parvais, U. Peralagu, A. Vais, A. Alian, L. Witters, Y. Mols, A. Walke, M. Ingels, H. Yu, V. Putcha, A. Khaled, R. Rodriguez, A. Sibaja-Hernandez, S. Yadav, R. El Kashlan, M. Baryshnikova, G. Mannaert, R. Alcotte, B. Kunert, E. Simoen, S. E. Zhao, B. De Jaeger, D. M. Fleetwood, R. Langer, M. Zhao, P. Wambacq, N. Waldron, and N. Collaert, "Advanced Transistors for High Frequency Applications," Spring Meeting of The Electrochemical Society, Montreal, Canada, May 10-15, 2020. (meeting cancelled; proceedings published)
23. D. M. Fleetwood, "Total ionizing dose effects, border traps, and 1/*f* noise in emerging MOS technologies," European Conference on Radiation Effects on Components and Systems (RADECS), Montpellier, France, Sept. 16, 2019. (short course)
24. D. M. Fleetwood, "Interface-trap annealing and its implications for radiation hardness assurance," 10th International Conference on. Materials for Advanced Technologies, Singapore, June 23-28, 2019.
25. R. D. Schrimpf, M. L. Alles, D. M. Fleetwood, K. M. Warren, R. A. Reed, R. A. Weller, R. Austin, A. F. Witulski, N. Mahadevan, G. Karsai, and B. D. Sierawski, "Modeling component and system responses to radiation: Opportunities and limits," Workshop on the Future of Space Radiation Assurance, Jet Propulsion Laboratory, Pasadena, CA, June 3, 2019.
26. D. M. Fleetwood, E. X. Zhang, C. D. Liang, P. Wang, C. X. Zhang, R. D. Schrimpf, M. L. Alles, R. A. Reed, A. O'Hara, S. T. Pantelides, Y. Su, R. Ma, and S. Koester, "Radiation effects on MOS devices based on 2D materials," 3rd International Conference on Radiation Effects of Electronic Devices, Chongqing, China, May 29-31, 2019. (keynote)
27. D. M. Fleetwood, "Reliability limiting defects in MOS gate oxides: Mechanisms and modeling implications," IEEE Intl. Reliab. Phys. Sympos., Monterey, CA, March 31 – April 4, 2019.
28. D. M. Fleetwood, "Bias dependence of interface-trap annealing: Implications for RHA testing," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Feb. 5-7, 2019.
29. R. A. Reed, R. D. Schrimpf, E. X. Zhang, D. M. Fleetwood, M. L. Alles, A. L. Sternberg, J. A. Kozub, H. Gong, K. Ni, and I. K. Samsel, "Radiation-induced transients in advanced devices," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Feb. 5-7, 2019.
30. D. M. Fleetwood, E. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "1/*f* noise, border traps, and radiation response," RADECS Workshop, Beijing, China, May 16-18, 2018.
31. D. M. Fleetwood, "Evolution of total ionizing dose effects in MOS devices with Moore's Law scaling," European Conference on Radiation Effects on Components and Systems (RADECS), Geneva, Switzerland, Oct. 2, 2017. (short course)
32. D. M. Fleetwood, J. Chen, R. Jiang, E. X. Zhang, S. Mukherjee, R. D. Schrimpf, Y. S. Puzyrev, and S. T. Pantelides, "Radiation response, 1/*f* noise, and reliability of GaN/AlGaN HEMTs," 2017 International Workshop on Reliability of Micro- and Nano-Electronics in Harsh Environment, Chengdu, China, May 22-24, 2017. (keynote address)
33. R. A. Reed, R. A. Weller, J. M. Trippe, S. L. Weeden-Wright, E. D. Funkhouser, C. N. Arutt, R. D. Schrimpf, B. D. Sierawski, K. M. Warren, L. W. Massengill, D. M. Fleetwood, M. L. Alles, E. X. Zhang, and M. Asai, "Applications of MRED (Monte Carlo Radiative Energy Deposition)," 12th GEANT4 Space Users Workshop, Guildford, UK, April 10-12, 2017.
34. D. M. Fleetwood, "Moore's Law and radiation effects," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Feb. 7-9, 2017. (keynote address)
35. D. M. Fleetwood, P. Wang, J. Chen, R. Jiang, E. X. Zhang, M. W. McCurdy, and R. D. Schrimpf, "1/*f* noise in AlGaN/GaN HEMTs," IEEE International Conference on Solid-State and Integrated Circuit Technology, Hangzhou, China, Oct. 25-28, 2016.
36. E. Simoen, G. Eneman, A.Vinicius De Oliveira, K. Ni, J. Mitard, L. Witters, P. Ghedini Der Agopian, J. A. Martino, D. M. Fleetwood, R. D. Schrimpf, R. A. Reed, N. Collaert, A. Thean, and C. Claeys, "On the assessment of electrically active defects in high-mobility materials and devices," IEEE International Conference on Solid-State and Integrated Circuit Technology, Hangzhou, China, Oct. 25-28, 2016.
37. D. M. Fleetwood, J. Chen, R. Jiang, E. X. Zhang, and R. D. Schrimpf, "Hardness assurance issues for GaN/AlGaN HEMTs," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Feb. 9-10, 2016.

38. S. M. Weiss, S. Bhandaru, S. Hu, and D. M. Fleetwood, "Radiation studies on silicon photonic ring resonators," SPIE Optics & Photonics, San Diego, CA, Aug. 28 – Sept. 1, 2015.
39. S. T. Pantelides, R. D. Schrimpf, and D. M. Fleetwood, "Connecting theory to experiments – Defects in semiconductor electronic devices," 28th International Conference on Defects in Semiconductors, Espoo, Finland, July 27 – 31, 2015. (plenary)
40. D. M. Fleetwood, "Energies and microstructures of defects contributing to 1/*f* noise in microelectronic materials and devices," 23rd International Conference on Noise and Fluctuations, Xi'an, China, June 2-6, 2015. (plenary)
41. D. M. Fleetwood and R. A. Reed, "Radiation effects in microelectronics," imec, Leuven, Belgium, May 12-13, 2015.
42. R. D. Schrimpf, D. M. Fleetwood, S. T. Pantelides, Y. S. Puzyrev, S. Mukherjee, R. A. Reed, J. S. Speck, and U. K. Mishra, "Physical mechanisms affecting the reliability of GaN-based high electron mobility transistors," Reliability and Materials Issues of Semiconductors-Optical and Electron Devices and Materials III, Spring Materials Research Society Meeting, San Francisco, CA, April 6-10, 2015 (Invited).
43. S. A. Ringel, A. R. Arehart, Z. Zhang, A. Sasikumar, D. Cardwell, E. C. H. Kyle, S. Kaun, J. Chen, E.X. Zhang, P. Saunier, C. Lee, D. M. Fleetwood, R.D. Schrimpf, and J.S. Speck, "Toward an understanding of GaN defects and device reliability using deep level trap spectroscopy methods," Reliability and Materials Issues of Semiconductors-Optical and Electron Devices and Materials III, Spring Materials Research Society Meeting, San Francisco, CA, April 6-10, 2015 (Invited).
44. J. S. Speck, E. C. H. Kyle, S. Kaun, Z. Zhang, A. R. Arehart, J. Chen, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, and S. A. Ringel, "GaN reliability," Reliability and Materials Issues of Semiconductors-Optical and Electron Devices and Materials III, Spring Materials Research Society Meeting, San Francisco, CA, April 6-10, 2015 (Invited).
45. R. D. Schrimpf, M. L. Alles, R. A. Reed, D. M. Fleetwood, S. Weeden-Wright, K. Ni, I. Samsel, and E. X. Zhang, "Single-event effects in emerging device technologies," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Jan. 27-29, 2015.
46. D. M. Fleetwood, E. X. Zhang, G. X. Duan, C. X. Zhang, I. K. Samsel, N. C. Hooten, W. G. Bennett, R. D. Schrimpf, R. A. Reed, D. Linten, and J. Mitard, "Soft errors and NBTI in SiGe pMOS transistors," IEEE International Conference on Solid-State and Integrated Circuit Technology, Guilin, China, Oct. 28-31, 2014.
47. S. T. Pantelides, R. D. Schrimpf, and D. M. Fleetwood, "Defect-mediated degradation of III-V HEMTs – From atomic-scale physics to engineering-level modeling," Workshop on Defects in Wide Band Gap Semiconductors, College Park, MD, Sept. 23, 2014.
48. D. M. Fleetwood, "Fundamentals of radiation effects in the space environment," First Workshop on Radiation Effects, in Guangzhou, China, Aug. 9, 2014.
49. D. M. Fleetwood, J. Chen, E. X. Zhang, Y. S. Puzyrev, R. D. Schrimpf, and S. T. Pantelides, "Defects affecting the 1/*f* noise and reliability of GaN/AlGaN HEMTs," 10th International Conference on Reliability, Maintainability and Safety, Guangzhou, China, Aug. 6-8, 2014.
50. S. A. Ringel, A. Arehart, A. Sasikumar, Z. Zhang, J. Speck, E. C. H. Kyle, M. Fireman, S. Kaun, R. D. Schrimpf, D. M. Fleetwood, "Defects in GaN-based transistors," Conference 8986: Gallium Nitride Materials and Devices IX, SPIE Photonics West, San Francisco, CA, Feb. 1-6, 2014.
51. R. D. Schrimpf, M. L. Alles, D. M. Fleetwood, K. M. Warren, R. A. Reed, and R. A. Weller, "Radiation effects and reliability: Physical mechanisms and rate prediction," IEEE International Integrated Reliability Workshop, Fallen Leaf Lake, CA, Oct. 13-17, 2013.
52. D. M. Fleetwood and E. X. Zhang, "Charge pumping in floating-body SOI FinFETs, "20th International Symposium on the Physical and Failure Analysis of Integrated Circuits, Suzhou, China, July 15-19, 2013.
53. D. M. Fleetwood, "Radiation response and reliability of MOS Devices," Tutorial: 20th International Symposium on the Physical and Failure Analysis of Integrated Circuits, Suzhou, China, July 16, 2013.
54. D. M. Fleetwood, T. Roy, X. Shen, Y. S. Puzyrev, E. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "Oxygen-related border traps in MOS and GaN devices," IEEE International Conference on Solid-State and Integrated Circuit Technology, Xi'an, China, Oct. 29 – Nov. 1, 2012.
55. R. D. Schrimpf, M. L. Alles, F. El-Mamouni, D. M. Fleetwood, R. A. Weller, and R. A. Reed, "Soft Errors in Advanced CMOS Technologies," IEEE International Conference on Solid-State and Integrated Circuit Technology, Xi'an, China, Oct. 29 – Nov. 1, 2012.
56. Y. F. Li, M. Li, R. D. Schrimpf, and D. M. Fleetwood, "Characterizing, modeling, and simulating soft error susceptibility in cell-based designs in highly scaled technologies," IEEE International Conference on Solid-State and Integrated Circuit Technology, Xi'an, China, Oct. 29 – Nov. 1, 2012.

57. D. M. Fleetwood, E. Simoen, S. A. Francis, C. X. Zhang, R. Arora, E. X. Zhang, R. D. Schrimpf, K. F. Galloway, J. Mitard, and C. Claeys, "Interface and border traps in Ge pMOSFETs," Fall Electrochemical Society Meeting, Oct. 7-12, 2012.
58. R. D. Schrimpf, M. L. Alles, F. El-Mamouni, D. M. Fleetwood, E. X. Zhang, and R. A. Reed, "Ultimate CMOS scaling and associated radiation reliability problems," EuroSOI 2012, La Grande Motte, France, Jan. 23-25, 2012.
59. C. Claeys, S. Iacvo, J. Mitard, R. Arora, C. X. Zhang, K. F. Galloway, D. M. Fleetwood, R. D. Schrimpf, M. Poizat, and E. Simoen, "Radiation hardness of SiGe and Ge-based CMOS technologies," 26th Symposium on Microelectronics Technology and Devices, Joao Pessoa, Brazil, Aug. 30 – Sept. 2, 2011.
60. R. D. Schrimpf, D. M. Fleetwood, M. L. Alles, R. A. Reed, G. Lucovsky, and S. T. Pantelides, "Radiation effects in new materials for nano-devices," Insulating Films on Semiconductors Conference, Grenoble, France, June 21-24, 2011.
61. S. T. Pantelides, X. Shen, Y. Puzyrev, B. R. Tuttle, T. Roy, S. DasGupta, D. M. Fleetwood, and R. D. Schrimpf, "Reliability of III-V devices: The defects that cause the trouble," International Conference on Micro- and Nano-electronics, Nanotechnologies, and MEMs, Athens, Greece, Dec. 12-15, 2010.
62. R. D. Schrimpf, M. L. Alles, D. M. Fleetwood, D. R. Ball, M. J. Gadlage, and F. El-Mamouni, "Design and evaluation of SOI devices for radiation environments," IEEE International SOI Conference, San Diego, CA, Oct. 11-14, 2010.
63. D. M. Fleetwood, R. D. Schrimpf, R. A. Weller, and P. E. Dodd, "Total dose and single event effects in highly scaled CMOS microelectronics," 2nd Radiation Effects and Reliability Workshop, Beijing, China, June 18, 2010.
64. D. M. Fleetwood, R. D. Schrimpf, R. A. Weller, and P. E. Dodd, "Addressing future trends in microelectronics radiation response via experiment and modeling," Lockheed Martin Technical Fellows Conference, Atlanta, GA, May 3, 2010.
65. R. D. Schrimpf, M. L. Alles, K. M. Warren, R. A. Reed, R. A. Weller, D. M. Fleetwood, and S. T. Pantelides, **"**Radiation effects and reliability issues in SOI technologies," Korean International Summer School on Nanoelectronics, Daegu, Korea, April 7-10, 2010.
66. D. M. Fleetwood, "Radiation effects on microelectronics in the space environment," Distinguished Visiting Faculty Lecture Series, American University of Cairo, October 20, 2009.
67. R. D. Schrimpf, M. L. Alles, K. M. Warren, R. A. Reed, R. A. Weller, D. M. Fleetwood, and S. T. Pantelides, "Radiation effects and reliability issues in SOI technologies," MIGAS: International Summer School on Advanced Microelectronics, Grenoble, France, June 20-26, 2009.
68. D. M. Fleetwood, S. A. Francis, A. Dasgupta, X. J. Zhou, R. D. Schrimpf, M. R. Shaneyfelt, and J. R. Schwank, "Moisture effects on the 1/*f* noise of MOS devices," in *Silicon Nitride, Silicon Dioxide, and Emerging Dielectrics 10*, Spring Meeting of the Electrochemical Society, San Francisco, CA, May 25-29, 2009.
69. S. T. Pantelides, L. Tsetseris, M. J. Beck, S. N. Rashkeev, G. Hadjisavvas, I. G. Batyrev, B. R. Tuttle, X. J. Zhou, D. M. Fleetwood and R. D. Schrimpf, "Performance, reliability, radiation effects, and aging issues in microelectronics–from atomic-scale physics to engineering-level modeling," in *Silicon Nitride, Silicon Dioxide, and Emerging Dielectrics 10*, Spring Meeting of the Electrochemical Society, San Francisco, CA, May 25-29, 2009.
70. R. L. Pease, R. D. Schrimpf, and D. M. Fleetwood, "An update on enhanced low dose rate sensitivity in bipolar linear circuits," RADECS 2008, Jyväskylä, Finland, Sept. 10-12, 2008.
71. R. D. Schrimpf, K. M. Warren, R. A. Weller, R. A. Reed, L. W. Massengill, M. L. Alles, D. M. Fleetwood, X. J. Zhou, L. Tsetseris, and S. T. Pantelides, "Reliability and radiation effects in IC Technologies," IEEE Intl. Reliab. Phys. Sympos., Phoenix, AZ, April 27 – May 1, 2008.
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83. D. M. Fleetwood, X. J. Zhou, L. Tsetseris, S. T. Pantelides, and R. D. Schrimpf, "Hydrogen model for negative-bias temperature instabilities in MOS gate insulators," 8th International Symposium on Silicon Nitride and Silicon Dioxide Thin Insulating Films and Other Emerging Dielectrics, 207th Meeting of the Electrochemical Society, Quebec City, QC, Canada, May 15-20, 2005.
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    - **(a)** 2nd International Conf. on Microelectronics, Microstructures, and Nanotechnology, Athens, Greece, Nov. 2004.
    - **(b)** American Physical Society March Meeting, Los Angeles, CA, March 2005.
    - **(c)** European Materials Research Society Meeting, Strasbourg FR, May 2005.
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87. S. T. Pantelides (in collaboration with T. Bakos, S. N. Rashkeev, Z. Lu, C. Nicklaw, R. D. Schrimpf, and D. M. Fleetwood, "Point Defects in Amorphous versus Crystalline SiO_2," 3rd International Conference on Computational Modeling and Simulation of Materials, Sicily, Italy, May 29 – June 4, 2004.
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268. A. Kalavagunta, M. Silvestri, M. J. Beck, S. K. Dixit, R. D. Schrimpf, R. A. Reed, D. M. Fleetwood, L. Shen, and U. K. Mishra, "Impact of proton irradiation-induced bulk defects on gate-lag in GaN HEMTs."

Tucson, AZ, July 14-18, 2008

269. D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, R. L. Pease, and G. W. Dunham, "Electron capture, hydrogen release, and ELDRS in linear bipolar transistors."
270. X. J. Zhou, D. M. Fleetwood, R. D. Schrimpf, F. Faccio, and L. Gonella, "Radiation effects on the 1/*f* noise of field oxide field effect transistors."
271. M. J. Beck, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Displacement damage effects in single-event gate rupture." *Best Paper Nominee.*
272. H. Park, S. K. Dixit, R. D. Schrimpf, D. M. Fleetwood, and S. E. Thompson, "Total ionizing dose effects on strained HfO_2-based MOSFETs."
273. I. G. Batyrev, R. Durand, D. Hughart, M. Bounasser, D. M. Fleetwood, R. D. Schrimpf, B. Tuttle, G. W. Dunham, and S. T. Pantelides, "Effects of hydrogen soaking on the radiation response of bipolar transistors: experiments and modeling."
274. X. J. Chen, H. J. Barnaby, K. Holbert, R. L. Pease, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, and P. C. Adell, "Annealing behavior of oxide trapped charge in bipolar base oxides after radiation exposure in H_2 environments."
275. J. D. Black, D. R. Ball, K. M. Warren, R. D. Schrimpf, R. A. Reed, D. M. Fleetwood, W. H. Robinson, A. D. Tipton, D. A. Black, P. E. Dodd, and N. F. Haddad, "Characterizing SRAM single event upset in terms of single and double node charge collection."
276. J. R. Schwank, M. R. Shaneyfelt, J. A. Felix, P. E. Dodd, A. Dasgupta, S. A. Francis, X. J. Zhou, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, and G. K. Lum, "Effects of moisture exposure on radiation-induced MOS device degradation and its implications for long-term aging." *Best Paper Nominee.*

Honolulu, HI, July 23-27, 2007

277. K. Adarvardar, R. D. Schrimpf, D. M. Fleetwood, S. Cristoloveanu, P. Gentil, and B. Blalock, "Evidence of radiation-induced dopant neutralization in partially-depleted SOI MOSFETs."
278. D. K. Chen, R. D. Schrimpf, D. M. Fleetwood, K. F. Galloway, S. Lee, H. Seo, G. Lucovsky, B. Jun, and J. D. Cressler, "Total dose response of HfSiON MOS capacitors."
279. S. K. Dixit, X. J. Zhou, R. D. Schrimpf, D. M. Fleetwood, S. T. Pantelides, L. C. Feldman, G. Bersuker, and R. Choi, "Radiation induced charge trapping in ultra-thin HfO_2 based MOSFETs."
280. M. J. Beck, R. Hatcher, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Quantum mechanical description of displacement damage formation." *Best Paper Nominee.*

281. M. Caussanel, A. Canals, S. K. Dixit, M. J. Beck, R. D. Schrimpf, D. M. Fleetwood, S. T. Pantelides, and A. D. Touboul, "Doping-type dependence of damage in Si diodes exposed to x-ray, proton, and He^+ irradiation."
282. F. Faccio, L. Gonella, H. J. Barnaby, M. McLain, D. M. Fleetwood, and R. D. Schrimpf, "Total ionizing dose effects in shallow trench isolation oxides."
283. A. Madan, B. Jun, R. M. Diestelhorst, A. Appaswamy, J. D. Cressler, R. D. Schrimpf, D. M. Fleetwood, T. Isaacs-Smith, J. R. Williams, and S. J. Koester, "Radiation tolerance of Si/SiGe n-MODFETs."
284. P. Cheng, B. Jun, A. Sutton, C. Zhu, A. Appaswamy, J. D. Cressler, R. D. Schrimpf, and D. M. Fleetwood, "Probing radiation and hot-carrier-induced damage processes in SiGe HBTs using mixed-mode electrical stress."
285. M. Bellini, B. Jun, A. K. Sutton, A. C. Appaswamy, P. Cheng, J. D. Cressler, P. W. Marshall, R. D. Schrimpf, D. M. Fleetwood, B. El-Kareh, S. Balster, P. Steinmann, and H. Yasuda, "The effects of proton and x-ray irradiation on the DC and AC performance of complementary (npn + pnp) SiGe HBTs on thick-film SOI."
286. R. M. Diestelhorst, S. Finn, B. Jun, A. K. Sutton, P. Cheng, J. D. Cressler, P. W. Marshall, R. D. Schrimpf, D. M. Fleetwood, H. Gustat, B. Heinemann, G. G. Fisher, D. Knoll, and B. Tillack, "The effects of x-ray and proton irradiation on a 200 GHz/90 GHz complementary (npn + pnp) SiGe:C HBT technology."
287. B. Jun, A. K. Sutton, R. M. Diestelhorst, G. J. Duperon, J. D. Cressler, J. D. Black, T. Haeffner, R. A. Reed, M. L. Alles, R. D. Schrimpf, D. M. Fleetwood, and P. W. Marshall, "The application of RHBD to n-MOSFETs intended for use in cryogenic-temperature radiation environments."

Ponte Vedra Beach, FL, July 17-21, 2006

288. X. J. Zhou, D. M. Fleetwood, L. Tsetseris, R. D. Schrimpf, and S. T. Pantelides, "Effects of switched-bias annealing on charge trapping in HfO_2 gate dielectrics."
289. I. G. Batyrev, M. P. Rodgers, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Effects of water on the aging and radiation response of MOS devices."
290. X. J. Chen, H. J. Barnaby, R. D. Schrimpf, D. M. Fleetwood, R. L. Pease, and D. G. Platteter, "Nature of interface defect buildup in gated bipolar devices under low dose rate irradiation."
291. M. J. Beck, L. Tsetseris, M. Caussanel, R. D. Schrimpf, D. M. Fleetwood and S. T. Pantelides, "Atomic-scale mechanism for dopant-type dependent damage in Si at low NIEL." *Best Paper Nominee.*
292. V. Ramachandran, B. Narasimham, R. D. Schrimpf, W. T. Holman, D. M. Fleetwood, A. F. Witulski, R. L. Pease, G. Dunham, J. Seiler, and D. G. Platteter, "Modeling total-dose effects of a low-dropout voltage regulator."
293. S. K. Dixit, S. Dhar, J. Rozen, S. Wang, R. D. Schrimpf, D. M. Fleetwood, S. T. Pantelides, and L. C. Feldman, "Total dose radiation response of nitrided and non-nitrided SiO_2/4H-SiC MOS Capacitors."
294. G. Lucovsky, S. Lee, H. Seo, L. B. Fleming, M. Ulrich, D. E. Aspnes, R. D. Schrimpf, D. M. Fleetwood, J. A. Felix, and J. Luning, "Differences between charge trapping states in irradiated nano-crystalline HfO_2 and non-crystalline Hf silicates."
295. M. Bellini, B. Jun, T. Chen, J. D. Cressler, P. W. Marshall, D. Chen, R. D. Schrimpf, D. M. Fleetwood, and J. Cai, "Radiation and bias effects in fully-depleted and partially-depleted SiGe HBTs fabricated on CMOS-compatible SOI."
296. B. Jun, R. M. Diestelhorst, M. Bellini, G. Espinel, A. P. Gnana Prakash, J. D. Cressler, D. Chen, R. D. Schrimpf, and D. M. Fleetwood, "Temperature-dependence of gate-induced drain leakage in X-ray irradiated 130 nm CMOS devices."
297. A. K. Sutton, A. P. Gnana Prakash, B. Jun, E. Zao, R. M. Diestelhorst, G. Espinel, J. D. Cressler, M. A. Carts, A. M. Phan, P. W. Marshall, R. L. Ladbury, C. J. Marshall, R. A. Reed, R. D. Schrimpf, and D. M. Fleetwood, "An investigation of dose enhancement and source dependent effects in 200 GHz SiGe HBTs."

Seattle, WA, July 11-15, 2005

298. X. J. Zhou, D. M. Fleetwood, J. A. Felix, E. P. Gusev, and C. D'Emic, "NBTI and radiation effects in high-K alternative dielectrics." *Best Paper Nominee.*
299. A. P. Karmarkar, D. M. Fleetwood, R. D. Schrimpf, R. A. Weller, B. D. White, L. J. Brillson, and U. K. Mishra, "Proton-induced damage in GaN-based Schottky diodes."
300. M. P. Rodgers, D. M. Fleetwood, and R. D. Schrimpf, "The effects of aging on MOS irradiation and annealing response."
301. L. Tsetseris, R. D. Schrimpf, D. M. Fleetwood, R. L. Pease, and S. T. Pantelides, "Common origin for enhanced low-dose-rate sensitivity and bias temperature instability under negative bias."

Atlanta, GA, July 19-23, 2004

302. S. N. Rashkeev, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Effects of hydrogen motion on interface trap formation and annealing."
303. R. A. Weller, M. H. Mendenhall, and D. M. Fleetwood, "A screened Coulomb scattering module for displacement damage computations in Geant4."
304. H. D. Xiong, B. Jun, D. M. Fleetwood, R. D. Schrimpf, and J. R. Schwank, "Charge trapping and low frequency noise in SOI buried oxides."
305. J. Stacey, R. D. Schrimpf, D. M. Fleetwood, and K. Holmes, "Surface charge analysis as a total dose radiation measurement tool for Si/SiO_2."
306. A. P. Karmarkar, B. Jun, D. M. Fleetwood, R. D. Schrimpf, R. A. Weller, B. D. White, L. J. Brillson, and U. K. Mishra, "Proton irradiation effects on GaN-based high electron mobility transistors with Si-doped $Al_xGa_{1-x}N$ and thick GaN cap layers."
307. J. A. Felix, M. R. Shaneyfelt, J. R. Schwank, P. E. Dodd, D. M. Fleetwood, E. P. Gusev, "The effects of processing on radiation-induced charge buildup and annealing in devices with high-K gate dielectrics."
308. M. R. Shaneyfelt, J. R. Schwank, J. A. Felix, P. E. Dodd, D. M. Fleetwood, R. L. Pease, and M. C. Maher, "Annealing behavior of linear bipolar devices with enhanced low-dose-rate sensitivity."
309. B. Jun, H. D. Xiong, C. R. Cirba, R. D. Schrimpf, D. M. Fleetwood, and S. Cristoloveanu, "Total dose effects on double gate fully depleted SOI MOSFETs."
310. S. Ducret, F. Saigne, J. Boch, R. D. Schrimpf, D. M. Fleetwood, J. R. Vaille, L. Dusseau, J. P. David, and R. Ecoffet, "Effect of thermal annealing on radiation induced degradation of bipolar technologies when the dose rate is switched from high to low."
311. J. Boch, F. Saigne, S. Ducret, R. D. Schrimpf, D. M. Fleetwood, P. Iacconi, and L. Dusseau, "Total dose effects on bipolar integrated circuits: characterization of the saturation region."
312. B. Jun, Y. V. White, R. Pasternak, S. N. Rashkeev, R. D. Schrimpf, D. M. Fleetwood, N. H. Tolk, F. Brunier, N. Bresson, and S. Cristoloveanu, "Charge trapping in irradiated SOI wafers measured by second harmonic generation."

Monterey, CA, July 21-25, 2003

313. S. N. Rashkeev, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Effects of Electric Field on Radiation-Induced Dopant Deactivation by Hydrogen."
314. J. A. Felix, D. M. Fleetwood, R. D. Schrimpf, M. R. Shaneyfelt, J. R. Schwank, P. E. Dodd, E. P. Gusev, and C. D'Emic, "Radiation-Induced Charge Trapping in Thin $Al_2O_3/SiO_xN_y/Si$ (100) Gate Dielectric Stacks." *Best Paper Nominee.*
315. B. Jun, R. D. Schrimpf, D. M. Fleetwood, and S. Cristoloveanu, "Charge Separation Techniques for Irradiated Pseudo-MOS SOI Transistors."
316. X. Hu, A. P. Karmarkar, D. M. Fleetwood, R. D. Schrimpf, R. D. Geril, R. A. Weller, B. D. White, M. Bataiev, J. L. Brillson, and U. K. Mishra, "Proton-Irradiation Effects on AlGaN/AlN/GaN High Electron Mobility Transistors.
317. J. Boch, R. Cizmarik, R. D. Schrimpf, D. M. Fleetwood, and F. Saigne, "Impact of Mechanical Stress on Total-Dose Effects in Bipolar Transistors."
318. R. A. Weller, A. L. Sternberg, L. W. Massengill, R. D. Schrimpf, and D. M. Fleetwood, "Evaluating Average and Atypical Response in Radiation Effects Simulations."
319. B. D. White, M. Bataiev, S. A. Ringel, L. J. Brillson, X. Hu, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, and W. J. Schaff, "Electrical and Spectral Properties of 1.8 MeV Proton Irradiated AlGaN/GaN HEMT Structures as a Function of Proton Fluence."
320. R. Pasternak, A. Chatterjee, Y. V. Shirokaya, B. K. Choi, Z. Marka, J. K. Miller, Y. Jiang, R. G. Albridge, S. N. Rashkeev, S. T. Pantelides, R. D. Schrimpf, D. M. Fleetwood, and N. H. Tolk, "Contactless Ultra-Fast Laser Probing of Radiation-Induced Leakage Current in Ultra-Thin Oxides."

Phoenix, AZ, July 15-19, 2002

321. D. M. Fleetwood, H. D. Xiong, Z. Y. Lu, C. J. Nicklaw, J. A. Felix, R. D. Schrimpf, and S. T. Pantelides, "Unified Model of Hole Trapping, 1/*f* Noise, and Thermally Stimulated Current in MOS Devices." ***Meritorious Conference Paper Award***.
322. H. D. Xiong, D. M. Fleetwood, B. K. Choi, and A. L. Sternberg, "Temperature Dependence and Irradiation Response of 1/*f* Noise in MOSFETs."

323. J. A. Felix, D. M. Fleetwood, R. D. Schrimpf, J. G. Hong, G. Lucovsky, J. R. Schwank, and M. R. Shaneyfelt, "Total Dose Radiation Response of Hafnium Silicate Capacitors."
324. S. N. Rashkeev, C. R. Cirba, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, S. C. Witczak, and A. Michez, "Physical Model for Enhanced Interface-Trap Formation at Low Dose Rates." ***Meritorious Conference Paper Award***.
325. B. K. Choi, R. D. Schrimpf, D. M. Fleetwood, L. W. Massengill, K. F. Galloway, M. R. Shaneyfelt, T. L. Meisenheimer, P. E. Dodd, J. R. Schwank, Y. M. Lee, R. S. Johnson, and G. Lucovsky, "Long-Term Reliability Degradation of Ultra-Thin Dielectric Films due to Heavy-Ion Irradiation." *Best Paper Nominee.*
326. C. J. Nicklaw, Z. Y. Lu, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "The Structure, Properties, and Dynamics of Oxygen Vacancies in Amorphous SiO_2."
327. H. J. Barnaby, S. K. Smith, R. D. Schrimpf, D. M. Fleetwood, and R. L. Pease, "Analytical Model for Proton Radiation Effects in Bipolar Devices."
328. X. Hu, B. K. Choi, H. J. Barnaby, D. M. Fleetwood, R. D. Schrimpf, K. F. Galloway, R. A. Weller, K. McDonald, and R. Dettmer, "Proton-Induced Degradation in AlGaAs/GaAs Heterojunction Bipolar Transistors."
329. B. D. White, M. Bataiev, L. J. Brillson, B. K. Choi, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, R. W. Dettmer, W. J. Schaff, and U. K. Mishra, "Characterization of 1.8 MeV Proton Irradiated AlGaN/GaN Field-Effect Transistor Structures by Nanoscale Depth-Resolved Luminescence Spectroscopy."
330. M. R. Shaneyfelt, R. L. Pease, J. R. Schwank, M. C. Maher, G. L. Hash, D. M. Fleetwood, P. E. Dodd, C. A. Reber, S. C. Witczak, L. C. Riewe, H. P. Hjalmarson, J. C. Banks, B. L. Doyle, and J. A. Knapp, "Impact of Passivation Layers on Enhanced Low-Dose-Rate Sensitivity and Thermal-Stress Effects in Linear Bipolar ICs." ***Outstanding Conference Paper Award***.

Vancouver, BC, July 16-20, 2001

331. S. N. Rashkeev, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Proton-Induced Defect Generation at the Si/SiO_2 Interface."
332. J. A. Felix, D. M. Fleetwood, L. C. Riewe, M. R. Shaneyfelt, and P. S. Winokur, "Bias and Frequency Dependence of Radiation-Induced Charge Trapping in MOS Devices." *Best paper nominee.*
333. L. W. Massengill, B. K. Choi, D. M. Fleetwood, R. D. Schrimpf, M. R. Shaneyfelt, T. L. Meisenheimer, P. E. Dodd, J. R. Schwank, Y. M. Lee, R. S. Johnson, and G. Lucovsky, "Heavy-Ion-Induced Breakdown in Ultrathin Gate Oxides." ***Meritorious Conference Paper Award***.
334. B. D. White, L. J. Brillson, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Detection of Trap Activation by Ionizing Radiation in SiO_2 by Spatially Localized Cathodoluminescence Spectroscopy."
335. A. Karmarkar, B. K. Choi, R. D. Schrimpf, and D. M. Fleetwood, "Aging and Baking Effects on the Radiation Hardness of MOS Capacitors."

Reno, NV, July 24-28, 2000

336. D. M. Fleetwood, L. C. Riewe, P. S. Winokur, and F. W. Sexton, "Electrical Breakdown of Irradiated Oxides During Current-Temperature Stress."
337. H. J. Barnaby, R. D. Schrimpf, D. M. Fleetwood, R. L. Pease, T. Turflinger, P. Cole, J. Krieg, and M. C. Maher, "Origins of Total-Dose Response Variability in LM111 Comparators."
338. S. T. Pantelides, S. N. Rashkeev, R. Buczko, D. M. Fleetwood, and R. D. Schrimpf, "Reactions of Mobile Hydrogen with the $Si\text{-}SiO_2$ Interface." *Best paper nominee*.
339. B. D. White, L. J. Brillson, S. C. Lee, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, Y. M. Lee, and G. Lucovsky, "Low Energy Electron-Excited Nanoscale Luminescence: A Tool to Detect Trap Activation by Ionizing Radiation."
340. P. E. Bunson, M. Di Ventra, S. T. Pantelides, D. M. Fleetwood, and R. D. Schrimpf, "Hydrogen Related Defects in Irradiated SiO_2."
341. C. J. Nicklaw, M. P. Pagey, S. T. Pantelides, D. M. Fleetwood, R. D. Schrimpf, K. F. Galloway, J. E. Wittig, B. M. Howard, E. Taw, W. H. McNeil, and J. F. Conley, Jr., "Defects and Nanocrystals Generated by Si Implantation into a-SiO_2."
342. C. R. Cirba, Y. Li, H. J. Barnaby, R. D. Schrimpf, D. M. Fleetwood, and S. Kosier, "Determining Energy Distributions of Interface Traps in Gate-Controlled Semiconductor Devices."
343. H. P. Hjalmarson, S. C. Witczak, P. A. Schultz, D. J. Bowman, and D. M. Fleetwood, "A Mechanism for Enhanced Low-Dose-Rate Degradation in Bipolar Transistors."

344. S. C. Lee, A. Raparla, Y. F. Li, G. Gasiot, R. D. Schrimpf, D. M. Fleetwood, K. F. Galloway, M. Featherby, and D. Johnson, "Total Dose Effects in Composite Nitride-Oxide (NO) Films and Optimizing Composite Layer Thickness for Minimizing Threshold Voltage Shift."
345. M. R. Shaneyfelt, J. R. Schwank, S. C. Witczak, L. C. Riewe, P. S. Winokur, G. L. Hash, R. L. Pease, and D. M. Fleetwood, "Thermal-Stress Effects on Enhanced Low-Dose-Rate Sensitivity of Linear Bipolar Circuits." *Best paper nominee.*
346. N. H. Tolk, S. K. Singh, Z. Marka, W. Wang, S. N. Rashkeev, S. T. Pantelides, S. C. Lee, R. D. Schrimpf, and D. M. Fleetwood, "Characterization of X-ray Radiation Damage in Gate and Isolation Oxides Using Second Harmonic Generation."
347. J. R. Schwank, M. R. Shaneyfelt, R. A. Loemker, B. L. Draper, P. E. Dodd, S. C. Witczak, L. C. Riewe, V. Ferlet-Cavrois, P. Paillet, J. L. Leray, and D. M. Fleetwood, "Correlation Between Co-60 and X-ray Exposures on Radiation-Induced Charge Buildup in Silicon-on-Insulator Buried Oxides."

Norfolk, VA, July 12-16, 1999

348. D. M. Fleetwood, P. S. Winokur, L. C. Riewe, O. Flament, P. Paillet, and J. L. Leray, "The Role of Electron Transport and Trapping in MOS Total-Dose Modeling."
349. O. Flament, P. Paillet, J. L. Leray, and D. M. Fleetwood, "Consideration on Isochronal Anneal Technique: From Measurement to Physics."
350. K. Vanheusden, P. P. Korambath, H. A. Kurtz, S. P. Karna, D. M. Fleetwood, W. M. Shedd, and R. D. Pugh, "The Effect of Near-Interface Network Strain on Proton Trapping in SiO_2."

Newport Beach, CA, July 20-24, 1998

351. D. M. Fleetwood, P. S. Winokur, M. R. Shaneyfelt, L. C. Riewe, O. Flament, P. Paillet, and J. L. Leray, "Effects of Isochronal Annealing and Irradiation Temperature on Radiation-Induced Trapped Charge."
352. F. W. Sexton, D. M. Fleetwood, M. R. Shaneyfelt, P. E. Dodd, G. L. Hash, L. P. Schanwald, R. A. Loemker, and K. S. Krisch, "Precursor Ion Damage and Angular Dependence of Single Event Gate Rupture in Thin Oxides." *Best Paper Nominee.*
353. K. Vanheusden, D. M. Fleetwood, J. R. Schwank, M. R. Shaneyfelt, T. L. Meisenheimer, and B. L. Draper, "The Effects of Irradiation and Proton Implantation on the Density of Mobile Protons in SiO_2 Films."
354. S. C. Witczak, R. C. Lacoe, D. C. Mayer, D. M. Fleetwood, R. D. Schrimpf, and K. F. Galloway," Space Charge Limited Degradation of Bipolar Oxides at Low Electric Fields." ***Outstanding Conference Paper Award***.
355. R. J. Graves, C. R. Cirba, R. D. Schrimpf, R. J. Milanowski, F. Saigne, A. Michez, D. M. Fleetwood, and S. C. Witczak, "Modeling Low-Dose-Rate Effects in Irradiated Bipolar-Base Oxides."
356. S. C. Witczak, R. C. Lacoe, D. C. Mayer, R. D. Schrimpf, H. J. Barnaby, K. F. Galloway, R. L. Pease, and D. M. Fleetwood, "Measurement Bias Dependence of Enhanced Bipolar Gain Degradation at Low Dose Rate." *Best Paper Nominee.*

Snowmass, CO, July 21-25, 1997

357. D. M. Fleetwood, M. J. Johnson, T. L. Meisenheimer, and P. S. Winokur, "Latent Interface Traps and 1/*f* Noise in Irradiated MOS Devices," ***Meritorious Conference Paper Award***.
358. D. M. Fleetwood , "Revised Model of Thermally Stimulated Current in MOS Capacitors."
359. F. W. Sexton, D. M. Fleetwood, M. R. Shaneyfelt, P. E. Dodd, and G. L. Hash, "Single Event Gate Rupture in Thin Gate Oxides," ***Outstanding Conference Paper Award***.
360. W. L. Warren, K. Vanheusden, D. M. Fleetwood, J. R. Schwank, P. S. Winokur, and M. J. Knoll "Nonvolatile Field Effect Transistors Based on Protons and $Si/SiO_2/Si$ Structures."
361. S. C. Witczak, R. D. Schrimpf, D. M. Fleetwood, R. C. Lacoe, D. C. Mayer, K. F. Galloway, J. M. Puhl, R. L. Pease, and J. S. Suehle, "Evaluation of Temperature-Enhanced Gain Degradation of Vertical NPN and Lateral PNP Bipolar Transistors," ***Meritorious Conference Paper Award***.
362. M. Simons, R. L. Pease, D. M. Fleetwood, J. R. Schwank, and M. Krzesniak, "Dose Enhancement in a Room Co-60 Source."
363. M. R. Shaneyfelt, P. S. Winokur, D. M. Fleetwood, G. L. Hash, J. R. Schwank, F. W. Sexton, and R. L. Pease, "Impact of Aging on Radiation Hardness," *Best Paper Nominee*.
364. A. Wu, R. D. Schrimpf, R. L. Pease, D. M. Fleetwood, and S. L. Kosier, "Radiation-Induced Gain Degradation in Lateral PNP PJT's with Lightly and Heavily Doped Emitters."

365. R. L. Pease, D. B. Brown, L. Cohn, D. M. Fleetwood, and A. H. Johnston, "A Proposed Hardness Assurance Test Methodology for Bipolar Linear Circuits and Devices in a Space Ionizing Radiation Environment."
366. K. Vanheusden, S. P. Karna, R. D. Pugh, J. R. Schwank, W. L. Warren, D. M. Fleetwood, and R. A. B. Devine, "Irradiation Response of Mobile Protons in Buried SiO_2."
367. M. Simons, R. L. Pease, D. M. Fleetwood, J. R. Schwank, M. Krzesniak, T. Turflinger, J. Buaron, L. C. Riewe, W. T. Kemp, P. W. C. Duggan, J. M. Puhl, A. H. Johnston, M. Wiedeman, R. E. Mills, A. G. Holmes-Seidle, L. M. Cohn, H. Doane, and W. Lohmeier, "Common-Source TLD and RADFET Characterization of Co-60, Cs-137, and X-ray Irradiation Sources," ***Outstanding Presentation, 1997 IEEE Radiation Effects Data Workshop***.

Indian Wells, CA, July 15-19, 1996

368. D. M. Fleetwood, L. C. Riewe, J. R. Schwank, S. C. Witczak, and R. D. Schrimpf, "Radiation Effects at Low Electric Fields in Thermal, SIMOX, and Bipolar-Base Oxides," ***Outstanding Conference Paper Award***.
369. W. L. Warren, K. Vanheusden, D. M. Fleetwood, J. R. Schwank, M. R. Shaneyfelt, P. S. Winokur, and R. A. B. Devine, "Over-Coordinated O Centers in SIMOX and Thermal Oxides," *Best Paper Nominee*.
370. D. M. Schmidt, A. Wu, R. D. Schrimpf, D. M. Fleetwood, R. L. Pease, and W. E. Combs, "Modeling Ionizing Radiation Induced Gain Degradation of the Lateral PNP BJT," *Best Paper Nominee*.
371. S. C. Witczak, R. D. Schrimpf, K. F. Galloway, D. M. Fleetwood, R. L. Pease, J. M. Puhl, D. M. Schmidt, W. E. Combs, and J. S. Suehle, "Accelerated Tests for Simulating Low Dose Rate Gain Degradation of Lateral and Substrate PNP Bipolar Junction Transistors," ***Meritorious Conference Paper Award***.

Madison, WI, July 17-21, 1995

372. D. M. Fleetwood, W. L. Warren, J. R. Schwank, P. S. Winokur, M. R. Shaneyfelt, and L. C. Riewe. "Effects of Interface Traps and Border Traps on MOS Postirradiation Annealing Response," ***Outstanding Conference Paper Award.***
373. D. M. Schmidt, D. M. Fleetwood, R. D. Schrimpf, R. L. Pease, R. J. Graves, G. H. Johnson, K. F. Galloway, and W. E. Combs, "Comparison of Ionizing Radiation-Induced Gain Degradation in Lateral, Substrate, and Vertical PNP BJT's."
374. R. D. Schrimpf, R. J. Graves, D. M. Schmidt, D. M. Fleetwood, R. L. Pease, W. E. Combs, and M. DeLaus, "Hardness Assurance Issues for Lateral PNP Bipolar Junction Transistors." ***Voted Outstanding Oral Presentation of Conference; Meritorious Conference Paper Award.***
375. W. L. Warren, M. R. Shaneyfelt, D. M. Fleetwood, and P. S. Winokur, "Microscopic Nature of Defect Centers in Doped Oxides," *Best Paper Nominee*.

Tucson, AZ, July 18-22, 1994

376. D. M. Fleetwood, R. A. Reber, Jr., P. S. Winokur, S. L. Kosier, R. D. Schrimpf, A. Wei, R. N. Nowlin, M. DeLaus, R. L. Pease, and W. E. Combs, "Physical Mechanisms Contributing to Enhanced Bipolar Gain Degradation at Low Dose Rates." ***Meritorious Conference Paper Award.***
377. M. R. Shaneyfelt, D. M. Fleetwood, J. R. Schwank, T. L. Meisenheimer, and P. S. Winokur, "Role of Burn-in During Qualification Testing." ***Meritorious Conference Paper Award.***
378. R. N. Nowlin, D. M. Fleetwood, and R. D. Schrimpf, "Saturation of the Dose-Rate Response of Single-Poly BJT's Below 10 rad(SiO_2)/s: Implications for Hardness Assurance."
379. P. Khosropour, D. M. Fleetwood, K. F. Galloway, R. D. Schrimpf, and P. Calvel, "Estimating Low-Dose-Rate Irradiation Response of MOSFETs."
380. W. L. Warren, M. R. Shaneyfelt, D. M. Fleetwood, J. R. Schwank, P. S. Winokur, R. A. B. Devine, and D. Mathiot, "Microscopic Nature of Border Traps in MOS Devices," *Best Paper Nominee*.
381. N. S. Saks, M. Simons, D. M. Fleetwood, J. T. Yount, and P. M. Lenahan, "Radiation Effects in Oxynitrides Grown in N_2O," *Best Paper Nominee*.
382. S. L. Kosier, A. Wei, R. D. Schrimpf, W. E. Combs, D. M. Fleetwood, M. DeLaus, and R. L. Pease, "Bounding the Total-Dose Response of Modern Bipolar Transistors."
383. R. L. Pease, S. L. Kosier, R. D. Schrimpf, W. E. Combs, M. DeLaus, and D. M. Fleetwood, "Correlation of Hot-Carrier Stress and Ionization Induced Degradation in Bipolar Transistors."

Snowbird, UT, July 19-23, 1993

384. D. M. Fleetwood, M. R. Shaneyfelt, L. C. Riewe, P. S. Winokur, and R. A. Reber, Jr., "Surprising Effects of High-Temperature Biased Annealing on the Postirradiation Electrical Response of MOS Devices." ***Meritorious Conference Paper Award***.

385. R. N. Nowlin, D. M. Fleetwood, R. D. Schrimpf, R. L. Pease, and W. E. Combs, "Hardness Assurance and Testing Issues for Bipolar/BiCMOS Devices," *Best Paper Nominee*.
386. T. S. Mayer, D. M. Fleetwood, D. E. Beutler, J. A. Cooper, and M. R. Melloch, "Unexpected Increase in the Thermal Generation Rate of Bulk GaAs Due to Electron-Beam Metallization."
387. J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, and P. S. Winokur, "A Critical Comparison of Charge-Pumping, Dual Transistor, and Midgap Measurement Techniques."
388. M. R. Shaneyfelt, D. M. Fleetwood, P. S. Winokur, J. R. Schwank, and T. L. Meisenheimer, "Effects of Device Scaling and Geometry on MOS Radiation Hardness Assurance."
389. S. L. Kosier, R. D. Schrimpf, R. N. Nowlin, D. M. Fleetwood, M. DeLaus, R. L. Pease, W. E. Combs, A. Wei, and F. Chai, "Charge Separation for Bipolar Transistors.
390. W. L. Warren, M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, P. S. Winokur, R. A. B. Devine, W. P. Maszara, and J. B. McKitterick, "Paramagnetic Defect Centers in Irradiated BESOI and SIMOX Buried Oxides."

New Orleans, LA, July 13-17, 1992

391. D. M. Fleetwood, S. L. Miller, R. A. Reber, Jr., P. J. McWhorter, and P. S. Winokur, "New Insights into Radiation-Induced Oxide-Trap Charge Through Thermally-Stimulated-Current Measurement and Analysis," *Best Paper Nominee*.
392. F. W. Sexton, D. M. Fleetwood, C. C. Aldridge, G. Garrett, J. C. Pelletier, and J. I. Gaona, "Qualifying Commercial ICs for Total-Dose Space Environments."
393. J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, P. S. Winokur, C. L. Axness, and L. C. Riewe, "Latent Interface-Trap Buildup: Issues for Long-Term Device Response," *Best Paper Nominee*.
394. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, P. S. Winokur, K. L. Hughes, G. L. Hash, and M. P. Connors, "Interface-Trap Buildup Rates in Wet and Dry Oxides."

San Diego, CA, July 15-19, 1991

395. D. M. Fleetwood, R. A. Reber, Jr., and P. S. Winokur, "Effect of Bias on Thermally Stimulated Current (TSC) in Irradiated MOS Devices," *Best Paper Nominee*.
396. T. L. Meisenheimer, D. M. Fleetwood, M. R. Shaneyfelt, and L. C. Riewe, "1/*f* Noise in N- and P-Channel MOS Devices Through Irradiation and Annealing."
397. M. R. Shaneyfelt, K. L. Hughes, J. R. Schwank, F. W. Sexton, D. M. Fleetwood, P. S. Winokur, and E. W. Enlow, "Wafer-Level Testing for Hardness Assurance."
398. M. R. Shaneyfelt, D. M. Fleetwood, J. R. Schwank, and K. L. Hughes, "Comparison of Low-Energy X-ray and Cobalt-60 Irradiations of MOS Devices as a Function of Gate Bias."
399. J. H. Scofield and D. M. Fleetwood, "Physical Basis for Nondestructive Tests of MOS Radiation Hardness."
400. D. M. Fleetwood, P. S. Winokur, and T. L. Meisenheimer, "Hardness Assurance for Low-Dose Space Applications," *Best Paper Nominee*.

Reno, Nevada, July 16-20, 1990

401. D. M. Fleetwood, P. S. Winokur, and L. C. Riewe, "Predicting Switched-Bias Response from Steady State Irradiations."
402. P. S. Winokur, F. W. Sexton, D. M. Fleetwood, M. D. Terry, P. V. Dressendorfer, M. R. Shaneyfelt, and J. R. Schwank, "Implementing QML for Radiation Hardness Assurance."
403. T. L. Meisenheimer and D. M. Fleetwood, "Effect of Radiation-Induced Charge on 1/*f* Noise in MOS Devices."
404. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, P. S. Winokur, and F. W. Sexton, "Field Dependence of Interface-Trap Buildup in Polysilicon and Metal Gate MOS Devices."

Marco Island, Florida, July 24-28, 1989

405. D. M. Fleetwood, J. R. Schwank, P. S. Winokur, F. W. Sexton, and M. R. Shaneyfelt, "Dual Transistor Method to Determine Threshold Voltage Shifts due to Oxide-Trapped and Interface-Trapped Charge in MOS Transistors," *Best Paper Nominee*.
406. D. M. Fleetwood, P. S. Winokur, L. C. Riewe, and R. L. Pease, "An Improved Standard Total-Dose Test for CMOS Space Electronics."
407. P. J. McWhorter, D. M. Fleetwood, R. A. Pastorek, and G. T. Zimmerman, "Comparison of MOS Capacitor and Transistor Postirradiation Response."

408. J. H. Scofield, T. P. Doerr, N. A. Schwadron, and D. M. Fleetwood, "1/*f* Noise: A Nondestructive Technique to Predict MOS Radiation Hardness?"
409. J. R. Schwank, F. W. Sexton, D. M. Fleetwood, M. R. Shaneyfelt, K. L. Hughes, and M. S. Rodgers, "Evaluation of Lot Acceptance Tests Using CMOS ICs."

Portland, Oregon, July 12-15, 1988

410. D. M. Fleetwood, P. S. Winokur, and J. R. Schwank, "Using Laboratory X-ray and Cobalt-60 Irradiations to Predict CMOS Device Response in Strategic and Space Environments," ***Outstanding Conference Paper Award***.
411. D. M. Fleetwood, S. S. Tsao, and P. S. Winokur, "Total Dose Hardness Assurance Issues for SOI MOSFETs."
412. D. M. Fleetwood, D. E. Beutler, L. J. Lorence, Jr., D. B. Brown, B. L. Draper, L. C. Riewe, H. B. Rosenstock, and D. P. Knott, "How Much Do We Know About X-ray Dose Enhancement Effects on MOS Oxides?"
413. J. R. Schwank, F. W. Sexton, D. M. Fleetwood, R. V. Jones, R. S. Flores, M. S. Rodgers, and D. T. Sanders, "Temperature Effects on the Radiation Response of MOS Devices," *Best Paper Nominee*.
414. W. Beezhold, D. E. Beutler, D. M. Fleetwood, R. L. Hospelhorn, and D. P. Knott, "Resolution of Computer Predictions and Measured Dose Enhancement Effects in CMOS Diodes in a Medium-Energy X-ray Environment."
415. D. E. Beutler, W. Beezhold, J. S. Browning, D. M. Fleetwood, M. Connors, C. L. Freshman, D. P. Knott, and N. E. Counts, "Comparison of Photocurrent Enhancement and Upset Enhancement in CMOS Devices in a Medium-Energy X-Ray Environment."
416. C. L. Axness, J. R. Schwank, P. S. Winokur, J. S. Browning, R. Koga, and D. M. Fleetwood, "Single-Event Upset in 16k CMOS SRAMs in Space Satellite Environments."

Snowmass, Colorado, July 28-31, 1987

417. D. M. Fleetwood, P. V. Dressendorfer, and D. C. Turpin, "A Reevaluation of Worst-Case Postirradiation Response for Hardened MOS Transistors."
418. D. M. Fleetwood and P. V. Dressendorfer, "A Simple Method to Predict Radiation and Annealing Biases that Lead to Worst-Case CMOS Static RAM Postirradiation Response," *Best Paper Nominee*.
419. J. R. Schwank, D. M. Fleetwood, P. S. Winokur, P. V. Dressendorfer, D. C. Turpin, and D. T. Sanders, "The Role of Hydrogen in Radiation-Induced Defect Formation in Polysilicon-Gate CMOS Devices."
420. D. E. Beutler, D. M. Fleetwood, W. Beezhold, D. Knott, L. J. Lorence, Jr, and B. L. Draper, "Variations in Semiconductor Response in a Medium-Energy X-ray Dose-Enhancing Environment."
421. S. S. Tsao, D. M. Fleetwood, H. T. Weaver, L. Pfeiffer, and G. K. Celler, "Radiation-Tolerant, Sidewall-Hardened SOI/MOS Transistors."
422. C. M. Dozier, D. M. Fleetwood, D. B. Brown, and P. S. Winokur, "Sandia/NRL Interlaboratory Comparison of Low-Energy X-ray and Cobalt-Irradiations of MOS Transistors."

Providence, Rhode Island, July 21-23, 1986

423. D. M. Fleetwood, P. S. Winokur, L. J. Lorence, Jr., W. Beezhold, P. V. Dressendorfer, and J. R. Schwank, "The Response of MOS Devices to Dose-Enhanced Low-Energy Radiation."
424. D. M. Fleetwood, R. W. Beegle, F. W. Sexton, P. S. Winokur, S. L. Miller, R. K. Treece, J. R. Schwank, R. V. Jones, and P. J. McWhorter, "Using a 10-keV X-ray Source for Hardness Assurance."
425. J. R. Schwank, P. S. Winokur, F. W. Sexton, D. M. Fleetwood, J. H. Perry, P. V. Dressendorfer, D. T. Sanders, and D. C. Turpin, "Radiation-Induced Interface-State Generation in MOS Devices.
426. P. S. Winokur, F. W. Sexton, J. R. Schwank, D. M. Fleetwood, P. V. Dressendorfer, T. F. Wrobel, and D. C. Turpin, "Total-Dose Radiation and Annealing Studies: Implications for Hardness Assurance Testing," *Best Paper Nominee*.

Monterey, California, July 22-24, 1985

427. D. M. Fleetwood, P. S. Winokur, R. W. Beegle, P. V. Dressendorfer, and B. L. Draper, "Accounting for Dose-Enhancement Effects with CMOS Transistors."
428. J. D. McBrayer, D. M. Fleetwood, R. A. Pastorek, and R. V. Jones, "Correlation of Hot-Carrier and Radiation Effects in MOS Transistors."
429. P. S. Winokur, E. B. Errett, D. M. Fleetwood, P. V. Dressendorfer, and D. C. Turpin, "Optimizing and Controlling the Radiation Hardness of a Si-Gate CMOS Process." ***Outstanding Conference Paper Award***.

Presentations at RADECS (Radiation Effects on Components and Systems) Conferences

430. X. Li, X. Zhao, P. Wang, M. W. McCurdy, R. D. Schrimpf, E. X. Zhang, and D. M. Fleetwood, "Threshold voltage hysteresis and gate leakage in AlGaN/GaN HEMTs," RADECS 2024, Gran Canaria, Spain, Sept. 16-20, 2024.
431. S. Islam, A. S. Senarath, E. Farzana, D. R. Ball, A. Sengupta, A. L. Sternberg, R. A. Reed, S. T. Pantelides, A. F. Witulski, J. S. Speck, D. M. Fleetwood, and R. D. Schrimpf, "Effects of epitaxial layer thickness on heavy ion-induced single-event burnout in vertical β-Ga_2O_3 Schottky barrier diodes," RADECS 2024, Gran Canaria, Spain, Sept. 16-20, 2024.
432. A. S. Senarath, S. Islam, J. R. McBride, O. Meilander, A. Sengupta, H. Pandey, T. Anderson, A. Jacobs, R. Kaplar, M.W. McCurdy, R. A. Reed, S. T. Pantelides, M. A. Ebrish, D. M. Fleetwood, J. D. Caldwell, and R. D. Schrimpf, "Heavy ion-induced single-event leakage current and burnout in homojunction GaN PIN diodes," RADECS 2024, Gran Canaria, Spain, Sept. 16-20, 2024.
433. I. R. Wynocker, E. X. Zhang, R. A. Reed, R. D. Schrimpf, D. M. Fleetwood, A. Arreghini, J. P. Bastos, G. Van den Bosch, and D. Linten, "Random telegraph noise and radiation response of 80 nm vertical charge-trapping NAND flash memory devices with SiON tunneling oxide," RADECS 2023, Toulouse, France, Sept. 25-29, 2023.
434. S. C. Witczak, D. M. Fleetwood, J. Theogene, K. F. Galloway, M. Langlois, R. D. Schrimpf, and B. Song, "Analysis of mobility scattering coefficients for gamma-irradiated power MOSFETs," RADECS 2023, Toulouse, France, Sept. 25-29, 2023.
435. S. Bonaldo, E. X. Zhang, S. Mattiazzo, A. Paccagnella, S. Gerardin, R. D. Schrimpf, and D. M. Fleetwood, "Total-ionizing-dose effects at ultra-high doses in AlGaN/GaN HEMTs," RADECS 2022, Venice, Italy, Oct. 3-7, 2022.
436. X. Li, P. F. Wang, H. Qiu, E. X. Zhang, M. W. McCurdy, R. D. Schrimpf, and D. M. Fleetwood, "Gate leakage in AlGaN/GaN HEMTs subjected to irradiation and bias stress," RADECS 2022, Venice, Italy, Oct. 3-7, 2022.
437. Z. Guo, K. Li, X. Li, X. Luo, E. X. Zhang, R. A. Reed, D. M. Fleetwood, R. D. Schrimpf, A. Chasin, J. Mitard, and D. Linten, "Total-ionizing-dose effects in IGZO thin-film transistors," RADECS 2022, Venice, Italy, Oct. 3-7, 2022.
438. S. C. Witczak, R. D. Schrimpf, D. M. Fleetwood, S. R. Messenger, M. Langlois, M. W. McCurdy, and J. Rodriguez, "Energy dependence of proton-induced degradation in a bipolar junction transistor," RADECS 2022, Venice, Italy, Oct. 3-7, 2022.
439. S. Toguchi, E. X. Zhang, M. W. Rony, X. Luo, D. M. Fleetwood, R. D. Schrimpf, S. Moreau, S. Cheramy, P. Batude, L. Brunet, F. Andrieu, and M. L. Alles, "Effects of layer-to-layer coupling on the total-ionizing-dose response of 3D-sequentially integrated FDSOI MOSFETs," RADECS 2021, Vienna, Austria (Hybrid), Sept. 13-17, 2021. (**Outstanding Conference Paper**)
440. S. Bonaldo, M. Gorchichko, E. X. Zhang, T. Ma, S. Mattiazzo, M. Bagatin, A. Paccagnella, S. Gerardin, R. D. Schrimpf, R. A. Reed, D. Linten, J. Mitard, and D. M. Fleetwood, "TID effects in highly scaled gate-all-around Si nanowire CMOS transistors irradiated to ultra-high doses," RADECS 2021, Vienna, Austria (Hybrid), Sept. 13-17, 2021.
441. S. Bonaldo, T. Ma, S. Mattiazzo, A. Baschirotto, C. Enz, D. M. Fleetwood, A. Paccagnella, and S. Gerardin, "TID degradation and low frequency noise in 16 nm bulk FinFETs irradiated to ultra-high doses," RADECS 2021, Vienna, Austria (Hybrid), Sept. 13-17, 2021.
442. D. M. Fleetwood, T. S. Mayer, M. R. Melloch, A. O'Hara, and S. T. Pantelides, "Defect and impurity-complex depassivation during electron-beam irradiation of GaAs," RADECS 2020, virtual, October 2020.
443. S. Bonaldo, S. Mattiazzo, C. Enz, A. Baschilotto, D. M. Fleetwood, A. Paccagnella, and S. Gerardin, "TID mechanisms and low-frequency noise in 28 nm MOSFETs irradiated to ultra-high doses," RADECS 2019, Montpellier, France, Sept. 16-20, 2019.
444. S. Bonaldo, E. X. Zhang, S. E. Zhao, V. Putcha, B. Parvais, D. Linten, S. Gerardin, A. Paccagnella, R. A. Reed, R. D. Schrimpf, and D. M. Fleetwood, "Total-ionizing-dose effects in InGaAs MOSFETs with high-k gate dielectrics and InP substrates," RADECS 2019, Montpellier, France, Sept. 16-20, 2019.
445. W. Liao, M. L. Alles, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, and R. D. Schrimpf, "Monte Carlo simulation of displacement damage in graphene," RADECS 2019, Montpellier, France, Sept. 16-20, 2019.
446. K. Li, E. X. Zhang, S. Bonaldo, A. L. Sternberg, J. A. Kozub, M. Reaz, L. D. Ryder, K. L. Ryder, H. Gong, S. M. Weiss, R. A. Weller, A. Vardi, J. A. del Alamo, R. A. Reed, D. M. Fleetwood, and R. D. Schrimpf, "Pulsed

laser-induced single-event transients in InGaAs FinFETs with sub-10-nm fin widths," RADECS 2019, Montpellier, France, Sept. 16-20, 2019.

447. P. Wang, K. Hirokjyoti, A. Krishnaprasad, D. Dev, A. O'Hara, R. Jiang, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, and T. Roy, "Total-ionizing-dose response of MoS_2 transistors with ZrO_2 and h-BN gate dielectrics," RADECS 2018, Gothenburg, Sweden, Sept. 17-21, 2018.
448. S. E. Zhao, R. Jiang, H. Gong, P. Wang, E. X. Zhang, N. Waldron, B. Kunert, J. Mitard, N. Collaert, S. Sioncke, D. Linten, R. D. Schrimpf, R. A. Reed, and D. M. Fleetwood, "Gate bias and length dependences of total-ionizing-dose effects in InGaAs FinFETs on bulk Si," RADECS 2018, Gothenburg, Sweden, Sept. 17-21, 2018.
449. W. Liao, M. L. Alles, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, and R. D. Schrimpf, "Monte Carlo simulation of displacement damage in graphene," RADECS 2018, Gothenburg, Sweden, Sept. 17-21, 2018.
450. S. Bonaldo, S. Gerardin, X. Jin, A. Paccagnella, F. Faccio, G. Borghello, and D. M. Fleetwood, "Spatial distribution of interface traps in 65 nm *p*MOSFETs irradiated to ultra-high doses," RADECS 2018, Gothenburg, Sweden, Sept. 17-21, 2018.
451. L. Xu, J. Chen, S. Wang, Z. Chai, B. Wang, W. Wu, P. Wang, E. X. Zhang, and D. M. Fleetwood, "TID degradation in RF SOI NMOS," RADECS 2018, Gothenburg, Sweden, Sept. 17-21, 2018.
452. P. F. Wang, E. X. Zhang, K. H. Chuang, W. Liao, H. Gong, P. Wang, C. N. Arutt, K. Ni, M. W. McCurdy, I. Verbauwhede, E. Bury, D. Linten, D. M. Fleetwood, R. D. Schrimpf, and R. A. Reed, "X-ray and proton radiation effects on 40 nm CMOS physically unclonable function devices," RADECS 2017, Geneva, Switzerland, Oct. 2-6, 2017.
453. G. Borghello, F. Faccio, E. Lerario, S. Michelis, S. Kulis, D. M. Fleetwood, R. D. Schrimpf, S. Gerardin, A. Paccagnella, and S. Bonaldo, "Dose rate sensitivity of 65 nm MOSFETs exposed to ultra-high doses," RADECS 2017, Geneva, Switzerland, Oct. 2-6, 2017.
454. X. J. Li, J. Q. Yang, C. M. Liu, D. M. Fleetwood, H. J. Barnaby, and K. F. Galloway, "Hydrogen soaking and displacement damage effects in gated lateral bipolar junction transistors," RADECS 2017, Geneva, Switzerland, Oct. 2-6, 2017.
455. R. A. Austin, B. D. Sierawski, J. M. Trippe, A. L. Sternberg, K. M. Warren, R. A. Reed, R. A. Weller, R. D. Schrimpf, M. L. Alles, L. W. Massengill, D. M. Fleetwood, G. W. Buxton, III, J. C. Brandenburg, W. B. Fisher, and R. Davis, "RadFxSat: A flight campaign for recording single-event effects in commercial off-the-shelf microelectronics," RADECS 2017, Geneva, Switzerland, Oct. 2-6, 2017.
456. R. M. Chen, N. N. Mahatme, Z. J. Diggins, L. Wang, E. X. Zhang, Y. P. Chen, Y. N. Liu, B. Narasimham, A. F. Witulski, B. L. Bhuva, and D. M. Fleetwood, "Analysis of temporal masking in master and slave type flip-flop SEUs and related applications," RADECS 2017, Geneva, Switzerland, Oct. 2-6, 2017.
457. R. Jiang, E. X. Zhang, X. Shen, J. Chen, K. Ni, P. Wang, D. M. Fleetwood, R. D. Schrimpf, S. W. Kaun, E. C. H. Kyle, J. S. Speck, and S. T. Pantelides, "Total ionizing dose effects in passivated and unpassivated AlGaN/GaN HEMTs," RADECS 2016, Bremen, Germany, Sept. 19-23, 2016.
458. K. Ni, E. X. Zhang, J. A. Kozub, R. Jiang, R. D. Schrimpf, R. A. Reed, D. M. Fleetwood, M. L. Alles, J. Lin, A. Vardi, and J. A. del Alamo, "Understanding charge collection mechanisms in InGaAs FinFETs using high-speed pulsed-laser transient testing with tunable wavelength," RADECS 2016, Bremen, Germany, Sept. 19-23, 2016.
459. R. M. Chen, Z. J. Diggins, N. N. Mahatme, L. Wang, E. X. Zhang, Y. P. Chen, H. Zhang, Y. N. Liu, B. Narasimham, A. F. Witulski, B. L. Bhuva, and D. M. Fleetwood, "Effects of temperature and supply voltage on SEU- and SET-induced errors in bulk 40-nm sequential circuits," RADECS 2016, Bremen, Germany, Sept. 19-23, 2016.
460. R. M. Chen, N. N. Mahatme, Z. J. Diggins, L. Wang, E. X. Zhang, Y. P. Chen, Y. N. Liu, B. Narasimham, A. F. Witulski, B. L. Bhuva, and D. M. Fleetwood, "Impact of temporal masking of flip-flop upsets on soft error rates of sequential circuits," RADECS 2016, Bremen, Germany, Sept. 19-23, 2016.
461. S. L. Weeden-Wright, S. L. Gollub, R. Harl, A. B. Hmelo, D. M. Fleetwood, B. R. Rogers, R. D. Schrimpf, and D. G. Walker, "Radiation effects on the photoluminescence of rare-earth doped pyrochloric powders," RADECS 2012, Biarritz, France, Sept. 24-28, 2012.
462. S. Bhandaru, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, and S. M. Weiss, "Accelerated oxidation of silicon due to x-ray irradiation," RADECS 2011, Seville, Spain, Sept. 19-23, 2011.
463. S. A. Francis, C. X. Zhang, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, K. F. Galloway, E. Simoen, J. Mitard, and C. Claeys, "Comparison of charge pumping and 1/*f* noise in irradiated Ge pMOSFETs," RADECS 2011, Seville, Spain, Sept. 19-23, 2011.

464. N. L. Rowsey, M. E. Law, R. D. Schrimpf, D. M. Fleetwood, B. R. Tuttle, and S. T. Pantelides, "Radiation induced oxide charge in low- and high-H_2 environments," RADECS 2011, Seville, Spain, Sept. 19-23, 2011.
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466. C. X. Zhang, S. A. Francis, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, K. F. Galloway, E. Simoen, J. Mitard, and C. Claeys, "Effect of ionizing radiation on defects and 1/*f* noise in Ge pMOSFETs," RADECS 2010, Langenfeld, Austria, Sept. 20-24, 2010.
467. R. Arinero, A. Touboul, F. Saigne, E. X. Zhang, N. Rezzak, R. D. Schrimpf, D. M. Fleetwood, B. K. Choi, and A. Hmelo, "1.8 MeV proton radiation effects on substrate resistivity of n-type MOS capacitors," RADECS 2010, Langenfeld, Austria, Sept. 20-24, 2010.
468. R. Arora, J. Mitard, E. Simoen, E. X. Zhang, D. M. Fleetwood, B. K. Choi, R. D. Schrimpf, K. F. Galloway, S. R. Kulkarni, M. Meuris, and C. Claeys, "Effects of halo doping and Si capping layer thickness on total-dose effects in Ge p-MOSFETs," RADECS 2009, Bruges, Belgium, Sept. 14-18, 2009.
469. I. Batyrev, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "The role of water in the radiation response of wet and dry oxides," RADECS 2007, Deauville, France, Sept. 10-14, 2007.
470. A. Kalavagunta, A. Touboul, R. D. Schrimpf, D. M. Fleetwood, R. A. Reed, R. K. Jain, L. Shen, and U. K. Mishra, "Electrostatic mechanisms responsible for device degradation in AlGaN/AlN/GaN HEMTs," RADECS 2007, Deauville, France, Sept. 10-14, 2007. *Best Paper Nominee.*
471. J. D. Black, B. L. Bhuva, M. L. Alles, L. W. Massengill, D. M. Fleetwood, R. D. Schrimpf, and K. F. Galloway, "Static and dynamic power comparison of hardened-by-design transistor-based circuits designed in a commercial 130 nm technology," RADECS 2006, Athens, Greece, Sept. 27-29, 2006.
472. D. K. Chen, R. D. Schrimpf, D. M. Fleetwood, K. F. Galloway, A. Dimoulas, A. Sotiropoulos, and Y.Panayiotatos, "Total dose response of Ge MOS capacitors with HfO_2/Dy_2O_3 gate stacks," RADECS 2006, Athens, Greece, Sept. 27-29, 2006.
473. J. R. Schwank, F. W. Sexton, M. R. Shaneyfelt, and D. M. Fleetwood, "Hardness assurance test issues for high dose rate environments," RADECS 2006, Athens, Greece, Sept. 27-29, 2006.
474. R. R. Cizmarik, R. D. Schrimpf, D. M. Fleetwood, K. F. Galloway, D. G. Platteter, M. R. Shaneyfelt, R. L. Pease, J. Boch, D. R. Ball, J. D. Rowe, and M. C. Maher, "The impact of mechanical stress on the total-dose response of linear bipolar transistors with various passivation layers," RADECS2004 Workshop, Madrid, Spain, Sept. 22-24, 2004.
475. J. Boch, F. Saigne, R. D. Schrimpf, D. M. Fleetwood, and R. Cizmarik, "Elevated Temperature Irradiation at High Dose Rate of Commercial Linear Bipolar IC's," RADECS '03, Noordwijk, The Netherlands, Sept. 15-19, 2003.
476. J. Boch, F. Saigne, R. D. Schrimpf, D. M. Fleetwood, S. Ducret, L. Dusseau, J-P. David, J. Fesquet, J. Gasiot, and R. Ecoffet, "Effect of Switching from High to Low Dose Rate on Linear Bipolar Technology Radiation Response," RADECS '03, Noordwijk, The Netherlands, Sept. 15-19, 2003.
477. X. Hu, B. K. Choi, H. J. Barnaby, D. M. Fleetwood, R. D. Schrimpf, S. C. Lee, S. Shojah-Ardalan, R. Wilkins, U. K. Mishra, and R. Dettmer, "The Energy Dependence of Proton-Induced Degradation in AlGaN/GaN High Electron Mobility Transistors," RADECS2002 Workshop, Padova, Italy, September 16-18, 2002.
478. P. Paillet, V. Ferlet-Cavrois, J. R. Schwank, and D. M. Fleetwood, "Response of SIMOX and UNIBOND buried oxides: Trapping and detrapping properties," RADECS '99, Fontevraud, France, Sept. 13-17, 1999.
479. R. L. Pease, M. R. Shaneyfelt, P. S. Winokur, D. M. Fleetwood, J. Gorelick, S. McClure, S. Clark, D. Alexander, and L. Cohn, "Mechanisms for Enhanced Packaging and/or Burn-In Total Dose Sensitivity in Microelectronics," RADECS '97, Cannes, France, Sept. 15-19, 1997.
480. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, and P. S. Winokur, "Effects of Temperature on MOS Radiation Response," RADECS '97, Cannes, France, Sept. 15-19, 1997.
481. M. R. Shaneyfelt, P. S. Winokur, D. M. Fleetwood, J. R. Schwank, and R. A. Reber, Jr., "Effects of Reliability Screens on MOS Charge Trapping," RADECS '95, Arcachon, France, Sept. 18-22, 1995.

Presentations made at Hardened Electronics and Radiation Technology (HEART) Conferences

482. C. A. Champagne, D. A. Black, K. McDonald, J. D. Black, D. R. Ball, R. D. Schrimpf, D. M. Fleetwood, B. P. Fox, M. L. Alles, and T. M. Fabian, "Photoconductivity degradation in semi-insulating GaAs due to cumulative radiation damage," Monterey, CA, Apr. 7-11, 2025.

483. D. A. Black, J. K. McDonald, J. D. Black, J. D. Serrano, R. P. Cuoco, Jr., D. R. Ball, M. L. Alles, D. M. Fleetwood, and R. D. Schrimpf, "Analysis of the photocurrent response of heterojunction bipolar transistors," Tarrytown, NY, March 7-11, 2022.
484. R. A. Reed, M. P. King, B. Sierawski, A. Dasgupta, R. A. Weller, D. M. Fleetwood, M. H. Mendenhall, K. M. Warren, and R. D. Schrimpf, "Radiation response of advanced semiconductors," Orlando, FL, March 28 – April 1, 2011.
485. R. A. Weller, A. L. Sternberg, A. Kobayashi, L. W. Massengill, R. D. Schrimpf, and D. M. Fleetwood, "Modeling Semiconductor Device Response Using Detailed Radiation Event Simulations," Monterey, California, March 1-5, 2004. ***Meritorious Conference Paper Award***.
486. C. R. Cirba, H. J. Barnaby, J. M. Hutson, J. A. Felix, R. D. Schrimpf, and D. M. Fleetwood, "Modeling Oxide Trapped Charge Annealing Processes in Irradiated SOI MOSFETs," Albuquerque, New Mexico, March 13-16, 1995.
487. D. M. Fleetwood, M. R. Shaneyfelt, W. L. Warren, J. R. Schwank, and P. S. Winokur, "Charge Trapping in Field Oxides," Albuquerque, New Mexico, March 13-16, 1995. ***Outstanding Conference Paper Award.***

Monterey, California, February 14-17, 1994

488. M. R. Shaneyfelt, D. M. Fleetwood, T. L. Meisenheimer, J. R. Schwank, and P. S. Winokur, "Radiation Response of Hardened Field Oxides Before and After Elevated Temperature Anneals."
489. T. L. Meisenheimer, D. M. Fleetwood, M. R. Shaneyfelt, and P. S. Winokur, "Temperature Dependence of Static RAM Volatility."

Monterey, California, February 13-16, 1990

490. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, and F. W. Sexton, "MOS Process Development for Ultrahardened Applications."
491. J. R. Schwank, F. W. Sexton, M. R. Shaneyfelt, D. M. Fleetwood, K. L. Hughes, and M. S. Rodgers, "CMOS IC Response in Simulated NPB (Neutral Particle Beam) Environments." ***Outstanding Conference Paper Award***.

Melbourne, Florida, February 7-10, 1989

492. D. M. Fleetwood, J. R. Schwank, F. W. Sexton, P. S. Winokur, G. L. Hash, and M. R. Shaneyfelt, "Lot Acceptance Strategy for Reentry Vehicle CMOS Electronics."
493. S. S. Tsao, D. M. Fleetwood, T. R. Guilinger, and M. J. Kelly, "Materials for Radiation-Hard Buried Insulators in SOI Technology."

El Toro, California, Feb. 1-4, 1988

494. D. M. Fleetwood, F. V. Thome, S. S. Tsao, V. J. Dandini, J. R. Schwank, and P. V. Dressendorfer, "High-Temperature Silicon-on-Insulator Electronics for Space Nuclear Power Systems: Requirements and Feasibility."
495. S. S. Tsao, H. T. Weaver, and D. M. Fleetwood, "Sidewall-Hardening Process for Silicon-on-Insulator MOSFETS." ***Outstanding Conference Paper Award***.
496. D. E. Beutler, W. Beezhold, D. P. Knott, E. F. Hartman, L. J. Lorence, Jr., and D. M. Fleetwood, "Angular and Spectral Dependence of X-Ray-Induced Photocurrent Enhancement for Kovar/Au-Lidded CMOS Devices."

Newport, Rhode Island, July 24-25, 1986

497. F. W. Sexton, J. R. Schwank, P. S. Winokur, D. M. Fleetwood, and P. V. Dressendorfer, "Silicon-Gate Device Response in a Satellite-Based SDI Environment."
498. W. Beezhold, D. M. Fleetwood, L. J. Lorence, Jr., D. Knott, P. S. Winokur, and N. E. Counts, "Dose-Enhancement Effects for Medium-Energy X-Ray Irradiations of Reentry Vehicle Electronic Devices."
499. J. R. Schwank, D. M. Fleetwood, P. S. Winokur, P. S. Hund, and E. C. DasKalos, "Process Effects on the Radiation Hardness of Polysilicon Gate CMOS ICs."

Presentations at IEEE Semiconductor Interface Specialists Conferences

500. P. Wang, R. Jiang, E. X. Zhang, H. Gong, S. Zhao, R. D. Schrimpf, and D. M. Fleetwood, "Gate voltage dependence of 1/*f* noise of GaN/AlGaN HEMTs," San Diego, CA, Dec. 8-10, 2016.

501. M. Bhuiyan, X. Lou, X. Gong, H. Zhou, K. Ni, R. Jiang, H. Gong, E. X. Zhang, R. G. Gordon, R. A. Reed, D. M. Fleetwood, P. D. Ye, and T. P. Ma, "Radiation induced charge trapping in epitaxial La_2O_3 gate dielectric grown on GaAs," San Diego, CA, Dec. 8-10, 2016.
502. M. Bhuiyan, H. Zhou, S.-J. Chang, X. Lou, X. Gong, K. Ni, R. Jiang, H. Gong, E. X. Zhang, C.-H. Won, R. G. Gordon, J.-W. Lim, J.-H. Lee, R. A. Reed, D. M. Fleetwood, P. D. Ye, and T. P. Ma, "Total ionizing dose effects on GaN-based HEMTs and MOSHEMTs: Effects of channel thickness and epitaxial MgCaO as gate dielectric," San Diego, CA, Dec. 8-10, 2016.
503. S. Ren, J. Zhang, M. Si, K. Ni, X. Wan, J. Chen, X. Sun, E. X. Zhang, D. M. Fleetwood, P. D. Ye, S. Cui, and T. P. Ma, "Total ionizing dose effects on GaAs MOSFETs with epitaxial high-k gate dielectrics," Arlington, VA, Dec. 2-5, 2015.
504. S. Ren, M. Si, K. Ni, S. Chang, X. Sun, E. X. Zhang, D. M. Fleetwood, P. D. Ye, S. Cui, and T. P. Ma, "A study of factors affecting radiation hardness of InGaAs nanowire gate-all-around MOSFETs," San Diego, CA, Dec. 10-13, 2014.
505. S. Ren, X. Sun, M. Si, E. X. Zhang, J. Chen, D. M. Fleetwood, P. D. Ye, S. Cui, and T. P. Ma, "Total ionizing dose (TID) effects on ultrathin InGaAs nanowire gate-all-around MOSFETs with ALD Al_2O_3 gate dielectrics," Washington, DC, Dec. 5-7, 2013.
506. G. X. Duan, C. X. Zhang, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, R. A. Reed, D. Linten, and J. Mitard, "Negative bias temperature instabilities in SiGe-pMOSFETs with SiO_2/HfO_2 gate dielectrics," Washington, DC, Dec. 5-7, 2013.
507. E. X. Zhang, C. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. Dhar, and S-H. Ryu, "Bias-temperature instabilities in 4H-SiC MOS capacitors," San Diego, CA, Dec. 2-4, 2010.
508. E. X. Zhang, D. M. Fleetwood, F. El-Mamouni, D. R. Ball, M. L. Alles, R. D. Schrimpf, W. Xiong, S. Cristoloveanu, "Charge trapping effects on memory windows in SOI FinFET ZRAM transistors," Washington, DC, Dec. 3-5, 2009.
509. X. J. Zhou, D. M. Fleetwood, I. Danciu, A. Dasgupta, S. A. Francis, and A. D. Touboul, "Effects of strained Si-Si bonds and O vacancies near the SiO_2/Si interface," Washington, DC, Dec. 6-8, 2007.
510. X. J. Zhou, D. M. Fleetwood, L. Tsetseris, R. D. Schrimpf, S. T. Pantelides, J. A. Felix, E. P. Gusev, and C. D'Emic, "Effects of irradiation and bias-temperature stress on charge trapping in HfO_2 Gate Dielectrics," Washington, DC, Dec. 1-3, 2005.
511. J. A. Felix, M. R. Shaneyfelt, D. M. Fleetwood, E. P. Gusev, R. D. Schrimpf, and C. D'Emic, "The Effects of Interfacial Layer Thickness and Processing on the Radiation Response of High-K/SiO_xN_y/Si (100) Gate Dielectric Stacks," Washington, DC, Dec. 4-6, 2003.
512. J. A. Felix, D. M. Fleetwood, R. D. Schrimpf, J. G. Hong, G. Lucovsky, J. R. Schwank, and M. R. Shaneyfelt, "Radiation Response and Reliability of Hafnium Silicate Capacitors," San Diego, CA, Dec. 5-7, 2002.
513. S. N. Rashkeev, C. R. Cirba, D. M. Fleetwood, R. D. Schrimpf, S. C. Witczak, A. Michez, and S. T. Pantelides, "Physical Model for Enhanced Interface-Trap Formation at Low Dose Rates," San Diego, CA, Dec. 5-7, 2002.
514. S. N. Rashkeev, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Proton-Induced Defect Generation at the Si/SiO_2 Interface," Washington, DC, Nov. 29 to Dec. 1, 2001.
515. D. M. Fleetwood, J. A. Felix, L. C. Riewe, and P. S. Winokur, "Effects of Alternating Bias Irradiation on Defects in MOS Devices," San Diego, CA, Dec. 7-9, 2000.
516. S. N. Rashkeev, R. Buczko, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Reactions of Hydrogen with Si-SiO_2 Interfaces," San Diego, CA, Dec. 7-9, 2000.
517. D. M. Fleetwood, L. C. Riewe, and F. W. Sexton, "Breakdown During High-Field Bias-Temperature Stress," Charleston, SC, Dec. 2-4, 1999.
518. D. M. Fleetwood, P. S. Winokur, O. Flament, and P. S. Winokur, "Stability of Trapped Electrons in SiO_2," San Diego, CA, Dec. 3-5, 1998.
519. F. W. Sexton, D. M. Fleetwood, and K. S. Krisch, "Mechanisms of Heavy-Ion Induced Gate Rupture in Thin Oxides," San Diego, CA, Dec. 3-5, 1998.
520. K. Vanheusden, R. A. B. Devine, D. M. Fleetwood, and W. L. Warren, "Hydrogen Diffusion and Chemistry During the Annealing-Induced Generation of Mobile Protons in the Oxide Layer of Si/SiO_2/Si Capacitors," San Diego, CA, Dec. 3-5, 1998.
521. K. Vanheusden, W. L. Warren, L. B. Archer, D. M. Fleetwood, R. A. B. Devine, B. L. Draper, J. R. Schwank, M. R. Shaneyfelt, P. S. Winokur, and R. M. Wallace, "Generation Kinetics and Thermal Stability of Mobile Protons in SiO_2 Thin Films," Charleston, SC, Dec. 4-6, 1997.

San Diego, CA, Dec. 5-7, 1996

522. D. M. Fleetwood and R. D. Schrimpf, "Enhanced Low-Rate Radiation-Induced Charge Trapping at the Emitter-Base/Oxide Interface of Bipolar Devices."
523. K. Vanheusden, W. L. Warren, D. M. Fleetwood, and R. A. B. Devine, "Temperature Dependence of Electron Capture by Protons (H^+) in SiO_2 Thin Films."

Charleston, SC, Dec. 7-9, 1995

524. D. M. Fleetwood, W. L. Warren, J. R. Schwank, P. S. Winokur, M. R. Shaneyfelt, and L. C. Riewe, "Fast and Slow Border Traps in MOS Devices."
525. K. Vanheusden, W. L. Warren, J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, P. S. Winokur, and R. A. B. Devine, "Paramagnetic Interface Traps in High-Temperature Annealed $Si/SiO_2/Si$ Structures."

San Diego, CA, Dec. 7-10, 1994

526. D. M. Fleetwood and N. S. Saks, "Density and Energy of Oxide-Trap Charge due to High-Field Stress."
527. W. L. Warren, D. M. Fleetwood, M. R. Shaneyfelt, J. R. Schwank, P. S. Winokur, and R. A. B. Devine, "Identity of Border Traps in SiO_2 Films."
528. M. R. Shaneyfelt, D. M. Fleetwood, J. R. Schwank, T. L. Meisenheimer, and P. S. Winokur, "Effects of Reliability Screens on MOS Charge Trapping."
529. R. A. B. Devine, W. L. Warren, and D. M. Fleetwood, "On the Nature of Annealing Induced Interfacial and Bulk Oxide Degradation in $Si/SiO_2/Si$ Structures."

Ft. Lauderdale, FL, Dec. 8-11, 1993

530. D. M. Fleetwood, M. R. Shaneyfelt, and J. R. Schwank, "Simple Method to Estimate MOS Oxide-Trap, Interface-Trap, and Border-Trap Densities."
531. W. L. Warren, D. M. Fleetwood, M. R. Shaneyfelt, J. R. Schwank, P. S. Winokur, and R. A. B. Devine, "Delocalized Spin Centers in SiO_2 Thin Films."
532. R. A. B. Devine, W. L. Warren, and D. M. Fleetwood, "Point Defect Generation and Oxide Degradation During Annealing of the Si/SiO_2 Interface."

San Diego, CA, Dec. 9-12, 1992

533. D. M. Fleetwood, S. L. Miller, and R. A. Reber, Jr, "Energy Distribution of Trapped Holes in Irradiated SiO_2."
534. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, and P. S. Winokur, "Effect of Oxide Thickness on Interface-Trap Buildup Rates."

Orlando, FL, Dec. 11-14, 1991

535. D. M. Fleetwood, R. A. Reber, Jr., and P. S. Winokur, "Hole and Electron Trapping in Irradiated MOS Devices."
536. J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, and P. S. Winokur, "Latent, Thermally-Activated Interface-Trap Generation in MOS Devices."

San Diego, CA, Dec. 5-8, 1990

537. D. M. Fleetwood and J. H. Scofield, "Correlation Between Preirradiation Channel Resistance and Postirradiation Interface-Trap Charge in MOS Transistors."
538. T. L. Meisenheimer and D. M. Fleetwood, "Effect of Oxide and Interface-Trap Charge on $1/f$ Noise in MOS Devices."
539. M. R. Shaneyfelt, J. R. Schwank, D. M. Fleetwood, and P. S. Winokur, "Hole-Trapping/Hydrogen Transport (HT^2) Model for Interface-Trap Buildup in MOS Devices."

Ft. Lauderdale, FL, Dec. 6-9, 1989

540. D. M. Fleetwood, "Radiation Induced Charge Neutralization and Interface-Trap Buildup in MOS Devices."
541. J. H. Scofield, N. Schwadron, and D. M. Fleetwood, "Correlation Between $1/f$ Noise of MOSFETs and Oxide Trapped Charge Following Co-60 Irradiation."

San Diego, CA, Dec. 14-16, 1986

542. J. R. Schwank, P. S. Winokur, P. V. Dressendorfer, and D. M. Fleetwood, "Radiation-Induced Interface-Traps in Polysilicon Gate MOS Devices."

Ft. Lauderdale, FL, Dec. 5-7, 1985

543. J. D. McBrayer, D. M. Fleetwood, R. A. Pastorek, and R. V. Jones, "Damage Due to Hot-Carrier and Radiation Effects in MOS Transistors."

Contributed Talks at Electrochemical (ECS) or Materials Research Society (MRS) Meetings

544. S. H. Lee, R. D. Schrimpf, D. M. Fleetwood, and D. Linten, "Retention instability of low-resistance state in metal-oxide RRAM," Fall Materials Research Meeting, Boston, MA, Nov. 29 – Dec. 4, 2015.
545. Y. Puzyrev, X. Shen, K. Ni, C. X. Zhang, J. Hachtel, B. Choi, M. Chisholm, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Memristive switching of self-assembled ZnO nanorods," Fall Materials Research Meeting, Boston, MA, Nov. 29 – Dec. 4, 2015.
546. Z. Zhang, A. R. Arehart, E. C. H. Kyle, J. Chen, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, J. S. Speck, and S. A. Ringel, "Proton irradiation effects on deep level states in *p*-type GaN," Reliability and Materials Issues of Semiconductors-Optical and Electron Devices and Materials III, Spring Materials Research Society Meeting, San Francisco, CA, April 6-10, 2015.
547. E. X. Zhang, D. M. Fleetwood, G. X. Duan, C. X. Zhang, R. D. Schrimpf, E. Simoen, and D. Linten, "Fin width and gate length dependences of charge pumping and DCIV currents in floating-body SOI MOSFETs," Fall Electrochemical Society Meeting, Oct. 7-12, 2012.
548. E. X. Zhang, C. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. Dhar, S.-H. Ryu, X. Shen, and S. T. Pantelides, "Bias-temperature instabilities and radiation effects on SiC MOSFETs," in *Silicon Nitride, Silicon Dioxide, and Emerging Dielectrics 11*, Spring Meeting of the Electrochemical Society, Montreal, QC, May 2-6, 2011.
549. R. Arora, D. M. Fleetwood, R. D. Schrimpf, K. F. Galloway, B. G. Schmidt, B. R. Rogers, K. B. Chung, and G. Lucovsky, "Temperature stress response of germanium MOS with HfSiON dielectric," in *Silicon Nitride, Silicon Dioxide, and Emerging Dielectrics 10*, Spring Meeting of the Electrochemical Society, San Francisco, CA, May 25-29, 2009.
550. R. Pasternak, B. Jun, R. D. Schrimpf, D. M. Fleetwood, M. Alles, R. Dolan, R. Standley, and N. Tolk, "Investigation of second-harmonic generation for SOI wafer metrology," 12th International Symposium on SOI Techology and Devices, 207th Meeting of The Electrochemical Society, Quebec City, QC, May 15-20, 2005.
551. L. Tsetseris, X. J. Zhou, D. M. Fleetwood, R. D. Schrimpf and S. T. Pantelides, "Physical mechanisms of negative-bias temperature instability, MRS Spring Meeting, San Francisco, CA, March 28 – April 1, 2005.
552. L. Tsetseris, X. Zhou, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Field-Induced Reactions of Water Molecules at Si-Dielectric Interfaces," MRS Fall Meeting, Boston, MA, Dec. 1-5, 2003.
553. C. R. Cirba, S. Cristoloveanu, R. D. Schrimpf, L. C. Feldman, D. M. Fleetwood, and K. F. Galloway, "Total-Dose Radiation Hardness of Double-Gate Ultra-Thin SOI MOSFETs," 203rd Meeting of The Electrochemical Society, Paris, France, April 27 – May 2, 2003.
554. H. P. Hjalmarson, P. A. Schultz, D. J. Bowman, and D. M. Fleetwood, "A Unified Computational Approach to Oxide Aging," Fall Meeting, Boston, MA, Nov. 30 – Dec. 4, 1998.
555. K. Vanheusden, W. L. Warren, R. A. B. Devine, D. M. Fleetwood, J. R. Schwank, P. S. Winokur, and Z. J. Lemnios, "Direct Observation of Mobile Protons in SiO_2 Thin Films: Potential Application in a Novel Memory Device," Fall Meeting, Boston, MA, Dec. 2-6, 1996.
556. W. L. Warren, K. Vanheusden, J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, P. S. Winokur, and R. A. B. Devine, "Positively Charged Over-Coordinated Oxygen Centers in SiO_2 Thin Films," Fall Meeting, Boston, MA, Dec. 2-6, 1996.
557. K. Vanheusden, W. L. Warren, J. R. Schwank, D. M. Fleetwood, M. R. Shaneyfelt, P. S. Winokur, and R. A. B. Devine, "Paramagnetic Interface Traps in High-Temperature Annealed $Si/SiO_2/Si$ Structures," Spring Meeting, San Francisco, CA, April 8-12, 1996.
558. R. A. B. Devine, D. Mathiot, W. L. Warren, and D. M. Fleetwood, "Near-Interface Oxide Degradation in High-Temperature Annealed $Si/SiO_2/Si$ Structures," Materials Research Society Meeting, Boston, MA, Nov. 29-Dec. 3, 1993.
559. R. A. B. Devine, W. L. Warren, M. R. Shaneyfelt, D. M. Fleetwood, and B. Aspar, "Oxide Modification Due to High-Temperature Processing of $Si/SiO_2/Si$ Structures," European Materials Research Society Meeting, Strasbourg, France, May 4-7, 1993.

Contributed Talks at March American Physical Society Meetings

560. H. Pandey, D. R. Ball, D. M. Fleetwood, G. M. Mayberry, D. Negash, R. D. Schrimpf, and S. T. Pantelides, "Radiation-induced anion-vacancy dynamics in wide-band-gap semiconductors for power devices," March Meeting of The American Physical Society, Anaheim, CA, March 16-21, 2025.
561. A. O'Hara, X. Luo, E. X. Zhang, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Defects in as-processed, irradiated, and stressed GaAs-based device structures," March Meeting of the American Physical Society, Minneapolis, MN, March 3-8, 2024.
562. A. O'Hara, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Effects of excess electron-hole pairs on defect migration in semiconductors," March Meeting of the American Physical Society, Las Vegas, NV, March 5-10, 2023.
563. A. O'Hara, P. Wang, C. Perini, E. X. Zhang, D. M. Fleetwood, E. Vogel, and S. T. Pantelides, "Passivation and depassivation of defects in graphene-based FETs," March American Physical Society Meeting, New Orleans, LA, March 13-17, 2017.
564. Y. S. Puzyrev, X. Shen, K. Ni, C. X. Zhang, J. Hachtel, B. Choi, M. Chisholm, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Memristive switching of ZnO nanorod mesh," March Meeting of The American Physical Society, March 14-18, 2016, Baltimore, MD.
565. K. H. Warnick, Y. Puzyrev, T. Roy, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Field-enhanced vacancy diffusion in AlGaN," March Meeting of The American Physical Society, Feb. 27 – Mar. 2, 2012, Boston, MA.
566. T. Roy, Y. S. Puzyrev, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. T. Pantelides, "Defect energy distribution in GaN/AlGaN heterostructures grown in Ga-rich and ammonia-rich conditions," March American Physical Society Meeting, Dallas, TX, March 21-25, 2011.
567. Y. S. Puzyrev, T. Roy, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Atomic displacements in proton-irradiated AlGaN/GaN heterostructures," March American Physical Society Meeting, Dallas, TX, March 21-25, 2011.
568. Y. S. Puzyrev, B. R. Tuttle, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Theory of hot-carrier-induced phenomena in GaN HEMTs," Portland, OR, March 15-19, 2010.
569. N. Sergueev, Y. S. Puzyrev, M. Beck, K. Varga, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Ion-induced quantum transport in ultrathin a-SiO_2 films," Portland, OR, March 15-19, 2010.
570. Y. S. Puzyrev, M. Beck, B. Tuttle, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Interaction of hydrogen with defects in GaN," Pittsburgh, PA, March 16-20, 2009.
571. X. J. Zhou, D. M. Fleetwood, R. D. Schrimpf, L. Gonella, and F. Faccio, "Transition from high to low 1/*f* noise regimes in field oxide field effect transistors," New Orleans, LA, March 10-14, 2008.
572. M. J. Beck, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Disorder-recrystallization effects following low-energy beam-solid interactions," New Orleans, LA, March 10-14, 2008.
573. A. Dasgupta, S. A. Francis, and D. M. Fleetwood, "Effects of aging and humidity on low-frequency noise of MOS transistors," New Orleans, LA, March 10-14, 2008.
574. A. G. Marinopoulos, I. Batyrev, X. J. Zhou, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "H-shuttling within a Hf-defect complex in Si/SiO_2/HfO_2 structures," New Orleans, LA, March 10-14, 2008.
575. I. G. Batyrev, L. Tsetseris, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Reactions of water molecules at the Si/SiO_2 interface," Denver, CO, March 5-9, 2007.
576. I. G. Batyrev, S. T. Pantelides, M. P. Rodgers, D. M. Fleetwood, and R. D. Schrimpf, "New SiOH complexes and proton release mechanism in silica as a source of SiO_2 interface trap buildup," Baltimore, MD, March 13-17, 2006.
577. L. Tsetseris, X. J. Zhou, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Hole-controlled defect formation at Si-SiO_2 interfaces in the presence of water and fluorine-related species," Montreal, Quebec, March 22-26, 2004.
578. R. Pasternak, Y. V. Shirokaya, Z. Marka, J. K. Miller, S. N. Rashkeev, S. T. Pantelides, N. H. Tolk, B. K. Choi, D. M. Fleetwood, and R. D. Schrimpf, "Contactless Characterization of Carrier Injection and Recombination Processes at Semiconductor Interfaces Using Second-Harmonic Generation," Austin, TX, March 3-7, 2003.
579. H. D. Xiong and D. M. Fleetwood, "Temperature Dependence of 1/f Noise in MOSFETs," Indianapolis, IN, March 18-22, 2002.
580. Z. Y. Lu, C. J. Nicklaw, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "The Structure, Properties, and Dynamics of Oxygen Vacancies in Amorphous SiO_2," Indianapolis, IN, March 18-22, 2002.

581. R. Pasternak, Z. Marka, Y. V. Shirokaya, S. N. Rashkeev, S. T. Pantelides, B. K. Choi, D. M. Fleetwood, R. D. Schrimpf, and N. H. Tolk, "Changes in Carrier Dynamics at Si/SiO_2 Interfaces After X-ray Irradiation Detected by Electric Field Induced Second-Harmonic Generation," Indianapolis, IN, March 18-22, 2002.
582. J. H. Scofield, N. P. Borland, and D. M. Fleetwood, "Temperature and Gate-Voltage Dependencies of Random Telegraph Noise Due to Oxide Traps in Small Gate-Area MOSFETs," Bull. Am. Phys. Soc. 38, 633 (1993), Seattle, WA, March 22-26, 1993.
583. D. M. Fleetwood, R. A. Reber, Jr., and P. S. Winokur, "Temperature and Radiation-Induced Trapped-Positive-Charge Neutralization in MOS Devices," Bull. Amer. Phys. Soc. 37, 773 (1992), Indianapolis, IN, March 16-20, 1992.
584. J. H. Scofield, N. P. Borland, and D. M. Fleetwood, "Temperature- and Gate-Voltage Dependencies of the Low-Frequency Noise of Small Gate Area MOSFETs," Bull. Amer. Phys. Soc. 37, 267 (1992), Indianapolis, IN, March 16-20, 1992.
585. D. M. Fleetwood and J. H. Scofield, "Correlation Between 1/*f* Noise and Radiation-Induced-Hole Trapping in MOSFETs," Bull. Amer. Phys. Soc. 35, 445, Anaheim, CA, March 12-16, 1990.
586. D. M. Fleetwood, J. T. Masden, and N. Giordano, "1/*f* Noise in Thin Platinum Wires and Films," Bull. Amer. Phys. Soc. 28, 460 (1983), Los Angeles, CA, March 21-25, 1983.
587. D. M. Fleetwood and N. Giordano, "Experimental Study of 1/*f* Noise in Tin," Bull. Amer. Phys. Soc. 27, 217 (1982), Dallas, TX, March 8-12, 1982.

Other Contributed Talks

588. J. M. Trippe, M. Solt, M. D. Hu, D. R. Ball, S. Schröder, J. van Tilborg, B. D. Sierawski, R. A. Reed, D. M. Fleetwood, V. Ryan, B. Dorney, S. Wolin, and K. Nagamatsu, "Focused pulsed-electron beams as surrogates for heavy ion single-event transient testing," Single Event Effects Symposium (SEE) and Military and Aerospace Programmable Logic Devices (MAPLD) Workshop, La Jolla, CA, May 12-16, 2025.
589. M. Ebrish, A. Senarath, S. Neema, O. Meilander, D. R. Ball, J. Caldwell, D. M. Fleetwood, A. Jacobs, T. Anderson, R. Kaplar, and R. D. Schrimpf, "Single event radiation impact on various GaN devices," GOMACTech, Pasadena, CA, March 17-20, 2025.
590. H. Ghadi, T. Kasher, M. Carver, J. F. McGlone, L. Meng, D. S. Yu, M. W. McCurdy, H. Zhao, D. M. Fleetwood, R. D. Schrimpf, and S. A. Ringel, "Investigating thermal stability and influence of electric field on radiation-induced defects in β-Ga_2O_3," 7th U.S. Workshop on Gallium Oxide (GOX 2024), Columbus, OH, Aug. 5-7, 2024.
591. K. P. Arnold, J. B. Slaby, H. M. Dattilo, C. A. Kaylor, R. D. Schrimpf, D. M. Fleetwood, S. E. Ralph, R. A. Reed, and S. M. Weiss, "Grating coupled attachment of optical fiber arrays for in situ photonics experimentation," Conference on Lasers and Electro-Optics (CLEO) 2024, Long Beach, CA, May 4-9, 2024.
592. D. Nergui, M. Hosseinzadeh, Y. A Mensah, H. P. Lee, D. G. Sam, K. Li, E. X. Zhang, D. M. Fleetwood, and J. D. Cressler, Intl. Reliab. Phys. Sympos., Dallas, TX, Apr. 14-18, 2024.
593. E. Farzana, N. S.Hendricks, J. S. Speck, S. Islam, A. S. Senarath, R. M. Cadena, D. R. Ball, A. Sengupta, E. X. Zhang, D. M. Fleetwood, and R. D. Schrimpf, "Radiation-hard low-loss β-Ga_2O_3 high-power diodes," GOMACTech 2024, Charleston, SC, Mar. 18-21, 2024.
594. D. M. Fleetwood, E. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "New insights into low-frequency noise of GaN-based HEMTs and Si MOS transistors," Microelectronics and Qualification Workshop, El Segundo, CA, Feb. 6-8, 2024.
595. J. F. McGlone, N. K. Kalarickal, M. W. McCurdy, E. X. Zhang, D. M. Fleetwood, S. Rajan, and S. A. Ringel, "Impact of radiation damage and buffer charge on Si δ-doped β-Ga_2O_3 MESFETs," Electronic Materials Conference, Santa Barbara, CA, June 28-30, 2023.
596. S. Islam, A. S. Senarath, A. Sengupta, E. X. Zhang, D. R. Ball, D. M. Fleetwood, R. D. Schrimpf, E. Farzana, A. Bhattacharyya, N. S. Hendricks, and J. S. Speck, "Single-event burnout by Cf-252 irradiation in vertical Ga_2O_3 diodes with Pt and PtO_x Schottky contacts and high permittivity dielectric field plate," Device Research Conference, Santa Barbara, CA, June 26-28, 2023.
597. C. A. Champagne, B. D. Sierawski, D. M. Fleetwood, R. L. Ladbury, and M. J. Campola, "Including survivors in probabilistic TID failure assessment," NASA NEPP Electronics Technology Workshop, June 12-15, 2023.
598. D. O. Nielsen, C. G. Van de Walle, S. T. Pantelides, R. D. Schrimpf, D. M. Fleetwood, and M. V. Fischetti, "Closing the '10-100 eV gap' for electron thermalization in GaN devices from first principles," Intl. Workshop Computational Nanotechnology, Barcelona, Spain, June 12-16, 2023.

599. S. Islam, A. S. Senarath, D. R. Ball, A. Sengupta, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, E. Farzana, N. S. Hendricks, and J. S. Speck, "Exploring single-event burnout in β-Ga_2O_3 Schottky barrier diodes under low-energy ion irradiation," Reliability of Compound Semiconductors Workshop, Orlando, FL, May 15, 2023.
600. E. Farzana, N. S. Hendricks, A. Bhattacharyya, S. Krishnamoorthy, J. S. Speck, R. M. Cadena, D. R. Ball, S. Islam, A. Senarath, E. X. Zhang, D. M. Fleetwood, and R. D. Schrimpf, "Radiation effects on vertical β-Ga_2O_3 power diodes," GOMACTech 2023, March 20-23, San Diego, CA.
601. N. Deng, P. Wang, E. X. Zhang, B. Guo, D. Li, B. Ma, D. M. Fleetwood, H. Tian, and J. Zhang, "Low-frequency 1/*f* noise in a graphene/silicon X-ray detector," 2021 IEEE International Conference on Manipulation, Manufacturing and Measurement on the Nanoscale (3M-NANO), Xi'an, China, Aug. 2-6, 2021.
602. P. Wang, M. W. McCurdy, J. Lin, E. X. Zhang, M. L. Alles, J. L. Davidson, B. W. Alphenaar, D. M. Fleetwood, and R. D. Schrimpf, "Effects of external strain on GaN-based HEMTs under X-ray irradiation," Reliability of Compound Semiconductors Workshop, May 24, 2021, presented virtually by D. M. Fleetwood.
603. D. M. Fleetwood, A. O'Hara, S. T. Pantelides, T. S. Mayer, and M. R. Melloch, "Defect dehydrogenation in GaN and GaAs," Microelectronics Reliability and Qualification Workshop, virtual, Feb. 9-11, 2021.
604. D. M. Fleetwood, P. F. Wang, E. X. Zhang, M. W. McCurdy, R. D. Schrimpf, R. Jiang, B. S. Poling, and E. R. Heller, "High field stress-induced degradation and low-frequency noise of AlGaN/GaN HEMTs," Microelectronics Reliability and Qualification Workshop, El Segundo, CA, Feb. 4-6, 2020.
605. U. Peralagu, A. Alian, V. Putcha, A. Khaled, R. Rodriguez, A. Sibaja-Hernandez, S. Chang, E. Simoen, S. E. Zhao, B. De Jaeger, D. M. Fleetwood, P. Wambacq, M. Zhao, B. Parvais, N. Waldron, and N. Collaert, "CMOS-compatible GaN-based devices on 200 mm-Si for RF applications: Integration and performance," IEEE Intl. Electron Devices Meeting, San Francisco, CA, Dec. 8-11, 2019.
606. P. F. Wang, E. X. Zhang, R. Jiang, M. W. McCurdy, B. S. Poling, E. R. Heller, R. D. Schrimpf, and D. M. Fleetwood, "High field stress-induced degradation and low-frequency noise of AlGaN/GaN HEMTs," Reliability of Compound Semiconductors Workshop, Minneapolis, MN, April 29, 2019.
607. Y. Yuan, S. Chen, H. Zhao, W. Wu, D. M. Fleetwood, and E. X. Zhang, "A new imaging method for forward-looking linear-array SAR based on fractional Fourier transform," IEEE RADAR Conference, Boston, MA, Apr. 22-26, 2019.
608. D. M. Fleetwood, R. Jiang, E. X. Zhang, and R. D. Schrimpf, "Voltage-stress induced defects in AlGaN/GaN HEMTs," Microelectronics Reliability and Qualification Workshop, El Segundo, CA, Feb. 6-8, 2018.
609. D. M. Fleetwood, "IEEE Nuclear and Plasma Sciences Society's Distinguished Lecture Program," IEEE Sections Congress, Sydney, Australia, Aug. 11-13, 2017.
610. R. Jiang, X. Shen, E. X. Zhang, J. Chen, D. M. Fleetwood, R. D. Schrimpf, S. W. Kaun, E. C. H. Kyle, J. S. Speck, and S. T. Pantelides, "Oxygen-impurity-induced hot-carrier degradation and total-ionizing-dose effects in unpassivated AlGaN/GaN HEMTs," 2017 International Workshop on Reliability of Micro- and Nano-Electronics in Harsh Environment, Chengdu, China, May 22-24, 2017. (Outstanding Student Paper)
611. S. E. Zhao, R. Jiang, E. X. Zhang, and D. M. Fleetwood, "Using Capacitance-Frequency Measurements to Estimate Interface and Border Trap Charge Densities in MOS Devices," 2017 International Workshop on Reliability of Micro- and Nano-Electronics in Harsh Environment, Chengdu, China, May 22-24, 2017.
612. B. D. Sierawski, R. A. Reed, K. M. Warren, A. L. Sternberg, R. A. Austin, J. M. Trippe, R. A. Weller, M. L. Alles, R. D. Schrimpf, L. W. Massengill, D. M. Fleetwood, G. W. Buxton, III, J. C. Brandenburg, W. B. Fisher, and R. Davis, "CubeSat: Real-time soft error measurements at low earth orbits," IEEE Intl. Reliability Physics Sympos., Monterey, CA, April 2-6, 2017.
613. M. L. Alles, K. Bolotin, A. Zettl, B. Homeijer, J. L. Davidson, R. D. Schrimpf, R. A. Reed, and D. M. Fleetwood, "Radiation effects in M&NEMs," Gomactech 2016, Orlando, FL, March 14-17.
614. B. Mallick, A. Chatterjee, G. Setlur, V. Koldyeav, D. M. Fleetwood, N. Tolk, and R. D. Schrimpf, "Modeling saturation of second harmonic generation in Si/dielectric system: An ultra-sensitive non-invasive metrological tool," 24th DAE-BRNS National Laser Symposium, RRCAT, Incore, India, Dec. 2-5, 2015.
615. E. Farzana, Z. Zhang, E. C. H. Kyle, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, J. S. Speck, A. R. Arehart, and S. A. Ringel, "Comparison of electron and proton irradiation-induced traps in n-type GaN," 57th Electronic Materials Conference, Columbus, OH, Jun. 24-26, 2015. **(Best student paper.)**
616. M. L. Alles, R. D. Schrimpf, D. M. Fleetwood, R. A. Reed, K. Ni, I. Samsel, and E. X. Zhang, "What vs. why: Characterization for insight," NASA Electronic Parts and Packaging Program Electronics Technology Workshop, Greenbelt, MD, Jun. 23-26, 2015.
617. V. Koldyaev, M. C. Kryger, J. P. Changala, M. L. Alles, D. M. Fleetwood, R. D. Schrimpf, and N. H. Tolk, "Rapid non-destructive detection of sub-surface Cu in SOI wafers by optical second harmonic generation," SEMI Advanced Semiconductor Manufacturing Conference, Saratoga Springs, NY, May 3-6, 2015.

618. S. Ren, M. Si, K. Ni, S. Chang, X. Sun, E. X. Zhang, D. M. Fleetwood, P. D. Ye, S. Cui, T. P. Ma, "A study of radiation hardness of InGaAs nanowire gate-all-around MOSFETs," Gomactech 2015, St. Louis, MO, March 23-26, 2015.
619. S. J. Koester, C. Kim, Y. Su, R. D. Schrimpf, D. M. Fleetwood, M. L. Alles, R. A. Reed, C. X. Zhang, and E. X. Zhang, "Radiation effects in field-effect transistors based upon 2D materials," Gomactech 2015, St. Louis, MO, March 23-26, 2015.
620. A. Sasikumar, Z. Zhang, P. Kumar, E. X. Zhang, B. Poling, G. D. Via, E. Heller, D. M. Fleetwood, R. D. Schrimpf, P. Saunier, C. Lee, S. A. Ringel, and A. R. Arehart," "Comparison of radiation and electrical stressors on AlGaN/GaN HEMT reliability," Gomactech 2015, St. Louis, MO, March 23-26, 2015.
621. I. K. Samsel, E. X. Zhang, K. Ni, R. A. Reed, R. D. Schrimpf, D. M. Fleetwood, R. A. Weller, M. W. McCurdy, and M. L. Alles, "Physical mechanisms for radiation-induced effects in non-Si channel CMOS devices," Gomactech 2015, St. Louis, MO, March 23-26, 2015. **(Best student poster.)**
622. D. M. Fleetwood, J. Chen, T. Roy, E. X. Zhang, Y. Puzyrev, S. T. Pantelides, R. D. Schrimpf, E. C. H. Kyle, B. McSkimming, S. Kaun, and J. S. Speck, "1/*f* noise and defects in GaN/AlGaN HEMTs," Microelectronics Quality and Reliability Workshop, El Segundo, CA, Jan. 27-29, 2015.
623. W. T. Holman, B. D. Sierawski, R. A. Reed, R. A. Weller, A. L. Sternberg, R. Austin, and D. M. Fleetwood, "The small satellite (CubeSat) Program as a pedagogical framework for the undergraduate EE curriculum," 121 ASEE Conference, Indianapolis, IN, June 15-18, 2014.
624. M. Si, J. Gu, P. Ye, S. Ren, X. Sun, S. Cui, T. P. Ma, E. X. Zhang, and D. M. Fleetwood, "Performance and radiation response of InGaAs gate-all-around nanowire MOSFETs," GOMACTech 2014, Charleston, SC, March 31 – April 3, 2014.
625. S. Koester, C. Kim, R. D. Schrimpf, D. M. Fleetwood, M. L. Alles, R. A. Reed, and E. X. Zhang, "Radiation effects in 2D material/high-K dielectric interfaces," GOMACTech 2014, Charleston, SC, March 31 – April 3, 2014.
626. A. Arehart, A. Sasikumar, Z. Zhang, P. Kumar, S. Ringel, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, B. Poling, G. Via, E. Heller, P. Saunier, and C. Lee, "Comparison of irradiation and electrical stressors on AlGaN/GaN HEMT reliability," GOMACTech 2014, Charleston, SC, March 31 – April 3, 2014.
627. J. S. Speck, Z. Zhang, A. R. Arehart, E. Cinkilic, J. Chen, E. X. Zhang, Y. S. Puzyrev, C. X. Zhang, M. W. McCurdy, S. T. Pantelides, B. McSkimming, S. W. Kaun, E. C. H. Kyle, D. M. Fleetwood, R. D. Schrimpf, and S. A. Ringel, "Proton irradiation in bulk GaN layers and nitride-based HEMT devices," GOMACTech 2014, Charleston, SC, March 31 – April 3, 2014.
628. E. X. Zhang, I. K. Samsel, E. D. Funkhouser, W. G. Bennett, N. C. Hooten, M. W. McCurdy, D. M. Fleetwood, R. A. Reed, M. L. Alles, R. D. Schrimpf, R. A. Weller, D. Linten, and J. Mitard, "Heavy-ion and laser-induced transients in SiGe channel pMOSFETs," International Semiconductor Device Research Symposium, Bethesda, MD, Dec. 11-13, 2013.
629. S. Mukherjee, Y. Puzyrev, J. Chen, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Modeling hot-carrier-induced degradation in AlGaN/GaN HEMTs," Reliability of Compound Semiconductors Workshop, New Orleans, LA, May 13, 2013.
630. G. Gaur, D. S. Koktysh, D. M. Fleetwood, R. A. Reed, R. A. Weller and S. M. Weiss, "Effects of x-ray and gamma-ray irradiation on the optical properties of quantum dots immobilized in porous silicon," SPIE Defense, Security, and Sensing, Baltimore, MD, April 29 – May 3, 2013.
631. J. Bi, R. A. Reed, R. D. Schrimpf, D. M. Fleetwood, and Z. Han, "Neutron-Induced Single-Event-Transient Effects in Ultrathin-Body Fully-Depleted Silicon-on-Insulator MOSFETs," IEEE International Reliability Physics Symposium, Monterey, CA, April 14-18, 2013.
632. I. Chatterjee, E. X. Zhang, B. L. Bhuva, D. M. Fleetwood, Y. P. Fang, and A. Oates, "Length and fin number dependence of ionizing radiation-induced degradation in bulk FinFETs," IEEE International Reliability Physics Symposium, Monterey, CA, April 14-18, 2013.
633. C. X. Zhang, E. X. Zhang, D. M. Fleetwood, M. L. Alles, R. D. Schrimpf, "Total ionizing dose effects and reliability in graphene-based non-volatile memory," IEEE Aerospace Conf, Big Sky, Montana, March 2-9, 2013.
634. R. D. Schrimpf, D. M. Fleetwood, S. T. Pantelides, Y. S. Puzyrev, X. Shen, J. Singh, J. M. Hinckley, U. K. Mishra, and J. S. Speck, "Multi-scale analysis of hot-electron-related device reliability," Proc. GOMACTech, Las Vegas, NV, March 11-14, 2013.
635. S. Mukherjee, Y. Puzyrev, J. Chen, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Degradation prediction for AlGaN/GaN HEMTs," Reliability Science for Advanced Materials and Devices, Golden, CO, Feb. 24-25, 2013.

636. E. X. Zhang, D. M. Fleetwood, C. X. Zhang, B. Wang, M. L. Alles, A. Newaz, R. D. Schrimpf, K. Bolotin, S. T. Pantelides, E. B. Song, S. Kim, K. Galatsis, and K. L. Wang, "UV ozone irradiation induced defect formation in graphene/PZT devices," 59th Annual Meeting of the American Vacuum Society, Tampa, FL, Oct. 29 – Nov. 2, 2012.
637. M. Li, Y. F. Li, R. D. Schrimpf, and D. M. Fleetwood, "Including process-related variability in soft error rate analysis of advanced logic design down to 28 nm based on a foundry PDK," IEEE International Conference on Solid-State and Integrated Circuit Technology, Xi'an, China, Oct. 29 – Nov. 1, 2012.
638. C. X. Zhang, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, S. Dhar, S. H. Ryu, X. Shen, and S. T. Pantelides, "Bias-temperature instabilities and radiation effects on SiC MOS devices," Annual SiC MOS Workshop, College Park, MD, USA, August 16-17, 2012.
639. S. Mukherjee, Y. S. Puzyrev, J. M. Hinckley, R. D. Schrimpf, D. M. Fleetwood, J. Singh, and S. T. Pantelides, "Hot-carrier degradation of AlGaN HEMTs," 39th International Symposium on Compound Semiconductors, Santa Barbara, CA, Aug. 27-30, 2012.
640. E. X. Zhang, D. M. Fleetwood, S. A. Francis, C. X. Zhang, F. El-Mamouni, and R. D. Schrimpf, "Charge pumping and DCIV currents in SOI FinFETs," International Semiconductor Device Research Symposium, College Park, MD, Dec. 7-9, 2011.
641. R. A. Reed, R. A. Weller, M. H. Mendenhall, K. M. Warren, R. D. Schrimpf, D. M. Fleetwood, B. Sierawski, N. Dodds M. King, A. DasGupta, F. El-Mamouni, D. Black, "Applications of MRED," 8th Geant4 Space Users Workshop, Tsukuba, Japan, December 7-9, 2011.
642. E. X. Zhang, A. K. M. Newaz, S. Bhandaru, B. Wang, C. X. Zhang, M. L. Alles, D. M. Fleetwood, K. I. Bolotin, R. D. Schrimpf, S. T. Pantelides, S. M. Weiss, R. A. Reed, and R. A. Weller, "X-ray-induced defect formation in graphene," American Vacuum Society Symposium 58, Nashville, TN, Oct. 31-Nov. 4, 2011.
643. K. H. Warnick, Y. S. Puzyrev, T. Roy, D. M. Fleetwood, R. D. Schrimpf, and S. T. Pantelides, "Room-temperature native defect diffusion in semiconductors," American Vacuum Society Symposium 58, Nashville, TN, Oct. 31-Nov. 4, 2011.
644. S. Bhandaru, S. M. Weiss, E. X. Zhang, D. M. Fleetwood, R. A. Reed, R. A. Weller, B. R. Rogers, and R. R. Harl, "Effect of 10-keV x-rays on silicon oxidation," American Vacuum Society Symposium 58, Nashville, TN, Oct. 31-Nov. 4, 2011.
645. X. Shen, S. Dasgupta, R. A. Reed, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Metastable defects and recoverable degradation in InAs/AlSb HEMTs," American Vacuum Society Symposium 58, Nashville, TN, Oct. 31-Nov. 4, 2011.
646. B. R. Tuttle, R. D. Schrimpf, D. M. Fleetwood, and S. T. Pantelides, "Atomic-scale physical mechanisms for reliability modeling of microelectronics," DOD High Performance Users Group Conference, Portland, OR, June 21-23.
647. T. Roy, E. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, Y. S. Puzyrev, and S. T. Pantelides, "Reliability limiting defects in AlGaN/GaN HEMTs," 2011 IEEE Intl. Reliability Physics Symposium, Monterey, CA, April 10-14, 2011.
648. M. L. Alles, J. L. Davidson, S. T. Pantelides, R. D. Schrimpf, D. M. Fleetwood, K. I. Bolotin, J. U. Lee, and C. D. Cress, "Radiation effects in carbon devices – It's all about the substrate," Government Microcircuit Applications and Critical Technologies Conference, Orlando, FL, March 21-24, 2011.
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683. D. M. Fleetwood and N. Giordano, "1/*f* Noise in Metal Films: Resistivity Dependence and Sample-to-Sample Variations," Noise in Physical Systems, Montpellier, France, May 1983.

External Seminars

684. D. M. Fleetwood, "1/*f* noise, radiation effects, and defects in microelectronic devices," imec, Leuven, Belgium, June 5, 2025.
685. D. M. Fleetwood, "Moore's law and radiation effects," Physics Department Career Seminar, Purdue University, March 26, 2025.
686. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, University of Central Florida, March 13, 2025.
687. D. M. Fleetwood, "1/*f* noise, radiation effects, and defects in microelectronic devices," IEEE NPSS Distinguished Lecture, University of Central Florida, November 13, 2024.
688. D. M. Fleetwood, "Moore's law and radiation effects," ETH-Zurich, October 20, IEEE NPSS Distinguished Lecture, 2023.
689. D. M. Fleetwood, "Moore's law and radiation effects," Michigan State University, April 21, 2023.
690. D. M. Fleetwood, "Moore's law and radiation effects," Raj and Jeannette Mittra Distinguished Lecture, Pennsylvania State University, April 7, 2023.
691. D. M. Fleetwood, "Use and misuse of statistics," L3Harris Webinar (via Zoom), June 16, 2022.
692. D. M. Fleetwood, "75th anniversary of the transistor, Moore's Law, and radiation effects on microelectronics," EPFL/IEEE Swiss Section, Neuchatel, Switzerland, IEEE NPSS Distinguished Lecture, June 8, 2022.
693. D. M. Fleetwood, "Moore's law and radiation effects," NPSS INSAT (National Institute of Applied Science and Technology) Student Branch Chapter, Tunisia, IEEE NPSS Distinguished Lecture, via Google Meet, Nov. 22, 2021.
694. D. M. Fleetwood, "1/*f* noise, radiation effects, and defects in microelectronic devices," IEEE NPSS Distinguished Lecture, ISAE SUPAERO, Toulouse, France, June 17, 2021 (via Zoom).

695. D. M. Fleetwood, "Moore's law and radiation effects," Yale University, Special ECE Department Seminar, Nov. 4, 2020 (via Zoom).
696. D. M. Fleetwood, "Are there still roles for elevated-temperature, post-irradiation annealing in radiation-hardness-assurance testing?" JEDEC JC13.4 Working Group Meeting, New Orleans, LA, Jan. 7, 2020.
697. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Los Alamos/Santa Fe IEEE NPSS Chapter, Los Alamos, NM, November 12, 2019.
698. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Northern Virginia IEEE NPSS Chapter, Arlington, VA, September 9, 2019.
699. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Singapore IEEE NPSS Chapter, Singapore University of Technology and Design, July 2, 2019.
700. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, ISAE SUPAERO, Toulouse, France, June 7, 2019.
701. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Universite de Montpellier II, France, June 6, 2019.
702. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Dallas IEEE Section, November 29, 2018.
703. D. M. Fleetwood, "Moore's law and radiation effects," seminar at Texas Instruments, Dallas, TX, November 29, 2018.
704. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, Oakland/East Bay Chapter of the IEEE NPSS, November 16, 2017.
705. D. M. Fleetwood, "Basic mechanisms of radiation effects," National University of Defense Technology, Changsha, China, Sept. 4, 2017.
706. D. M. Fleetwood, "Evolution of total ionizing dose effects in MOS devices with Moore's Law scaling," IEEE NPSS Distinguished Lecture, National University of Defense Technology, Changsha, China, Sept. 4, 2017.
707. D. M. Fleetwood, "Moore's law and radiation effects," IEEE NPSS Distinguished Lecture, University of Wollongong, Center for Medical Radiation Physics, August 14, 2017.
708. D. M. Fleetwood, "Moore's law and radiation effects," University of Electronic Science and Technology of China, Chengdu, China, May 22, 2017.
709. D. M. Fleetwood, "Moore's law and radiation effects," Micron Technology: Friday Forum, Boise, ID, May 5, 2017.
710. D. M. Fleetwood, "Moore's law and radiation effects," Iowa State University, Distinguished Lecture, ECE Department, Ames, IA, Oct. 7, 2016.
711. E. X. Zhang, C. Liang, C. X. Zhang, D. M. Fleetwood, R. D. Schrimpf, M. L. Alles, R. A. Reed, K. Bolotin, and S. T. Pantelides, "Radiation effects in 2D materials and devices," University of Memphis, Physics Dept. Colloquium, Oct. 7, 2016.
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713. D. M. Fleetwood, J. Chen, R. Jiang, E. X. Zhang, S. Mukherjee, R. D. Schrimpf, Y. S. Puzyrev, and S. T. Pantelides, "Radiation response, 1/*f* noise, and reliability of GaN/AlGaN HEMTs," Tsinghua University, Beijing, China, June 17, 2016.
714. D. M. Fleetwood, E. X. Zhang, C. X. Zhang, G. X. Duan, and R. D. Schrimpf, "Radiation effects and reliability of advanced CMOS devices," Beijing Microelectronics Technology Institute, Beijing, China, June 16, 2016.
715. D. M. Fleetwood, "Moore's law and radiation effects," Tsinghua University, IEEE NPSS Distinguished Lecture, Beijing, China, June 15, 2016.
716. D. M. Fleetwood, "Moore's law and radiation effects," Univ. Jean Monnet St. Etienne, IEEE NPSS Distinguished Lecture, ECE Department, St. Etienne, France, April 28, 2016.
717. D. M. Fleetwood, "Moore's law and radiation effects," Boston University, Distinguished Lecture, ECE Department, Boston, MA, Sept. 30, 2015.
718. R. D. Schrimpf, W. G. Bennett, S. L. Weeden-Wright, M. L. Alles, R. A. Reed, D. M. Fleetwood, E. X. Zhang, D. Linten, M. Jurzak, R. DeGraeve, and A. Fantini, "Reliability issues for RRAM in radiation environments," presented at 5th International Stanford/imec RRAM Workshop, Leuven, Belgium, September 24, 2015.
719. D. M. Fleetwood, "Energies and microstructures of defects contributing to 1/*f* noise in microelectronic materials and devices," Harbin Institute of Technology, Harbin, China, June 5, 2015.
720. D. M. Fleetwood, E. X. Zhang, K. Ni, G. X. Duan, R. D. Schrimpf, and R. A. Reed, "Radiation effects in SiGe and III-V channel MOSFETs," imec, Leuven, Belgium, May 11, 2015.

721. D. M. Fleetwood, E. X. Zhang, K. Ni, R. D. Schrimpf, and R. A. Reed, "Single event transient responses of SiGe and InGaAs MOSFETs," Shanghai Institute for Microsystem and Information Technology, Shanghai, China, Oct. 31, 2014.
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723. R. D. Schrimpf and D. M. Fleetwood, "Radiation effects in devices and ICs: BJT gain degradation and single-event effects," Harbin Institute of Technology, Harbin, China, May 7, 2014.
724. D. M. Fleetwood and R. D. Schrimpf, "Hardness assurance testing of MOS and linear bipolar devices and ICs," Institute of Microelectronics, CAS, Beijing, China, May 5, 2014.
725. R. D. Schrimpf, M. L. Alles, F. El Mamouni, D. M. Fleetwood, E. X. Zhang, and R. A. Reed, "Ultimate CMOS scaling and associated radiation reliability problems," Institute of Microelectronics, CAS, Beijing, China, May 5, 2014.
726. R. D. Schrimpf D. M. Fleetwood, R. A. Reed, and S. T. Pantelides, "Deeming GaN space-worthy," Air Force Research Laboratory, Albuquerque, NM, Dec. 13, 2013.
727. D. M. Fleetwood and R. D. Schrimpf, "Radiation effects and reliability of micro- and nano-electronics," Sandia National Laboratories, Albuquerque, NM, Dec. 12, 2013.
728. R. A. Reed, R. A. Weller, R. D. Schrimpf, M. Alles, B. Sierawski, M. King, F. El-Mamouni, I. Samsel, D. M. Fleetwood, M. H. Mendenhall "Radiation-induced soft errors in advanced electronic devices," Columbia University, New York, NY, Sept. 10, 2013.
729. D. M. Fleetwood and R. D. Schrimpf, "Hardness assurance testing of MOS and linear bipolar devices and ICs."
    - **(a)** Harbin Institute of Technology, Harbin, China, June 19, 2013.
    - **(b)** Xinjiang Institute of Physics and Chemistry, Urumqi, China, June 17, 2013.

730. R. D. Schrimpf, M. L. Alles, F. El-Mamouni, D. M. Fleetwood, E. X. Zhang, and R. A. Reed, "Ultimate CMOS scaling and associated radiation reliability problems."
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731. D. M. Fleetwood, T. Roy, J. Chen, X. Shen, Y. S. Puzyrev, E. X. Zhang, C. X. Zhang, R. D. Schrimpf, and S. T. Pantelides, "Low-frequency noise and defects in GaN devices," Air Force Research Laboratory seminar, Dayton, OH, Nov. 30, 2012.
732. D. M. Fleetwood, S. T. Pantelides, and R. D. Schrimpf, "Multi-scale simulation of reliability in emerging electronic materials and devices," Air Force Research Laboratory seminar, Dayton, OH, Nov. 30, 2012.
733. S. T. Pantelides, D. M. Fleetwood, and R. D. Schrimpf, "Modeling, theory, and reliability prediction," Air Force Research Laboratory seminar, Dayton, OH, Nov. 30, 2012.
734. D. M. Fleetwood, R. D. Schrimpf, E. X. Zhang, J. J. Song, and F. El-Mamouni, "Radiation effects in SOI FinFETs," Shanghai Institute for Microsystem and Information Technology, March 23, 2012.
735. D. M. Fleetwood, "A brief history of radiation effects through highly cited papers," Shanghai Institute for Microsystem and Information Technology, March 22, 2012.
736. D. M. Fleetwood, R. D. Schrimpf, R. A. Weller, and P. E. Dodd, "Total dose and single event effects in highly scaled CMOS microelectronics," Shanghai Institute for Microsystem and Information Technology, June 24, 2010.
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738. D. M. Fleetwood, "Effects of defects on MOS reliability and radiation response," Shanghai Institute for Microsystem and Information Technology, Jan. 18, 2010.
739. D. M. Fleetwood, "Moore's law," Shanghai University of Engineering Science, Jan. 18, 2010.
740. D. M. Fleetwood, E. X. Zhang, and R. D. Schrimpf, "Radiation effects and ZRAMs in SOI technologies," Shanghai Institute for Microsystem and Information Technology, Jan. 15, 2010.
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742. D. M. Fleetwood, "Radiation effects on microelectronics," ENCOMM seminar, Ohio State University, Feb. 20, 2009.
743. D. M. Fleetwood and X. J. Zhou, "Potential effects of moisture and aging on RADFET radiation response," SiCel Technologies, Morrisville, NC, September 27, 2007.

744. D. M. Fleetwood and X. J. Zhou, "Low frequency noise in MOSFETs with SiO_2 or high-K gate dielectrics," National Semiconductor, Santa Clara, CA, August 23, 2007.
745. X. J. Zhou and D. M. Fleetwood, "Effects of aging on MOS low frequency noise," National Semiconductor, Santa Clara, CA, August 23, 2007.
746. R. D. Schrimpf, R. A. Weller, R. A. Reed, K. Warren, D. M. Fleetwood, and L. W. Massengill, "Radiation effects on emerging electronic materials and devices," IBM, Austin, TX, Nov. 13, 2006.
747. D. M. Fleetwood, "Radiation Effects on Electronics in the Space Environment," Purdue University, Physics Dept., Feb. 18, 2003.
748. D. M. Fleetwood, "1/*f* Noise in Metals and MOSFETs," Rice University, February 22, 2002.
749. D. M. Fleetwood, "Thermally Stimulated Current Studies of Defects in SiO_2," Physics Department Seminar, Purdue University, April 7, 2000.
750. D. M. Fleetwood, "The Protonic Nonvolatile Memory," Sandia National Laboratories, Physics and Chemistry Colloquium Series, June 16, 1999; and Vanderbilt University, ECE Dept. Seminar, April 7, 1999.
751. D. M. Fleetwood, "Radiation Effects in the Space Telecom Environment," University of Central Florida, ECE Dept. Seminar, April 13, 1999; Virginia Tech, EE/MSE Dept. Seminar, March 18, 1999; and Texas A&M, ECE Dept. Seminar, February 10, 1999.
752. D. M. Fleetwood, "Mobile Protons and Thermally Stimulated Current in the Si/SiO_2 System," Ohio State University Physics Dept. Seminar, Sept. 22, 1998.
753. D. M. Fleetwood, "The MOS Gate Oxide," University of New Mexico Microelectronics Reliability Lecture Series, Albuquerque, NM, February 10, 1998.
754. D. M. Fleetwood, W. L. Warren, M. R. Shaneyfelt, B. L. Draper, J. R. Schwank, P. S. Winokur, M. G. Knoll, and C. L. Renschler, "Low-Power, Nonvolatile Memory Elements Based on Mobile Protons in Si/SiO_2 Structures," Motorola Semiconductor Products Sector Seminar, Austin, TX, March 24, 1998.
755. D. M. Fleetwood, "Radiation Effects on Electronics in Space," Materials Science and Engineering Department Seminar, Lehigh University, Bethlehem, PA, February 19, 1997.
756. D. M. Fleetwood, "Border Traps in MOS Devices," Materials Science & Engineering Dept. Seminar, Lehigh U., Bethlehem PA, Feb. 19, 1997; and Physical Sciences Seminar, AT&T Bell Laboratories, Murray Hill, NJ, October 10, 1995.
757. D. M. Fleetwood, "Reduced Radiation Hardness of Bipolar Devices in Space Environments," University of Bordeaux, France, Sept. 15, 1995; Alcatel Espace, Toulouse, France, Sept. 13, 1995; and University of Montpellier, France, Sept. 11, 1995.
758. D. M. Fleetwood, "Origin(s) of 1/*f* Noise in MOS Transistors," Texas Instruments Research Labs, Dallas, TX, November 7, 1991; Purdue University, W. Lafayette, IN, September 20, 1991; and University of Arizona, Tucson, AZ, August 30, 1991.
759. D. M. Fleetwood, "1/*f* Noise and Defects in MOS Transistors: Links to Radiation-Induced Trapped Charge," Vanderbilt University, Nashville, TN, March 15, 1991; Lehigh University, Bethelehem, PA, September 27, 1990.
760. D. M. Fleetwood, "Microelectronics for Space: How to Keep a Would-Be HAL from Mucking Up Your Jupiter Probe," University of Illinois at Urbana-Champaign, May 15, 1989.
761. D. M. Fleetwood, "Radiation Effects on Microelectronics: Physics and Phenomenology," Oberlin College, Oberlin, OH, Sept. 9, 1988.