Vincent M. Donnelly

John and Rebecca Moores Professor
Department of Chemical and Biomolecular Engineering — Ph: (713) 743-4313
University of Houston — Fax: (713) 743-4323
Houston, TX 77204-4004 — vmdonnelly@uh.edu

EDUCATION

- Ph.D., Physical Chemistry, University of Pittsburgh, Pittsburgh Pa., 1977, Thesis Advisor: Prof. F. Kaufman.
- B.A., Chemistry, LaSalle College, Philadelphia, Pa., 1972

EXPERIENCE

2002- present:	Professor, Department of Chemical Engineering, University of Houston, Houston, TX 77204-4004.
2001:	Distinguished Member of Technical Staff, Agere Systems, Murray Hill, NJ.
1993 - 2001:	Distinguished Member of Technical Staff, Bell Laboratories, Lucent Technologies (formerly AT&T), Murray Hill, NJ.
1979 - 1993:	Member of Technical Staff, AT&T Bell Laboratories, Murray Hill, NJ.
1977 - 1979:	National Research Council Postdoctoral Fellow, Naval Research Laboratory, Washington D.C.

RECENT RESEARCH ACTIVITIES

- Chemistry and Mechanisms in Plasmas and Plasma Etching
- Optical Diagnostic Techniques for Plasmas
- Plasma-Surface Interactions
- Nano-fabrication methods, employing plasmas
- Plasma Etching of New Materials
- Atmospheric Pressure Plasmas

HONORS AND AWARDS

- Cullen College of Engineering 2014 Fluor Daniel Research Award.
- American Vacuum Society's John Thornton Memorial Award, 2011.
- University of Houston Research and Scholarship Award, 2010.
- University of Houston John and Rebecca Moores Professorship, 2008.
- University of Houston Cullen College of Engineering Senior Research Award, 2007
- American Vacuum Society Plasma Science and Technology Division Plasma Prize, 2003
- American Vacuum Society Fellow, 1997.
- Bell Labs 1997 Research Area Affirmative Action Award.
- AT&T Bell Laboratories Distinguished Member of Technical Staff Award, 1993.
- Tegal Corporation Thinker Award in Recognition of Pioneering Research in the Application of Optical Diagnostic Techniques to Plasma Processing, May, 1991.

- National Research Council Postdoctoral Fellowship, 1977-1979
- LaSalle College Analytical Chemistry Award, 1972.
- American Institute of Chemists Chemistry Award, 1972.

OTHER PROFESSIONAL ACTIVITIES

- Dry Process Symposium Advisory Committee 2014.
- Gaseous Electronics Conference Allis Prize Committee, 2008-2012.
- Group Leader for the DOE-sponsored "Plasma 2010-Low Temperature Plasma Science Workshop-Science Challenges for the Next Decade", UCLA, 25-27 March 2008.
- Program Committee for the International Dry Process Symposium, Japan, 2005, 2008, 2013.
- Session Organizer for the 2007 American Institute of Chemical Engineers Symposium
- Session Organizer for the 2006American Institute of Chemical Engineers Symposium
- Topic Organizer for the 2006 IEEE International Conference on Plasma Science.
- Organizing Committee for the 2005 International Conference on Reactive Plasmas, Japan.
- Session Organizer for the 2004 IEEE International Conference on Plasma Science.
- Chair of the American Vacuum Society Plasma Science and Technology division, 1999-2001.
- Advisory Committee of The Industrial Physicist, 2000-2003.
- Member of the National Research Council's Plasma Science Committee, 1995-1998.
- Member of Bell Laboratories Recruiting Advisory Committee, 1996-2000.
- Sematech Plasma Diagnostics Process Technical Advisory Board member, 1995-2001.
- Semiconductor Research Corporation (SRC) mentor, 1995-2001.
- Organizer of 1994 Materials Research Society Symposium on Chemical Perspectives in
- Microelectronics Processing, Boston, MA, December 1-5, 1994.
- Chairperson of the 1992 Tegal Plasma Symposium.
- SRC Mentor, 1992.
- Organizer of 1986 Materials Research Society Symposium on Photon, Beam and Plasma Stimulated Processes at Surfaces, Boston, MA, December 1-5, 1986.

RESEARCH GRANTS, GIFTS AND DONATIONS

- Equipment Donation from Bell Labs and Agere Systems, 2002, $500,000.
- "Nanopantography", **National Science Foundation**, Aug. 2003-July 2007, $1,000,000 (joint with D. Economou, P. Ruchhoeft, and S. Jin).
- "Heterogeneous Radical Recombination on Dynamic Surfaces in Reactive Environments", **American Chemical Society Petroleum Research Fund**, May 2003-Apr 2006, $80,000.
- "Spatially-Resolved Diagnostics and Modeling of Microhollow Discharges", **Department of Energy and National Science Foundation**, Aug 2003-Jul 2006, $470,000 (joint with D. Economou).
- "Etching of High-K Dielectric Materials", **Semiconductor Research Corporation**, Aug. 2003-Jul 2006, $252,880.
- "Etching of High-K Dielectric Materials", **GEAR (U. Houston)**, Sept. 2003-Aug 2004, $21,700.

- "Energetic (100's of eV) Neutral Beams for Advanced Microelectronics Manufacturing", **Texas Advanced Technology Program**, Jan. 2004-Dec. 2005, $160,000 (joint with D. Economou).
- Donation of Commercial Plasma Etching Cluster Tool, **Tokyo Electron,** 2005, $1,600,000 (joint with D. J. Economou).
- "Heterogeneous Radical Recombination on Dynamic Surfaces in Reactive Environments"**, GEAR (U. Houston),** Sept 2005-Aug. 2006, $25,500.
- "MRI: Development of an Energetic Atom Beam Lithography System for Nanosystem Prototyping and Manufacturing," **National Science Foundation**, 09/01/05 - 08/31/08, $296,142 (joint with John C. Wolfe, D. J. Economou, D. Litvinov, and P. Ruchhoeft).
- "Time and Space-Resolved Diagnostics and Modeling of Power-Modulated Atmospheric Pressure Micro-Discharges", **Department of Energy and National Science Foundation**, 01/01/07 – 12/31/09, $450,000 (joint with D. Economou).
- "A Novel Method for Massively Parallel Formation of Nanometer-Scale Patterns and Shapes", **Texas Advanced Research Projects,** June 2006 – May 2008, $100,000 (joint with D. J Economou).
- "Spectroscopic Studies of Hydrocarbon-Ammonia Plasmas Used in Plasma-Enhanced Chemical Vapor Deposition of Carbon Materials" **GEAR (U. Houston)**, Sept 2006-Aug. 2007, $30,000.
- "Neutral Beam Etching", **Tokyo Electron Corp**., June 2006 - June 2008, $100,000 (joint with D. J Economou).
- "Plasma Research Gift", **Lam Research Inc**., Sept 2006 – Sept 2007, $35,000.
- "Plasma Research Gift", **Lam Research Inc**., Sept 2007 – Sept 2008, $35,000.
- "Plasma Research Gift", **Lam Research Inc**., Sept 2008 – Sept 2009, $35,000.
- "Plasma Research Gift", **Lam Research Inc**., Sept 2009 – Sept 2010, $35,000.
- "Plasma Research Gift", **Lam Research Inc**., Sept 2010 – Sept 2011, $35,000.
- Donation of Miscellaneous Plasma Equipment, **Tokyo Electron,** 2008, $500,000 (joint with D. J. Economou).
- "Trace Rare Gases Optical Emission Spectroscopy", **Tokyo Electron Corp**., Feb. 2007 – Feb. 2008, $100,000 (joint with D. J Economou).
- "Systematic Studies of Plasma Reactions on Dynamic Surfaces, Using a Novel Rotating Substrate", **National Science Foundation**, May 1, 2007, Apr. 30, 2010, $299,999.
- "Surface Kinetics of Amorphous Silicon Deposition and an Advanced Method for Low Temperature Growth and Control of Nano-Crystalline Films, Based on the 'Spinning Wall' Method" **GEAR (U. Houston)**, Sept 2007-Aug. 2008, $25,000.
- "Trace Rare Gases Optical Emission Spectroscopy", **Tokyo Electron Corp**., Oct. 2008 – Apr. 2009, $55,000 (joint with D. J Economou).
- "Trace Rare Gases Optical Emission Spectroscopy", **Tokyo Electron Corp.**, Dec. 1, 2009-Nov. 30, 2010, $35,000 (joint with D. Economou).
- "Growth and Crystallization of Amorphous Silicon Using a Novel Dual-Plasma Reactor with Rotating Substrates", **TCSUH (University of Houston)**, Sept 2008 – Aug. 2009, $20,000 (joint with D. J. Economou).
- "Pulsed Plasma with Synchronous Boundary Voltage for Rapid Atomic Layer Etching", **Department of Energy and National Science Foundation**, 07/15/09 - 07/14/12, $545,000 (joint with D. J. Economou).
- "Predictive Control of Plasma Kinetics: Multi-Phase and Bounded Systems", **Department of Energy Center** (multiple PIs), 09/01/09 - 08/31/13, $525,000 (VMD's share).

- "Pulsed Plasma with Synchronous Boundary Voltage for Rapid Atomic Layer Etching – Equipment Supplement, **Department of Energy, University of Houston Matching Funds**, 07/15/09 - 07/14/10, $ 177,010 (joint with D. J. Economou).
- Donation of Surface Wave Plasma Source, **Tokyo Electron,** 2010, $300,000, (joint with D. J. Economou).
- "Predictive Control of Plasma Kinetics: Multi-Phase and Bounded Systems – Equipment Supplement, **Department of Energy Center (multiple PIs), University of Houston Matching Funds**, 09/01/09 - 08/31/10, $150,000, (joint with D. J. Economou).
- "Systematic Studies of Plasma Reactions on Dynamic Surfaces, Using a Novel Rotating Substrate", **National Science Foundation**, 08/03/09, $ 5,962.
- "Systematic Studies of Plasma Reactions on Dynamic Surfaces, Using a Novel Rotating Substrate", **National Science Foundation**, May 15, 2010, Apr. 30, 2013, $299,999.
- "Large Area-Rapid Manufacturing of Virtually Any Nanopattern Using Nanopantography", **National Science Foundation**, Aug. 1, 2010 – July 31, 2013, $450,000 (joint with D. Economou).
- "Precision Etching", **Varian Corp.**, May 1, 2010 – June 30, 2012, $150,000 (joint with D. J. Economou).
- "Fundamental Study of Silicon Nitride and Silicon Etching by Ionic and Neutral Species Found in Fluorocarbon Plasmas", **Lam Research Corp.**, Sept 1, 2011 – Aug. 31, 2013, $397,000 (joint with D. Economou).
- "Etching of TiN for High-k/Metal Gate-Last Integration", **Texas Instruments**, Oct. 1, 2011 – Sept. 30, 2012, $60,000 (joint with D. Economou).
- "Plasma Wall Interactions in HBr/O_2-Containing Plasmas", **Tokyo Electron America**, Apr. 1, 2013, May 31, 2014, $135,000 (joint with D. Economou).
- "Gift for Research in Plasma-Wall Interactions", **Hitachi Corp.**, Sept 1, 2013 – Aug 31, 2014, $40,000.
- "MRI: Electron Beam Lithography", **National Science Foundation**, Mar. 15, 2010 – Feb. 28, 2013, $800,000 (joint with multiple co-investigators).
- "PRI:AIR Technology Translation - Control of Ion Energy Distributions in Plasma Processing", **National Science Foundation**, Dec. 1, 2013 – May 31, 2015, $149,997 (joint with D. Economou).
- "Diagnostic Studies of a Microwave Plasma System: RLSA TM", **Tokyo Electron America**, Jan. 1, 2014 – June 30, 2014, $67,500 (joint with D. Economou).
- "Diagnostic Studies of a Microwave Plasma System: RLSA TM", **Tokyo Electron America**, Mar. 1, 2014 – Oct. 1, 2014, $49,000 (joint with D. Economou).
- "Plasma-Wall Interactions", **Samsung Corp.**, Feb. 1, 2014 – Oct. 2015, $400,000.
- "Diagnostic Studies of a Microwave Plasma System: RLSA TM", **Tokyo Electron America**, Sept. 1, 2013 – Aug. 31, 2015, $166,300 (joint with D. Economou).
- "Predictive Control of Plasma Kinetics: Multi-phase Kinetics: Multi-phase and Bounded Systems", **Department of Energy through the University of Michigan,** (multiple PIs), Aug. 15, 2014 – Aug 15, 2015, **$**96,500 (VMD's share).
- "Atomic Layer Etching of SiO2 Using Self-Limited Fluorocarbon Films", **Lam Research Corporation**, July 1, 2014 – July 1, 2016, $374,463 (joint with D. Economou).
- "Plasma-Surface Interactions During Photo-Assisted Etching", **National Science Foundation**, July 15, 2015 –July 14, 2018 $434,998 (joint with D. Economou).
- "Plasma Research Gift", **Tokyo Electron America**, Oct. 1, 2015 – Sept. 30, 2016, $75,000.

- “Plasma Science Center on Control of Plasma Kinetics: Renewal Years”, **Department of Energy through the University of Michigan**, Aug. 15, 2015 –Aug. 15, 2017, $398,000 (joint with D. Economou).
- “SNM: Massively Parallel Nanopatterning by Print and Repeat Nanopantography with Reusable Stencil Masks”, **National Science Foundation**, 09/01/15 - 09/01/19Sept. 1, 2015 –Sept. 1, 2019, $ 1,425,722 (joint with D. Economou, P. Ruchhoeft, and J. Bao).
- “Leveraging Non-steady State Conditions for Next generation Plasma Processing”, **Samsung Corp.** (through University of Michigan), 02/01/16 - 01/31/18, $340,833.
- “Radical Species Diagnostics for Flowable CVD (FCVD)”, MKS Corp., 12/21/15 - 12/31/18, $340,980.

SUPERVISION OF RESEARCH

M.S. Theses Supervised (Completed)

1. Sung Joong Kang, "Optical Diagnostics Studies of Carbon Nanotubes Plasma Enhanced Chemical Vapor Deposition," **M.S. Thesis**, May 2005. Currently with S.G. South Korea.

2. Manish Kumar Jain, "Simulations and Experimental Studies of Nanopantography, a Method for Parallel Patterning over Large Areas" **M.S. Thesis**, December 2007, (with D. J. Economou as co-advisor). Currently with Bechtel, Houston, TX.

3. Rahul Khandelwal, **course-based M.S.**, December 2007 (with D. J. Economou as co-advisor). Currently with Air Liquide, Houston, TX.

4. Sanbir S. Kaler, "Etching of Si and SiN_x by Beams Emanating from Inductively-Coupled CH_3F/O_2 and CH_3F/CO_2 Plasmas, August 2014 (with D. J. Economou as co-advisor).

5. Eduardo Hernandez, "Optical Emission Diagnostics of Non-Equilibrium Atmospheric Pressure Helium Plasma Jet in Open Air", May 2016 (with D. J. Economou as co-advisor).

Ph.D. Dissertations Supervised (Completed)

1. Mikhail V. Malyshev, "Advanced Plasma Diagnostics for Plasma Processing", **Ph.D. Dissertation**, January 1999 (Bell Labs/Princeton University). Currently with Teza, Chicago, IL.

2. Nickolas Fuller, "Laser Desorption Studies of Plasma Etching", (with Irving Herman, Columbia University, as co-advisor) **Ph.D. Dissertation**, 2000 (Columbia University/Bell Labs). Currently with IBM, Yorktown Heights, NY.

3. Qiang Wang, "Experimental and Theoretical Investigation of Atmospheric Pressure Direct Current Microdischarges," (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, December 2006. Currently with Technip, Houston, TX.

4. Lin Xu, "Nanopantography: A New Method for Massively Parallel Nanopatterning Over Large Areas," (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, August 2007. Currently with Lam Research Corporation.

4. Chunyu Wang, "Plasma Etching of High Dielectric Constant Materials," **Ph.D. Dissertation**, December 2007. Currently with M3, Houston, TX.

5. Sung Joong Kang, "Studies of Plasma Diagnostics for Carbon Nanotube Growth with Plasma Enhanced Chemical Vapor Deposition," **Ph.D. Dissertation**, August 2008. Currently with S.G. North Korea.

6. Joydeep Guha, "Studies of Plasma Surface Interactions by the Spinning Wall Technique," **Ph.D. Dissertation**, August 2008. Currently with Lam Research Corp., Sunnyvale, CA.

7. Alok Ranjan, "Diagnostics of Fast Neutral Beams," (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, August 2008. Currently with Tokyo Electron, Albany, NY.

8. Sergey Belostotskiy, "Diagnostics of High Pressure Microdischarge Plasmas," (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, December 2009. Currently with Applied Materials, Santa Clara, CA.

9. Rohit Khare, "Interactions of Chlorine and Oxygen-Containing Plasmas with Etching Product-Coated Reactor Walls, Studied by the Spinning Wall Technique" **Ph.D. Dissertation**, May 2012. Currently with Lam Research Corp., Sunnyvale, CA.

10. Zhuo (Carol) Chen, "Layer-by-Layer Growth and Nano-crystallization of Si:H Films," (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, December 2012. Currently with MICRON, Boise, Idaho.

11. Weiye Zhu, "Advanced Control of Ion and Electron Energy Distributions and Investigation of in-situ Photo-Assisted Etching" (with D. J. Economou as co-advisor) **Ph.D. Dissertation**, May 2014. Currently with Lam Research Corp., Sunnyvale, CA.

12. Ashutosh Srivastava, "Chamber Wall Interactions with HBr/Cl2/O2 Plasmas Studied by the "Spinning Wall" Method", **Ph.D. Dissertation**, Apr. 27, 2015. Currently with Intel Corp.

13. Siyuan Tian, "Sub-10 nm Nanopantography and Nanopattern Transfer Using Highly Selective Plasma Etching" (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, Mar. 6, 2015. Currently with Lam Research Corp., Sunnyvale, CA.

14. "Photo-Assisted Etching in Halogen Containing Plasmas", Shyam Sridhar (with D. J. Economou as co-advisor), **Ph.D. Dissertation**, August 2016.

15. "Control of the Electron Energy Distribution and Plasma Ignition Delay in a Novel Dual Tandem Inductively Coupled Plasma", Lei Liu, (with D. J. Economou as co-advisor), Ph.D. Dissertation, August, 2016.

University of Houston, 2002-present

Postdocs	*Period*	*Postdocs*	*Period*
P. F. Kurunczi	2003-2005	Luc Stafford	2007-2008
Z-Y. Chen*	2007-2010	Hyungjoo Shin*	2010-2012
E. Karakas*	2011-present	S. Moon*	2011-2012
J. Ju*	2013-2014	V. Samara*	2014-present

Current PhD Students	*Period*	*Current PhD Students*	*Period*
S. Kaler*	2013-present	Q. Lou*	2013-present
T. Ma	2014-present	T. List*	2014-present
T. Nguyen*	2015-present	H. Li	2015-present
Y. Chen*	2015-present	E. Hirsch*	2015-present
R. Sawadichai*	2016-present	L. Du*	2016-present
D. Zhang*	2016-present	Y. Zhao	2016-present
P. Arora	2016-present	L. Peng*	2016-present

Undergraduate Students	*Period*	*Undergraduate Students*	*Period*
C. Czenn	2003-2004	D. Hopkins*	2006
G. Ciaccio*	2005-2006	T. Ouk*	2009-2010
S. Kaler*	2012	E. Hernandez*	2013

____
*co-advised with D. Economou

Bell Labs, 1985-2001

Postdocs	*Period*
V. R. McCrary	1986-1988
J. A. McCaulley	1988-1990
K. V. Guinn	1994-1996
C. C. Cheng	1995-1996
N. Layadi	1996-1997
K. H. A. Bogart	1997-1999
M. V. Malyshev	1999-2000
K. Pelhos	1999-2000

Graduate Students	*University*	*Period*
M. V. Malyshev	Princeton University	1997-1999, PhD
N. C. M. Fuller#	Columbia	1998-2000, PhD

____
#co-advised with I. Herman

Undergraduate Students	*Period*
L. Brown	1986
J. Washington	1990

COURSES DEVELOPED AND TAUGHT, AND STUDENT EVALUATION

Response to Category III in evaluation form. Perfect score=4.00 before 2007 and 5.00 afterwards.

COURSE NUMBER Semester	TITLE	# of RESPONSES	SCORE (Cat. III) VMD / college avg.
CHEE 3300/Fall 02	Material Science and Engineering	20	2.54/3.06
CHEE 3300/Spring 03	Material Science and Engineering	42	2.90/3.13
CHEE 3300/Fall 03	Material Science and Engineering	20	
CHEE 6375/Fall 03	Chemical Processing for Microelectronics	13	3.10 / 3.37
CHEE 3300/Spring 04	Material Science and Engineering	38	3.00/3.17
CHEE 7386/Spring 04	Plasma Processing	8	3.63 / 3.50
CHEE 3300/Fall 04	Material Science and Engineering	19	3.23/3.06
CHEE 3300/Spring 05	Material Science and Engineering	25	2.49/3.21
CHEE 3300/Fall 05	Material Science and Engineering	13	2.79/3.10
CHEE 3300/Spring 06	Material Science and Engineering	22	2.88/3.25
CHEE 3300/Fall 06	Material Science and Engineering	11	3.31/3.09
CHEE 3300/Spring 07	Material Science and Engineering	22	2.74/3.14
CHEE 4300/Spring 07	Chemistry and Physics of Engineering Materials	14	2.48/3.37
CHEE 6397/Spring 07	Chemistry and Physics of Engineering Materials	12	2.56/3.36
CHEE 3300/Fall 07	Material Science and Engineering	14	4.31/3.88
CHEE 6375/Fall 07	Chemical Processing for	12	4.28 / 4.31

	Microelectronics		
CHEE 6300/Spring 08	Chemistry and Physics of Engineering Materials	8	4.79/4.27
CHEE 3300/Fall 08	Material Science and Engineering	23	4.35/3.99
CHEE 3300/Fall 09	Material Science and Engineering	26	4.53/4.00
CHEE 6397/Fall 09	Experimental Methods in Chemical Engineering		team taught, lecturer, no evals.
CHEE 4300/Spring 10	Chemistry and Physics of Engineering Materials	3	4.67/4.34
CHEE 6300/Spring 10	Chemistry and Physics of Engineering Materials	11	4.55/4.37
CHEE 6397/Fall 10	Experimental Methods in Chemical Engineering		team taught, coordinator and lecturer, no evals.
CHEE 7387/Fall 10	Plasma Processing	12	4.75/4.37
CHEE 6397/Fall 11	Experimental Methods in Chemical Engineering		team taught, coordinator and lecturer, no evals.
CHEE 4300/Spring 12	Chemistry and Physics of Engineering Materials	4	4.50/4.04
CHEE 6300/Spring 12	Chemistry and Physics of Engineering Materials	9	4.38/4.39
CHEE 6397/Fall 12	Experimental Methods in Chemical Engineering		team taught, coordinator and lecturer, no evals.
CHEE 7387/Spring 13	Plasma Processing	5	5.00/4.60
CHEE 6300/Fall 13	Chemistry and Physics of Engineering Materials	17	4.24/4.35
CHEE 6397/Spring 14	Experimental Methods in Chemical Engineering		team taught, coordinator and lecturer, no evals.
CHEE 3300/Fall 14	Material Science and Engineering	20	4.25/4.10
CHEE 3300/Spring 15	Material Science and Engineering	59	3.78/3.93
CHEE 6300/Fall 15	Chemistry and Physics of Engineering Materials	17	4.53/4.3

CHEE 6375/Spring 16	Semiconductor Processing		
CHEE 3300/Fall 16	Material Science and Engineering	54	4.25/4.03
CHEE 7387/Spring 17	Plasma Processing	17	

UNIVERSITY SERVICE

- Graduate Program Director, 2007 – present
- GAANN Director, 2009 – 2012
- Supervision of Machine Shop Operation, 2005 – present
- College Faculty Research Committee, 2005 - 2008
- Faculty Search Committee, 2005-2006, 2008-2009
- Department Post Tenure Review Committee, 2006 – present
- Thesis Committees, 2002-present
- Radiation Safety Committee, 2011-present
- Radiation Safety Committee vice-chair, 2014-present
- Graduate Standards Committee, 2012-present

PUBLICATIONS

227 publications on plasma processing physics and chemistry, surface and gas-phase kinetics, spectroscopy, plasma etching, chemical vapor deposition, laser-processing of materials, and semiconductor lasers (see attached list).

H-index (via Google Scholar) = 57 in 2015.

PATENTS

14 issued (see attached list).

INVITED LECTURES

Over 135 (see attached list).

PUBLICATIONS

1. "Fluorescence Lifetime Studies of NO_2 . I. Excitation of the Perturbed $^2B_2$ State Near 600 nm", V. M. Donnelly and F. Kaufman, J. Chem. Phys. **66**, 4100 (1977).
2. "Mechanism of NO_2 Fluorescence Quenching", V. M. Donnelly and F. Kaufman, J. Chem. Phys. **67**, 4768 (1977).
3. "Fluorescence Lifetime Studies of NO_2. II. Dependence of the Perturbed $^2B_2$ State Lifetime on Excitation Energy", V. M. Donnelly and F. Kaufman, J. Chem. Phys. **69**, 1456 (1978).
4. "Reply to Comment on 'Mechanism of NO_2 Fluorescence Quenching'", V. M. Donnelly and F. Kaufman, J. Chem. Phys. **68**, 5671 (1978).
5. "Multiphoton-Vacuum-Ultraviolet Laser Photodissociation of Acetylene: Emission from Electronically Excited Fragments", J. R. McDonald, A. P. Baronavski, and V. M. Donnelly, Chem Phys. **33**, 161 (1978).
6. "Detection and Monitoring of Airborne Nuclear Waste Materials: Annual Report to the Department of Energy", J. R. McDonald, A. P. Baronavski, L. R. Pasternack, V. M. Donnelly, and R. C. Clark. *NRL Memorandum Report* 3895, (1978).
7. "Laser Excited NO_2 Fluorescence Lifetime Studies in the 600 nm Region", V. M. Donnelly and F. Kaufman, *NBS Special Publication (U.S.)* **526**, 75 (1978).
8. "Multiphoton-Vacuum-Ultraviolet Photodissociation of Simple Polyatomic Molecules", A. P. Baronavski, J. R. McDonald, and V. M. Donnelly, in *Laser Induced Processes in Molecules, Springer Series in Chemical Physics,* **6** , 213 (1979).
9. "Fluorescence Lifetime Studies of NO_2. III. Mechanism of Fluorescence Quenching", V. M. Donnelly and F. Kaufman, J. Chem. Phys. **71**, 659 (1979).
10. "Ammonia Photodissociation at 193 nm: Partitioning of Electronic, Vibrational, and Rotational Energy in the NH_2 Photofragment", V. M. Donnelly, A. P. Baronavski, and J. R. McDonald, Chem. Phys. **43**, 271 (1979).
11. "Excited State Dynamics and Quenching of NH_2 (A^2A_1)", V. M. Donnelly, A. P. Baronavski, and J. R. McDonald, Chem. Phys. **43**, 283 (1979).
12. "Reactions of C_2 $(a^3\Pi_u)$ with CH_4, C_2H_4, C_2H_6, and O_2 at 298 K Studied by Multiphoton UV Dissociation-Laser Induced Fluorescence Detection", V. M. Donnelly and L. Pasternack, Chem. Phys. **39**, 427 (1979).
13. "$C_2O(X^3\Sigma_-)$: Absolute Reaction Rates Measured by Laser Induced Fluorescence", V. M. Donnelly, W. M. Pitts and J. R. McDonald, Chem. Phys. **49**, 289 (1980).
14. "Fluorescence Lifetime Studies of NO_2. IV. Temperature Dependence of Fluorescence Spectra and of Collisional Quenching of Fluorescence", D. G. Keil, V. M. Donnelly, and F. Kaufman, Chem. Phys. **73**, 1514 (1980).
15. "Reactions of C_2 $(X^1\Sigma^-)$ and $(a^3\Pi_u)$ Produced by Multiphoton UV Excimer Laser Photolysis", L. Pasternack, J. R. McDonald, and V. M. Donnelly, in *Laser Probes for Combustion Chemistry*, ed. D. R. Crosley, ACS Symposium Series, ACS Wash. D.C. (1980), p 381.
16. "Pulsed Laser Studies of the Kinetics of C_2O $(A^3\Pi_i$ and $X^3\Sigma^-)$",V. M. Donnelly, W. M. Pitts, and A. P. Baronavski, in *Laser Probes for Combustion Chemistry*, ed. D. R. Crosley, ACS Symposium Series, ACS Wash. D.C., (1980), p 389.
17. "C_2O $(A^3\Pi_i - X^3\Sigma^-)$: Laser Induced Excitation and Fluorescence Spectra", W. M. Pitts, V. M. Donnelly, A P Baronavski, and J. R. McDonald, Chem. Phys. **61**, 451 (1981).
18. "Excited State Dynamics of C_2O $(A^3{}_i)$", W. M. Pitts, V. M. Donnelly, A. P. Baronavski, and J. R. McDonald, Chem. Phys. **61**, 465 (1981).
19. "Studies of Chemiluminescence Accompanying Fluorine Atom Etching of Silicon," V. M. Donnelly and D. L. Flamm, J. Appl. Phys. **73**, 1514 (1980).
20. "The Reaction of Fluorine Atoms with Silicon", D. L. Flamm, V. M. Donnelly, and J. A. Mucha. J. Appl. Phys. **52**, 3633, (1981).
21. "Anisotropic Etching in Chlorine-Containing Plasmas," V. M. Donnelly and D. L. Flamm, Solid State Tech., **24**, 161 (1981).

22. "Chemiluminescence and The Reaction of Molecular Fluorine with Silicon,"J. A. Mucha, V. M. Donnelly, D. L. Flamm, and L. Webb, J. Phys. Chem., **85**, 3529 (1981).
23. "Chemiluminescent Reaction of SiF_2 with Fluorine and the Etching of Silicon by Atomic and Molecular Fluorine," J. A. Mucha, D. L. Flamm, and V. M. Donnelly, J. Appl. Phys. **53**, 4553 (1982).
24. "Frequency and Ion Effects in Chlorine Plasma Etching," *Proc. 5th Intl. Symp. on Plasma Chem.*, p. 307, ed. B. Waldie and G. A. Farnell, Heriot Watt (1981), with R. H. Bruce, D. L. Flamm, B. S. Duncan, G. Collins.
25. "Kinetics and Mechanism of Silicon Etching by Fluorine Atoms and Molecules," *Proc. 5th Intl. Symp. on Plasma Chem.*, p. 293, ed. B. Waldie and G. A. Farnell, Heriot Watt (1981) with D. L. Flamm, J. A. Mucha, M. J. Vasile.
26. "Optical Emission From Transient Species in Halocarbon and Fluorosilicon Plasmas", V. M. Donnelly, D. L. Flamm, and J. A. Mucha, in *Plasma Processing*, R. G. Frieser, C. J. Mogab, eds, Proceedings. Vol. 81-1, Electrochem. Soc., (1981), p 270.
27. "Laser Induced Metal Deposition on InP", R. F. Karlicek, V. M. Donnelly, and G. Collins, J. Appl. Phys. **53**, 1084 (1982).
28. "The Design of Plasma Etchants," D. L. Flamm and V. M. Donnelly, Plasma Chemistry and Plasma Processing, **1**, 317 (1981).
29. "Laser Diagnostics of Plasma Etching: Measurement of Cl_2^+ in a Chlorine Discharge," V. M. Donnelly, D. L. Flamm, and G. Collins, J. Vac. Sci. Technol. **21**, 817 (1982).
30. "Development of Laser Diagnostic Probes for Chemical Vapor Deposition of InP/GaInAsP Epitaxial Layers", V. M. Donnelly and R. F. Karlicek, J. Appl. Phys. **53**, 6399 (1982).
31. "Temperature Dependence of InP and GaAs Etching in a Chlorine Plasma," V. M. Donnelly, D. L. Flamm, C. W. Tu, D. E. Ibbotson, J. Electrochem. Soc. **129**, 2533 (1982).
32. "Basic Chemistry and Mechanisms of Plasma Etching", D. L. Flamm, V. M. Donnelly, and, D. E. Ibbotson, J. Vac. Sci. Technol. B. **1**, 23, (1983).
33. "XeF_2 and F-Atom Reactions with Si: Their Significance for Plasma Etching", D. L. Flamm, D. E. Ibbotson, J. A. Mucha, and V. M. Donnelly, Solid State Technology, (April, 1983).
34. "Studies of Plasma Etching of III-V Compounds: The Effects of Temperature and Discharge Frequency", D. L. Flamm, D. E. Ibbotson, V. M. Donnelly, and B. S. Duncan, J. Vac. Sci. Technol. **20**, 489, (1982).
35. "Discharge Characteristics, Optical Emission and Concentration of Species in Cl_2 Plasmas: Their Significance for Plasma Etching," D. L. Flamm and V. M. Donnelly, Bull. Am. Phys. Soc. **27**, 97 (1982).
36. "Laser Spectroscopic Investigation of Gas-phase Processes Relevant to Semiconductor Device Fabrication", R. F. Karlicek, V. M. Donnelly, and W. D. Johnston, in *Laser Diagnostics and Photochemical Processing for Semiconductor Devices*, Materials Research Society Symposium Proceedings, 17, ed. R. M. Osgood, S. J. R. Brueck, and H. R. Schlossberg, 1983, p151.
37. "TEM Observations of Laser-Induced Pt and Au Deposition on InP" D. Brasen, R. F. Karlicek, and V. M. Donnelly, J. Electrochem. Soc. **130**, 1473 (1983).
38. "Plasma Etching of III-V Compound Semiconductors", V. M. Donnelly, D. L. Flamm, and D. E. Ibbotson, J. Vac. Sci. Technol., **41**, 626 (1983).
39. "Time-Dependent Excitation in High and Low Frequency Chlorine Plasmas," D. L. Flamm and V. M. Donnelly, in *Proc. 6th Symp. on Plasma Chem.*, M.I. Boulos, R. J. Munz, eds., **3**, 713 (Univ. Sherbrook & Mc Gill Univ., 1983).
40. "Ion Dynamics in Low Frequency RF Discharges," R. A. Gottscho, D. L. Flamm, R. H Burton, V. M. Donnelly, and G. Davis, in *Proc. 6th Symp. on Plasma Chem.*, M.I. Boulos, R. J. Munz, eds., **3**, 707 (Univ. Sherbrook & Mc Gill Univ., 1983).
41. "Reactions of XeF_2, Fluorine Atoms and Molecular Fluorine with Silicon and SiO_2 Surfaces", D. E. Ibbotson, J. A. Mucha, D. L Flamm, and V. M. Donnelly, in *Proc. 6th Symp. on Plasma Chem.*, M.I. Boulos, R. J. Munz, eds., **3**, 588 (Univ. Sherbrook & McGill Univ., 1983).
42. "Comparison of XeF_2 and F-Atom Reactions with Si and SiO_2," D. E. Ibbotson, D. L .Flamm, J. A. Mucha, and V. M. Donnelly, Appl. Phys. Lett. **44**, 1129 (1984).
43. "Crystallographic Etching of GaAs with Bromine and Chlorine Plasmas," D. E. Ibbotson, D. L. Flamm, and V. M. Donnelly, J. Appl. Phys. **54**, 5974 (1983).
44. "Anisotropic Etching of SiO_2 in Low Frequency CF_4/O_2 and NF_3/Ar Plasmas, V. M. Donnelly, D. L. Flamm, W. C. Dautremont-Smith, and D. J. Werder, J. Appl. Phys. **55**, 242 (1984).

45. "Ion Dynamics of RF Plasmas and Plasma Sheaths", R. A. Gottscho, R. H. Burton, D. L. Flamm, V. M. Donnelly, and G. P. Davis, J. Appl. Phys. **55**, 2707 (1984).
46. "Basic Principles of Plasma Etching for Silicon Devices", D. L. Flamm, V. M. Donnelly, and D. L. Flamm, in *VLSI Electronics: Microstructure Science, Plasma Processing for VLSI*, N. G. Einspruch and D. M. Brown eds., (Academic Press, 1984), Chap. 8.
47. "Fundamental Aspects of Plasma-Surface Interaction and the Etching Process," V. M. Donnelly, D. E. Ibbotson, and D. L. Flamm, in *Ion Bombardment Modification of Surfaces: Fundamentals and Applications*, O. Auciello, R. Kelly, eds., (Elsevier Press, 1984), Chap. 8.
48. "Optical Emission Actinometry and Spectral Lineshapes in RF Glow Discharges", R. A. Gottscho and V. M. Donnelly, J. Appl. Phys. **56**, 245 (1984).
49. "UV Excimer Laser Induced Deposition of InP and Indium-Oxide Films", V. M. Donnelly, M. Geva, J. Long, and R. F. Karlicek, Appl. Phys. Lett., **44**, 951 (1984).
50. "Proton Implanted Stripe Geometry (Al,Ga)As Lasers Using SiO_2 Masking", L. A. Koszi, V. M. Donnelly, W. C. Dautremont-Smith, and P. A. Barnes, IEEE Electron Devices Letters, **ED-31**, 1910 (1984).
51. "Thermal Decomposition of Metalorganic Compounds Used in MOCVD of InP", R. F. Karlicek, J. Long, and V. M. Donnelly, J. Crystal Growth, **68**, 123 (1984).
52. "Excimer Laser-Induced Decomposition of InP: Crystallographic and Mechanistic Studies", V. M. Donnelly, D. Brasen, A. Appelbaum, and M. Geva, J. Appl. Phys., **58**, 2022 (1985).
53. "A Photoluminescence Study of Cd Related Centers in InP", V. Swaminathan, V. M. Donnelly, and J. Long, J. Appl. Phys. **58**, 4565 (1985).
54. "Effect of Frequency on Optical Emission, Electrical, Ion, and Etching Characteristics of a Radio Frequency Chlorine Plasma", V. M. Donnelly, D. L. Flamm, and R. H. Bruce, J. Appl. Phys. **58**, 2135 (1985).
55. "Optical Diagnostic Studies in Plasmas and Plasma Processing", V. M. Donnelly, Mat. Res. Soc. Symp. Proceedings, **68**, 29 (1986).
56. "Excimer Laser-Induced Deposition of InP", V. M. Donnelly, D. Brasen, A. Appelbaum, and M. Geva, J. Vac. Sci. Technol. A. **4**, 716 (1986).
57. "Time-Dependent Excitation in High- and Low-Frequency Chlorine Discharges", D. L. Flamm and V. M. Donnelly, J. Appl. Phys. **59**, 1052 (1986).
58. "Excimer Laser Stimulated Growth of Polycrystalline GaAs Films", V. M. Donnelly, V. R. McCrary, A. Appelbaum, D. Brasen, and W. P.Lowe, J. Appl. Phys., **61**, 1410 (1987).
59. "Characterization of Excimer Laser Deposited GaAs Films from the Photolysis of Trimethylgallium and Trimethylarsine at 193 nm", V. R. McCrary, V. M. Donnelly, D. Brasen, A. Appelbaum, and R. C. Farrow, in *Photon, Beam, and Plasma Stimulated Chemical Processes at Surfaces*, ed. V. M. Donnelly, I. P. Herman, and M. Hirose, **75**, (Materials Research Society, Pittsburgh PA, 1987), pp. 223-231.
60. "Production of Electronically Excited P_2 and In from ArF Excimer Laser Irradiation of InP", V. M. Donnelly, V. R. McCrary, and D. Brasen, in *Photon, Beam, and Plasma Stimulated Chemical Processes at Surfaces*, ed. V. M. Donnelly, I. P. Herman, and M. Hirose, **75**, (Materials Research Society, Pittsburgh, PA, 1987), pp. 567-574.
61. "The Ultraviolet Absorption Spectra of Selected Organometallic Compounds Used in the Chemical Vapor Deposition of Gallium Arsenide", V. R. McCrary and V. M. Donnelly, J. Crystal Growth, **84**, 253 (1987).
62. "Optical Diagnostic Studies of Trimethylphosphine Containing Radio Frequency Discharges", L. Brown, V. M. Donnelly, and V. R. McCrary, Plasma Chemistry and Plasma Processing, **7**, 395 (1987).
63. "Nucleation Considerations in the Wavelength Dependent Activation Selectivity of Aluminum Chemical Vapor Deposition", G. S. Higashi, G. E. Blonder, C. G. Fleming, V. R. McCrary, and V. M. Donnelly, J. Vac. Sci. Technol. B. **5**, 1441 (1987).
64. *"Photon, Beam, and Plasma Stimulated Chemical Processes at Surfaces"*, ed. V. M. Donnelly, I. P. Herman, and M. Hirose, Materials Research Society Symposium Proceedings, **75**, 1987.
65. "Optical Diagnostic Techniques for Low Pressure Plasma Processing", V. M. Donnelly, in *Plasma Surface Interactions and Processing of Materials*, eds. O. Auciello, A. Gras-Marti, J. A. Valles-Abarca, and D. L. Flamm, NATO ASI Series, (Kluwer Academic Publishers, 1988), Vol. 176.

66. "Laser-Modified Molecular-Beam Epitaxial Growth of (Al)GaAs on GaAs and (Ca, Sr)F_2/GaAs Substrates", C. W. Tu, V. M. Donnelly, J. C. Beggy, F. A. Baiocchi, V. R. McCrary, T. D. Harris, and M. G. Lamont, Appl. Phys. Lett. **52**, 966 (1988).
67. "Laser-Assisted Metal-Organic Molecular Beam Epitaxy of GaAs", V. M. Donnelly, C. W. Tu, J. C. Beggy, V. R. McCrary, M. G. Lamont, T. D. Harris, F. A. Baiocchi, and R. C. Farrow, Appl. Phys. Lett. **52**, 1065 (1988).
68. "Selective-Area Epitaxy of GaAs by Molecular Beam Epitaxy (MBE) and Metal-Organic Molecular Beam Epitaxy (MOMBE) with Excimer Laser Irradiation", C. W. Tu, V. M. Donnelly, J. C. Beggy, V. R. McCrary, and J. A. McCaulley, J. Crystal Growth, **95**, 140, (1989).
69. "Optical Diagnostic Techniques for Low Pressure Plasmas and Plasma Processing", V. M. Donnelly, in *Plasma Diagnostics*, eds. D. L. Flamm and O. Auciello, (Academic Press, New York, 1989).
70. "Laser-Induced Decomposition of Triethylgallium and Trimethylgallium Adsorbed on GaAs(100)", J. A. McCaulley, V. R. McCrary, V. M. Donnelly, Journal of Physical Chemistry (F. Kaufman memorial issue), **93**, 1148 (1989).
71. "Direct Pattern Replication in Plasma Deposited Silicon Nitride Films by 193 nm ArF Excimer Laser Induced Suppression of Etching", V. M. Donnelly and J. A. Mucha, Appl. Phys. Lett. **54**, 1567 (1989).
72. "Mechanisms of Dehydrogenation During ArF Excimer Laser Patterning of Plasma-Deposited Silicon Nitride Films", V. M. Donnelly, J. A. Mucha, and V. R. McCrary, J. Appl. Phys. **67**, 3337 (1989).
73. "Infrared Laser Interferometric Thermometry: A Non-intrusive Technique for Measuring Semiconductor Wafer Temperatures", V. M. Donnelly and J. A. McCaulley, J. Vac. Sci. Technol. A. **8**, 84 (1989).
74. "Selected Area Growth of GaAs by Laser Induced Pyrolysis of Adsorbed Triethylgallium", V. M. Donnelly and J. A. McCaulley, Appl. Phys. Lett. **54**, 2458 (1989).
75. "Kinetics of the Thermal Desorption of Indium from GaAs(100)", J. A. McCaulley and V. M. Donnelly, J. Chem. Phys. **91**, 4330 (1989).
76. "Products of Thermal Decomposition of Triethylgallium and Trimethylgallium Adsorbed on Ga-stabilized GaAs(100)", V. M. Donnelly and J. A. McCaulley, Surf. Sci. **238**, 34 (1990).
77. "Methyl Exchange Reaction of Trimethylindium on GaAs(100) and the Preferential Etching of Gallium", V. M. Donnelly and J. A. McCaulley, Surf. Sci. Lett. **235**, L333 (1990).
78. "Laser Induced Etching of InP", V. M. Donnelly and T. R. Hayes, Appl. Phys. Lett. **57**, 701 (1990).
79. "Maskless Laser Interferometric Monitoring of InP/InGaAsP Heterostructure Reactive Ion Etching", T. R. Hayes, P. A. Heimann, V. M. Donnelly, and K. E. Strege, Appl. Phys. Lett. **57**, 2817 (1990).
80. "Products of Pulsed Laser Induced Thermal Decomposition of Triethylgallium and Trimethylgallium Absorbed on GaAs(100)," V. M. Donnelly, Journal of Vacuum Science and Technology, A. **9**, 2887 (1991).
81. "Kinetics of Thermal Decomposition of Triethylgallium, Trimethylgallium, and Trimethylindium Adsorbed on GaAs (100)," J. A. McCaulley, R. J. Shul, V. M. Donnelly, Journal of Vacuum Science and Technology, A. **9**, 2872 (1991).
82. "Intrinsic Mechanisms of Smooth and Rough Morphology in Etching of InP by Cl_2 Determined by Infrared Laser Interferometry," M. Vernon, T. R. Hayes and V. M. Donnelly, J. Vac. Sci. Technol. A. **10**, 3499, (1992).
83. "GaAs Surface Modification by Room Temperature Hydrogen Plasma Passivation," E. Yoon, R. A. Gottscho, V. M. Donnelly and H. S. Luftman, Applied Physics Letters, **60**, 2681 (1992).
84. "Interferometric Thermometry Measurements of Silicon Wafer Temperatures During Plasma Processing," V. M. Donnelly, D. E. Ibbotson, and C.-P. Chang, J. Vac. Sci. Technol. A, **10**, 1060 (1992).
85. "Cu CVD: A Brief Review and Recent Results of Mechanistic Studies of Nucleation on TIN, M. Gross and V. M. Donnelly, *Advanced Metallization for ULSI Applications*, ed. V. S. Rana and R. V. Joshi, Materials Research Society, 1991, pp. 355-366.
86. "Photo-Assisted Chemical Vapor Deposition", V. R. McCrary and V. M. Donnelly, in *Chemical Vapor Deposition*, ed. K. Jensen and M. Hitchman, (Academic Press, 1992).
87. "InP Substrate Temperature Measurements in a Horizontal, Low-Pressure Metal Organic Chemical Vapor Deposition Reactor by Infrared Laser Interferometric Thermometry," V. R. McCrary, V. M. Donnelly, S. G. Napholtz, T. R. Hayes, P. S. Davison and D. C. Bruno, Journal of Crystal Growth, **125**, 320 (1992).

88. "Copper CVD Reactions of Hexafluoroacetylacetonate Cu(I) Vinyltrimethylsilane and bis-Hexafluoroacetylacetonate Cu(II) Adsorbed on Titanium Nitride," V. M. Donnelly, M. E. Gross, J. Vac. Sci. Technol. A. **11**, 1 (1993).
89. "In Situ Passivation of GaAs after BCl_3/Cl_2 Reactive Ion Etching," E. Yoon, R. A. Gottscho, V. M. Donnelly and W. S. Hobson, Journal of Vacuum Science Technology, B. **10**, 2197 (1992).
90. "Ammonia Plasma Passivation of GaAs in Downstream Microwave and RF Parallel Plate Plasma Reactors," E. S. Aydil, K. P. Giapis, R. A. Gottscho, V. M. Donnelly, E. Yoon, J. Vac. Sci. Technol. B. **11**, 195 (1993).
91. "Kinetic Modelling of GaAs Chemical Beam Epitaxy," V. M. Donnelly and A. A. Robertson, Surface Science, **293**, 93 (1993).
92. "Real-Time Determination of the Direction of Wafer Temperature Charge by Spatially-Resolved IR-laser Interferometric Thermometry," V. M. Donnelly, J.Vac. Sci. Technol. A. **11**, 2393 (1993).
93. "Extension of IR-laser Interferometric Thermometry to Silicon Wafers Polished on Only One Side," V. M. Donnelly, Appl. Phys. Lett. **63**, 1396, (1993).
94. "Decomposition of Hexafluoroacetylacetonate Cu(I) Vinyltrimethylsilane on, and Diffusion of, Cu into Single Crystal and Polycrystalline Titanium Nitride", K. V. Guinn, V. M. Donnelly, M. E. Gross, F. A. Baiocchi, I. Petrov, J. E. Greene, Surface Science, **295**, 219 (1993).
95. "Chemical Topography in Anisotropic Etching", K. V. Guinn and V. M. Donnelly, J. Appl. Phys. **75**, 2227 (1994).
96. "Temperature Dependence of the the Refractive Indices of Si, GaAs, and InP", J. A. McCaulley, V. M. Donnelly, M. Vernon, and I. Taha, Phys. Rev. B, **49**, 7408 (1993).
97. "Laser-Induced Desorption as an *In Situ* Probe During Plasma Processing", I. P. Herman, V. M. Donnelly, K. V. Guinn, and C. C. Cheng, Phys. Rev. Lett. **72**, 2801 (1994).
98. "*In- Situ* Pulsed Laser-Induced Thermal Desorption Studies of the Silicon Chloride Surface Layer During Silicon Etching in High Density Plasmas of Cl_2 and Cl_2/O_2 Mixtures", C. C. Cheng, K. V. Guinn, V. M. Donnelly, and I. P. Herman, J. Vac. Sci. Technol. A. **12**, 2630 (1994).
99. "Reactive Ion Etching and Plasma Etching of Silicon", V. M. Donnelly, in *The Encyclopedia of Advanced Materials*, eds. D. Bloor, R. J. Brook, M. C. Fleming, and S. Mahajan, Pergamon Press, 1994.
100. "Quantitative Chemical Topography of Polycrystalline Si Anisotropically Etched in Cl_2/O_2 High Density Plasmas", K. V. Guinn, C. C. Cheng, and V. M. Donnelly, J. Vac. Sci. Technol. B. **13**, 214 (1995).
101. "Competitive Halogenation of Silicon Surfaces in HBr/Cl_2 Plasmas Studied with X-ray Photoelectron Spectroscopy and In-Situ, Real-Time, Pulsed Laser-Induced Thermal Desorption", C. C. Cheng, K. V. Guinn, I. P. Herman, and V. M. Donnelly, J. Vac. Sci. Technol. A. **13**, 1970 (1995).
102. "Mechanism for Anisotropic Etching of Photoresist-Masked, Polycrystalline Silicon in HBr Plasmas", C. C. Cheng, K. V. Guinn, and V. M. Donnelly, J. Vac. Sci. Technol. B. **14**, 85 (1995).
103. "All Dry Lithography: Applications of Plasma Polymerized Methylsilane as a Single Layer Resist and Silicon Dioxide Precursor," T. W. Weidman, O. Joubert, A. M. Joshi, J. T. C. Lee, D. Boulin, E. A. Chandross, R. Cirelli, F. P. Klemens, H. L. Maynard, and V. M. Donnelly, J. Photopolymer Sci. Technol. B. **8**, 679 (1995).
104. "Mass Spectrometric Measurements of Neutral Reactant and Product Densities During Si Etching in a High-Density Helical Resonator Cl_2 Plasma", V. M. Donnelly, J. Appl. Phys. **79**, 9353 (1996).
105. "A Simple Optical Emission Method for Measuring Percent Dissociations of Feed Gases in Plasmas: Application to Cl_2 in a High-Density Helical Resonator Plasma," V. M. Donnelly, J. Vac. Sci. Technol. A, **14**, 1076 (1996).
106. "Surface Analysis During Plasma Etching by Laser-Induced Thermal Desorption," I. P. Herman, V. M. Donnelly, C. C. Cheng, and K. V. Guinn, Jpn. J. Appl. Phys., **35**, 2410 (1996).
107. "Surface Chemistry During Plasma Etching of Si," V. M. Donnelly, I. P. Herman, C. C. Cheng, and K. V. Guinn, Pure and Appl. Chem. **68**, 1071 (1996).
108. "Cl_2 Plasma Etching of Si(100): Nature of the Chlorinated Surface Layer Studied by Angle-Resolved X-Ray Photoelectron Spectroscopy", N. Layadi, V. M. Donnelly, and J. T. C. Lee, J. Appl. Phys. **81**, 6738 (1996).
109. "Cl_2 Plasma Etching of Si(100): Damaged Surface Layer Studied by *In Situ* Spectroscopic Ellipsometry", N. Layadi, V. M. Donnelly, J. T. C. Lee, and F. P. Klemens, J. Vac. Sci. Technol. A. **15**, 604 (1997).

110. "Determination of Electron Impact Excitation Rates and Electron Temperature in Plasmas by Multiple Rare Gas Optical Emission, And Its Implications for Advanced Actinometry", M. V. Malyshev and V. M. Donnelly, J. Vac. Sci. Technol. A **15**, 550 (1996).
111. "Cl_2 Plasma - Si Surface Interactions in Plasma Etching: X-Ray Photoelectron Spectroscopy After Etching, and Optical and Mass Spectrometry Methods During Etching", V. M. Donnelly, N. Layadi, J. T. C. Lee, I. P. Herman, K. V. Guinn, and C. C. Cheng, Proceedings of the NATO ASI on Plasma Processing, Bonas France (Klewer Academic Publishers, Dordrecht, 1997).
112. "Cl_2 Plasma Etching of Si(100): Surface Chemistry and Damage", Proceedings of Symposium M of the Materials Research Society Fall Meeting, Boston, MA, Dec. 2-6, 1996.
113. "Cleaning of CHF_3 Plasma-Etched SiO_2/SiN/Cu Via Structures with Dilute Hydrofluoric Acid Solutions," K. Ueno, V. M. Donnelly, and T. Kikkawa, J. Electrochem. Soc. **144**, 2565 (1997).
114. "Analysis of the Etching of Silicon in an Inductively Coupled Chlorine Plasma Using Laser Thermal Desorption Spectroscopy", J. Y. Choe, I. P. Herman, and V. M. Donnelly, J. Vac. Sci. Technol. A. **15**, 3024 (1997).
115. "Halogen Uptake by Thin SiO_2 Layers on Exposure to HBr/O_2 and Cl_2 Plasmas, Investigated by Vacuum Transfer XPS", V. M. Donnelly and N. Layadi, J. Vac. Sci. Technol. A. **16**, 1571 (1997).
116. "Feature Evolution During Plasma Etching: I. Bulk Crystalline Silicon Etching", M. Vyyoda, H. Lee, M. V. Malyshev, F. P. Klemens, M. Cerullo, V. M. Donnelly, D. B. Graves, A. Kornblit, and J. T. C. Lee, J. Vac. Sci. Technol. A. **16**, 3247 (1998).
117. "Percent Dissociations of Cl_2 in Inductively-Coupled, Chlorine-Containing Plasmas", M. V. Malyshev, V. M. Donnelly, A. Kornblit, and N. A. Ciampa, J. Appl. Phys. **84**, 137 (1998).
118. "Trace Rare Gases Optical Emission Spectroscopy for Determination of Electron Temperatures and Species Concentrations in Chlorine-Containing Plasmas", V. M. Donnelly, M. V. Malyshev, A. Kornblit, N.A. Ciampa, J. I. Colonell, and J. T. C. Lee, Jpn. J. Appl. Phys. **37**, 2388 (1998).
119. "Ultra-thin, 1.03-3.0 nm, Gate Oxides for High Performance sub-100 nm Technology", T. Sorsch, W. Timp, F. H. Baumann, K. H. A. Bogart, T. Boone, V. M. Donnelly, M. L. Green, K. Evans-Lutterodt, C. Y. Kim, S. V. Moccio, J. M. Rosamilia, B. J. Sapjeta, P. J. Silverman, B. E. Weir, and G. L. Timp, VLSI Symposium Proceedings, Honolulu, HI, June 9-11, 1998.
120. "Cleaning of CHF_3 Plasma-Etched SiO_2/SiN/Cu Via Structures Using a Hydrogen Plasma, an Oxygen Plasma, and Hexafluoroacetylacetone Vapors", K. Ueno, V. M. Donnelly, and Y. Tsuchiya, J. Vac. Sci. Technol. B. **16**, 2986 (1998).
121. "Ultrahigh Frequency *vs.* Inductively-Coupled Chlorine Plasmas: Comparisons of Cl and Cl_2 Concentrations and Electron Temperatures Measured by Trace Rare Gases Optical Emission Spectroscopy", M. V. Malyshev, V. M. Donnelly, and S. Samukawa, J. Appl. Phys. **84**, 1222 (1998).
122. "Degree of Dissociation and Aluminum Etching Characteristics in High-Density Chlorine Plasmas", S. Samukawa and V. M. Donnelly, Jpn. J. Appl. Phys. **37**, L1036 (1998).
123. "Selected Topics in Plasma Processing Research", J. T. C. Lee, J.I. Colonell, F.P. Klemens, A. Kornblit, F.H. Baumann, H. Lee, H.L. Maynard, D.M. Tennant, T.W. Sorsch, G.L. Timp, N. Layadi, M.V. Malyshev, V.M. Donnelly, and N.A. Ciampa, *Proceedings of the 193rd meeting of the Electrochemical Society,* San Diego, CA, May 3-8, 1998.
124. "Laser-Induced Thermal Desorption Analysis of the Surface During Ge Etching in a Cl_2 Inductively Coupled Plasma", J. Y. Choe, I. P. Herman, and V. M. Donnelly, J. Vac. Sci. Technol. A. **16**, 3266 (1998)."Langmuir Probe Studies of a Transformer-Coupled Plasma, Aluminum Etcher", M. V. Malyshev, V. M. Donnelly, A. Kornblit, N. A. Ciampa, J. I. Colonell, and J. T. C. Lee, J. Vac. Sci. Technol. A, **17**, 480 (1999).
125. "Interface Formation Between Copper and Low Dielectric Constant Fluoro-Polymer (FLARE™ 1.0): Plasma Surface Modification and Its Effect on Cu Diffusion", M. Du, R. L . Opila, V. M. Donnelly, B. J. Sapjeta, and T. Boone, J. Appl. Phys. **85**, 1496 (1999).
126. "On the Constant Composition and Thickness of the Chlorinated Silicon Surface Layer Subjected to Increasing Etching Product Concentrations During Chlorine Plasma Etching", K. H. A. Bogart and V. M. Donnelly, J. Appl. Phys, **86**, 1822 (1999).
127. "Oxidation of Si Beneath Thin SiO_2 Layers During Exposure to HBr/O_2 Plasmas, Investigated by Vacuum Transfer X-Ray Photoelectron Spectroscopy", V. M. Donnelly, F. P. Klemens, T. W. Sorsch, G. L. Timp, and F. H. Baumann, Applied Physics Letters, **74**, 1260 (1999).

128. "Laser-Induced Fluorescence and Langmuir Probe Determination of Cl_2^+ and Cl^+ Absolute Densities in Transformer-Coupled Chlorine Plasmas", M. V. Malyshev, N. C. M. Fuller, K. H. A. Bogart, V. M. Donnelly, and I. P. Herman, Appl. Phys. Lett., **74**, 1666 (1999).
129. "Mask Charging and Feature Profile Evolution During Chlorine Plasma Etching of Silicon", K. H. A. Bogart, F. P. Klemens, J. Lane, M. V. Malyshev, J. I. Colonell, V. M. Donnelly, and J. T. C. Lee, J. Vac. Sci. Technol. A, **18**, 197 (2000).
130. "Dynamics of Pulsed-Power Chlorine Plasmas", M. V. Malyshev, V. M. Donnelly, J. I. Colonell, S. Samukawa, J. Appl. Phys. **86**, 4813 (1999).
131. "Trace Rare Gases Optical Emission Spectroscopy: A Nonintrusive Method for Measuring Electron Temperatures in Low Pressure, Low Temperature Plasmas", M. V. Malyshev and V. M. Donnelly, J. Phys. E, **60**, 6016 (1999).
132. "Plasma Diagnosis and Charging Damage", M. V. Malyshev, V. M. Donnelly, J. I. Colonell, and S. Samukawa, *Proceedings of the 4th International Symposium on Plasma Process-Induced Damage*, Sunnyvale, CA. May 9-11, 1999, pp. 149-154.
133. "Composition of Trench Sidewalls and Bottoms for SiO_2-Masked Si(100) Etched in Cl_2 Plasmas", K. H. A. Bogart and V. M. Donnelly, J. Appl. Phys., **87**, 8351 (2000).
134. "Diagnostic Studies of Aluminum Etching in an Inductively-Coupled Plasma System: Determination of Electron Temperatures and Connections to Plasma-Induced Damage", M. V. Malyshev, V. M Donnelly, S. W. Downey, J. I. Colonell, and N. Layadi, J. Vac. Sci. Technol. A. **18**, 849 (2000).
135. "Reduction of Plasma Induced Damage in an Inductively Coupled Plasma Using Pulsed Source Power", S. Samukawa, K. Noguchi, J. I. Colonell, K. H. A. Bogart, M. V. Malyshev, and V. M Donnelly, J. Vac. Sci. Technol. B, **18**, 834 (2000).
136. "Dynamics of Inductively-Coupled Pulsed Chlorine Plasmas in the Presence of Continuous Substrate Bias", M. V. Malyshev and V. M. Donnelly, Plasma Sources Sci. Technol. **9**, 353 (2000).
137. "Effects of Discharge Frequency in Plasma Etching and Ultrahigh Frequency Plasma Source for High-Performance Etching for ULSI", S. Samukawa, V. M. Donnelly, and M. V. Malyshev, Jpn. J. Appl. Phys., **39,** 1583 (2000).
138. "Transient Plasma-Induced Emission Analysis of Laser-Desorbed Species During Cl_2 Plasma Etching of Si", J-Y. Choe, N. C. M. Fuller, V. M. Donnelly, and I. P. Herman, J. Vac. Sci. Technol. (2000).
139. "Diagnostics of Inductively Coupled Chlorine Plasmas: Measurement of Cl_2^+ and Cl^+ Densities", M. V. Malyshev, N. C. M. Fuller, K. H. A. Bogart, V. M. Donnelly, and I. P. Herman, J. Appl. Phys. **88**, 2246 (2000).
140. "Diagnostics of Chlorine Inductively Coupled Plasmas: Measurement of Electron Temperatures and Electron Energy Distribution Functions", M. V. Malyshev and V. M Donnelly, J. Appl. Phys, **87**, 1642 (2000).
141. "Diagnostics of Inductively Coupled Chlorine Plasmas: Measurement of Cl_2 and Cl Number Densities", M. V. Malyshev and V. M Donnelly, J. Appl. Phys. **88**, 6207 (2000).
142. "Diagnostics of Inductively Coupled Chlorine Plasmas: Measurements of the Neutral Gas Temperature", V. M Donnelly and M. V. Malyshev, Appl. Phys. Lett., **77**, 2467 (2000).
143. "Characterization of Transformer Coupled Oxygen Plasmas by Trace Rare Gases-Optical Emission Spectroscopy and Langmuir Probe Analysis", N.C.M. Fuller, M.V. Malyshev, V.M.Donnelly, and I. P. Herman, Plasma Sources Sci. Technol. **9**, 116 (2000).
144. "Reduction of Plasma Induced Damage in an Inductively Coupled Plasma Using Pulsed Source Power", S. Samukawa, K. Noguchi, J. I. Colonell, K. H. A. Bogart, M. V. Malyshev, and V. M Donnelly, J. Vac. Sci. Technol. B, **18**, 834 (2000).
145. "Profiling nitrogen in ultrathin silicon oxynitrides with angle-resolved x-ray photoelectron spectroscopy", J. Appl. Phys. **87**, 4449 (2000).
146. "Si-doped Aluminates for High Temperature Metal-Gate CMOS: Zr-Al-Si-O a Novel Gate Dielectric for Low Power Applications", L. Manchanda, M. L. Green, R. B. van Dover, M. D. Morris, A. Kerber, Y. Hu, J.–P. Han, P. J. Silverman, T. W. Sorsch, G. Weber, V. Donnelly, K. Pelhos, F. Klemens, N. A. Ciampa, A. Kornblit, Y. O. Kim, E. J. Bower, D. Jacobson, J. Eng, B. Busch and H. Schulte, International Electron Devices Meeting 2000. Technical Digest. IEDM, pp.23-6 (2000).
147. "Determination of Concentrations and Temperatures of Charged and Neutral Species in Chlorine Inductively-Coupled Plasmas", V. M Donnelly, M. V. Malyshev, N. C. M. Fuller, K. H. A. Bogart, and I. P. Herman, Proceedings of the 2000 Symposium on Dry Process, Tokyo.

148. "Diagnostics of Inductively Coupled Chlorine Plasmas: Measurement of Electron and Total Positive Ion Densities", M. V. Malyshev and V. M Donnelly, J. Appl. Phys. **90**, 1130 (2001).
149. "Etching of High-K Dielectric $Zr_{1-x}Al_xO_y$ Films in Chlorine-Containing Plasmas", K. Pelhos, V.M. Donnelly, A. Kornblit, M.L. Green, R.B. Van Dover, L. Manchanda, Y. Hu, M. Morris, and E. Bower, J. Vac. Sci. Technol., A **19**, 1361 (2001).
150. "Optical Actinometry of Cl_2, Cl, Cl^+, and Ar^+ Densities in Inductively Coupled Cl_2-Ar Plasmas", N. C. M. Fuller, I. P. Herman, and V. M. Donnelly, J. Appl. Phys. **90** 3182 (2001).
151. "Determination of Electron Temperature, Fluorine Concentration, and Gas Temperature in Fluorocarbon/Argon Plasmas Using Optical Emission Spectroscopy", M. J. Schabel, V. M Donnelly, A. Kornblit, W. W. Tai, J. Vac. Sci. Technol. A, **20**, 555 (2002).
152. "Electron Temperatures of Inductively Coupled Cl-2-Ar Plasmas", N. C. M. Fuller, V. M. Donnelly, and I. P. Herman, J. Vac. Sci. Technol. A, **20,** 170 (2002).
153. "Spatially Resolved Electron Temperatures, Species Concentrations, and Electron Energy Distributions in Inductively-coupled Chlorine Plasmas, Measured by Trace-Rare Gases Optical Emission Spectroscopy ", V. M Donnelly and M. J. Schabel, J. Appl. Phys. **91**, 6288 (2002).
154. "Optical Plasma Emission Spectroscopy of Etching Plasmas Used in Si-based Semiconductor Processing", Plasma Sources Sci. Technol. **11**, A26 (2002).
155. "Transition between two states of surface coverage and etch rate during Si etching in inductively coupled Cl_2/Ar plasmas with changing mixtures", N. C. M. Fuller, D. A. Telesca, Jr., V. M. Donnelly, and I. P. Herman, Appl. Phys. Lett. **82,** 4663 (2003).
156. "Plasma Electron Temperatures and Electron Energy Distributions Measured by Trace Rare Gases Optical Emission Spectroscopy", V. M. Donnelly, J. Phys. D.: Appl. Phys. **37**, R217 (2004).
157. "Investigation of Fluorocarbon Plasma Deposition from c-C_4F_8 for Use as Passivation During Deep Silicon Etching" C. B. Labelle, V. M. Donnelly, G. R. Bogart, R. L. Opila, and A. Kornblit, J. Vac. Sci. Technol. A, **22**, 2500 (2004).
158. "Spatially Resolved Diagnostics of an Atmospheric Pressure Direct Current Helium Microplasma", Q. Wang, I. Koleva, V. M Donnelly, and D. J. Economou, J. Phys. D: Appl. Phys., **38**, 1690 (2005).
159. "Evaluation of the Effectiveness of H_2 Plasmas in Removing Boron from Si after Etching of HfO_2 Films in BCl_3 Plasmas", C. Wang and V. M. Donnelly, J. Vac. Sci. Technol. B, **23,** 547 (2005).
160. "Extraction of a Nearly Monoenergetic Ion Beam Using a Pulsed Plasma", L. Xu, D. J. Economou, V. M. Donnelly, and P. Ruchhoeft, Appl. Phys. Lett. **87**, 041502 (2005).
161. "Recombination Reactions of Oxygen Atoms on an Anodized Aluminum Plasma Reactor Wall, Studied by a Spinning Wall Method", P. F. Kurunczi, J. Guha and V. M. Donnelly, J. Phys. Chem. B, **109**, 20989 (2005).
162. "Nanopantography: A New Method for Massively Parallel Nano-Patterning over Large Areas", L. Xu, S. C. Vemula, M. Jain, S. K. Nam, V.M. Donnelly, D. J. Economou and P. Ruchhoeft, Nanoletters, **5**, 2563 (2005).
163. "Particle-in-Cell Simulation of Ion Flow Through a Hole in Contact with Plasma", S. K. Nam, V. M. Donnelly and D. J. Economou, IEEE Trans. on Plasma Sci. **33**, 232 (2005).
164. "Effectiveness of dilute H_2 plasmas in removing boron from Si after etching of HfO_2 films in BCl_3 plasmas", C. Wang and V. M. Donnelly, J. Vac. Sci. Technol. A, **24** 41 (2006).
165. "Plasma-Surface Reactions at a Spinning Wall", P. F. Kurunczi, J. Guha, and V. M. Donnelly, Phys. Rev. Lett. **96**, 018306 (2006).
166. "Particle-in-cell simulation of beam extraction through a hole in contact with plasma", Sang Ki, D. J. Economou, V. M. Donnelly, J. Phys. D (App. Phys.) **39,** 3994 (2006).
167. "Energy distribution and flux of fast neutrals and residual ions extracted from a neutral beam source", A. Ranjan, V. M. Donnelly, D. E. Economou, J. Vac. Sci. Technol. A, **24**, 1839 (2006).
168. "Three-dimensional gas temperature measurements in atmospheric pressure microdischarges using Raman scattering," S. G. Belostotskiy, Q. Wang, V. M. Donnelly, D. J. Economou, and N. Sadeghi, Appl. Phys. Let. **89**, 251503 (2006).
169. "Simulation of direct current microplasma discharge in helium at atmospheric pressure", Q. Wang, V. M. Donnelly, and D. J. Economou, J. Appl. Phys., **100**, 023301 (2006).
170. "Nickel atom and ion densities in an inductively coupled plasma with an internal coil", L. Xu, N. Sadeghi, V. M. Donnelly, and D. J. Economou, J. Appl. Phys. **101**, 013304 (2007).

171. "Effect of surface roughness of the neutralization grid on the energy and flux of fast neutrals and residual ions extracted from a neutral beam source", A. Ranjan, C. Helmbrecht, V. M. Donnelly, D. J. Economou and G. F. Franz, J. Vac. Sci. Technol. B, **25**, 258 (2007).
172. "Auger electron spectroscopy of surfaces during exposure to gaseous discharges", J. Guha, Y-K. Pu, and V. M. Donnelly, J. Vac. Sci. Technol. A, **25,** 347 (2007).
173. "Optical absorption and emission spectroscopy studies of ammonia-containing plasmas", S. J. Kang and V. M. Donnelly, Plasma Sources Sci. Technol. **16,** 265 (2007).
174. "Experimental and Theoretical Study of the Effect of Gas Flow on Gas Temperature on an Atmospheric Pressure Microplasma", Q. Wang, F. Doll, V. M. Donnelly, D. J. Economou, N. Sadeghi, and G. Franz, J. Phys. D: Appl. Phys. **40**, 4202 (2007).
175. "Generation of Fast Neutral Beams by Ion Neutralization in High Aspect Ratio Holes: A Particle-in-Cell Simulation Study", S. K. Nam, D. J. Economou, and V. M. Donnelly, IEEE Trans. on Plasma Sci. **35**, 1370 (2007).
176. "Mass and Auger Electron Spectroscopy Studies of the Interactions of Atomic and Molecular Chlorine on a Plasma Reactor Wall" J. Guha, V. M. Donnelly and Y-K. Pu, J. Appl. Phys. **103**, 013306 (2008).
177. "Etching of nanopatterns in silicon by nanopantography", L. Xu, A. Nasrullah, Z. Chen, P. Ruchhoeft, D. J. Economou and V, M. Donnelly, Appl. Phys. Letters, **92**, 013124 (2008).
178. "Recombination probability of oxygen atoms on dynamic stainless steel surfaces in inductively coupled O_2 plasmas", L. Stafford, J. Guha, and V. M. Donnelly, J. Vac. Sci. Technol. A **26**, 455 (2008).
179. "In-situ surface recombination measurements of oxygen atoms on anodized aluminum in an oxygen plasma", J. Guha, P. Kurunczi, L. Stafford and V. M. Donnelly, J. Phys. Chem. C, **112**, 8963 (2008).
180. "Mechanisms and Selectivity for Etching of HfO_2 and Si in BCl_3 Plasmas", C. Wang and V. M. Donnelly, J. Vac. Sci. Technol. A **26**, 597 (2008).
181. "Influence of gas heating on high pressure DC microdischarge I-V characteristics", S. Belostotskiy, V. M. Donnelly and D. J. Economou, Plasma Sources Sci. Technol., **17** 045018 (2008).
182. "Measurement of Electron Temperature and Density in an Argon Microdischarge by Laser Thomson Scattering", S. G. Belostotskiy, R. Khandelwal, Q. Wang, V. M. Donnelly, D. J. Economou, N. Sadeghi, Appl. Phys. Lett. **92** 221507 (2008).
183. "Diagnostics of ballistic electrons in a DC/RF hybrid capacitively-coupled discharge", L. Xu, L. Chen, M. Funk, A. Ranjan, M. Hummel, R. Bravenec, R. Sundararajan, D. J. Economou, and V. M. Donnelly, Appl. Phys. Lett., **93**, 261502 (2008).
184. "Electron energy distribution functions in low-pressure oxygen plasma columns sustained by propagating surface waves", L. Stafford, R. Khare, V.M. Donnelly, J. Margot, and M. Moisan, Appl. Phys. Lett. **94,** 021503 (2009).
185. "Dilute hydrogen plasma cleaning of boron from silicon after etching of HfO2 films in BCl3 plasmas: Substrate temperature dependence", C. Wang and V. M. Donnelly, J. Vac. Sci. Technol. A, **27** 114 (2009).
186. "Recombination of chlorine atoms on plasma-conditioned stainless steel surfaces in the presence of adsorbed Cl2", L. Stafford, R. Khare, J. Guha, V. M. Donnelly, J-S. Poirier and J. Margot, J. Phys. D: Appl. Phys. **42**, 055206 (2009).
187. "Spatially Resolved Measurements of Argon Metastable (1s5) Density in a High Pressure Microdischarge Using Diode Laser Absorption Spectroscopy", S. G. Belostotskiy, V. M. Donnelly, D. J. Economou, and N, Sadeghi, IEEE Trans. Plasma Sci., **37**, 852 (2009).
188. "Auger electron spectroscopy study of reactor walls in transition from an O2 to a Cl2 plasma", J. Guha and V. M. Donnelly, J. Vac. Sci. Technol. A, **27**, 515 (2009).
189. "Studies of chlorine-oxygen plasmas and evidence for heterogeneous formation of ClO and ClO2", J. Guha and V. M. Donnelly, J. Appl. Phys. **105,** 113309 (2009).
190. "Effect of Cu contamination on recombination of O atoms on a plasma-oxidized silicon surface", J. Guha , R. Khare, L. Stafford. V. M. Donnelly, S. Sirard and E. Hudson, J. Appl. Phys., **105**, 113309 (2009).
191. "Measurement of electron temperatures and electron energy distribution functions in dual frequency capacitively-coupled CF4/O2 plasmas using trace rare gases-optical emission spectroscopy (TRG-OES)", Z. Chen, V. M. Donnelly, D. J. Economou, L. Chen, M. Funk, and R. Sundararajan, J. Vac. Sci. Technol. A **27**, 1165 (2009).

192. "Gas Temperature and Electron Density Profiles in an Argon DC Microdischarge Measured by Optical Emission Spectroscopy", S. Belostotskiy, T. Ouk , V. M. Donnelly, D. J. Economou , N. Sadeghi, J. Appl. Phys. **107,** 053305 (2010).
193. "Experimental and modeling study of O and Cl atoms surface recombination reactions in O_2 and Cl_2 plasmas", L. Stafford, J. Guha, R. Khare, S. Mattei, O. Boudreault, B. Clain, and V. M. Donnelly, Pure Appl. Chem. **82**, 1301 (2010).
194. "Critical review: Plasma-surface reactions and the spinning wall method", V. M. Donnelly, J. Guha, and L. Stafford, J. Vac. Sci. Technol. A, **29**, 010801-1 (2011).
195. "Characterization of a low-pressure chlorine plasma column sustained by propagating surface waves using phase-sensitive microwave interferometry and trace-rare-gas optical emission spectroscopy", S. Mattei, O. Boudreault, R. Khare, L. Stafford, and V.M. Donnelly, J. Appl. Phys., **109**, 113304 (2011).
196. "Laser Thomson Scattering, Raman Scattering and laser-absorption diagnostics of high pressure microdischarges", V. M. Donnelly, S. Belostotskiy, D. J. Economou , N. Sadeghi, J. Phys.: Conf. Ser. 227, 012011 (2011).
197. "Control of ion energy distributions using a pulsed plasma with synchronous bias on a boundary electrode", Hyungjoo Shin, Weiye Zhu, Lin Xu, Vincent M Donnelly and Demetre J Economou, Plasma Sources Sci. Technol. **20,** 055001 (2011).
198. "Time- and space-resolved measurements of Ar(1s(5)) metastable density in a microplasma using diode laser absorption spectroscopy", S. Belostotskiy, T. Ouk, V. M. Donnelly, D. J. Economou, and N. Sadeghi, J. Phys. D-Appl. Phys. **44** (2011).
199. "Particle-in-cell simulation of ion energy distributions on an electrode by applying tailored bias waveforms in the afterglow of a pulsed plasma", P. Diomede, D. J Economou, and V. M. Donnelly,. J. Appl. Phys. **109** (2011).
200. "The surprising Importance of Photo-assisted Etching in Chlorine-Containing Plasmas", H. Shin, W. Zhu, C. M. Donnelly and D. J. Economou, J. Vac. Sci. Technol. A, **30**, 201306 (2012).
201. "Non-local effect of plasma resonances on the electron energy distribution function in microwave plasma columns", O. Boudreault, S. Mattei, L. Stafford, J. Margot, M. Moisan, R. Khare, V. M. Donnelly, Phys. Rev. E **86**, 015402(R) (2012).
202. "Ion energy distributions, electron temperatures, and electron densities in Ar, Kr, and Xe pulsed discharges", H. Shin, W. Zhu, D. J. Economou, and Vincent M. Donnelly, J. Vac. Sci. Technol. A **30**, 031304-1 (2012).
203. "Interactions of chlorine plasmas with silicon chloride-coated reactor walls during and after silicon etching", R. Khare, A. Srivastava, and V. M. Donnelly, J. Vac. Sci. Technol. A, **30**, 051306-1 (2012).
204. "Cl atom recombination on silicon oxy-chloride layers deposited on chamber walls in chlorine–oxygen plasmas", R. Khare, A. Srivastava, and V. M. Donnelly, J. Vac. Sci. Technol. A, **30**, 051307-1 (2012).
205. "Rapid calculation of the ion energy distribution on a plasma electrode", P. Diomede, D. J. Economou, and V. M. Donnelly, J. Appl. Phys. **111**, 123306 (2012).
206. "Selective Etching of TiN over TaN and *vice versa* in Chlorine-Containing Plasmas", H. Shin, W. Zhu, L. Liu, S. Sridhar, V. M. Donnelly, D. J. Economou, C. Lenox and T. Lii, J. Vac. Sci. Technol. A **30**, 031305-1 (2013).
207. "Ion energy distributions in inductively coupled plasmas having a biased boundary electrode", M.D. Logue, H. Shin, W. Zhu, L. Xu, V.M. Donnelly, D.J. Economou, and M.J. Kushner, Plasma Sources Sci. Technol. **21**, 065009 (2012).
208. "Abrupt transitions in species number densities and plasma parameters in a CH_3F/O_2 inductively coupled plasma", E. Karakas, V. M. Donnelly and D. J. Economou, Appl. Phys. Lett. **102**, 034107 (2013).
209. "Electrical and Optical Characterization of a CH3F/O2 Inductively Coupled Plasma", E. Karakas, V. M. Donnelly and D. J. Economou, J. Appl. Phys. **113** 213301 (2013).
210. "Plasma Etching: Yesterday, Today, and Tomorrow", V. M. Donnelly and A. Kornblit, J. Vac. Sci. Technol. A, **31**, 050825-1 (2103). (invited review article as part of the special issue for the 60th anniversary of the Journal of Vacuum Science and Technology). – ***most read JVST A article, Sept. 2013 – 2014, over 1000 downloads.***
211. "Plasma Enhanced Layer-by-Layer Deposition and Nano-crystallization of Hydrogenated Amorphous Silicon Films", Z. Chen, J. A. Mucha, V. M. Donnelly, and D. J. Economou, J. Vac. Sci. Technol. B, **31**, 061209-1 (2013).

212. "The Effect of Titanium Contamination on Oxygen Atom Recombination Probability on Plasma Conditioned Surfaces", A. Srivastava, R. Khare, and V. M. Donnelly, J. Vac. Sci. Technol. A, **31**, 061313-1, (2013).
213. "Measurement of absolute CO number densities in CH3F/O2 plasmas by optical emission self-actinometry", E. Karakas, S. Kaler, Q Lou, V. M. Donnelly, and D. J. Economou, J. Phys. D: Appl. Phys. **47**, 085203 (2014).
214. "Photo-Assisted Etching of Silicon in Chlorine- and Bromine-Containing Plasmas", W. Zhu, S. Sridhar, L. Liu, E. Hernandez, V. M. Donnelly, and D. J. Economou, J. Appl. Phys., **115**, 203303 (2014).
215. "Instabilities in Capacitively Coupled Plasmas Driven by Asymmetric Trapezoidal Voltage Pulses", P. Diomede, D. J. Economou, and V. M. Donnelly, IEEE Transactions on Plasma Science, **42** (2014).
216. "Transfer of nanopantography-defined patterns using highly selective plasma etching", S. Tian, V. M. Donnelly, and D. J. Economou, J. Vac. Sci. Technol. B **33**, 030602-1 (2015).
217. "Chamber Wall Interactions with $Cl_2/HBr/O_2$ Plasmas", A. K. Srivastava, T. Ohashi, and V. M. Donnelly, J. Vac. Sci. Technol. A **33**, 041301 (2015).
218. "External Manipulation of Electron Energy Distributions in a Dual Tandem Inductively Coupled Plasma", L. Liu, S. Sridhar, W. Zhu, V. M. Donnelly, D. J. Economou, M. D. Logue, and M. J. Kushner, J. Appl. Phys., **118**, 083303 (2015).
219. "Ignition Delay of a Pulsed Inductively Coupled Plasma (ICP) in Tandem with an Auxiliary ICP", L. Liu, S. Sridhar, V. M. Donnelly and D. J. Economou, J. Phys. D.: Appl. Phys., **48** 485201 (2015).
220. "Sub-10 nm Nanopantography", S. Tian, V. M. Donnelly, P. Ruchhoeft and D. J. Economou, Appl. Phys. Lett., **107**, 193109 (2015).
221. "Optical emission spectroscopic studies and comparisons of CH_3F/CO_2 and CH_3F/O_2 inductively coupled plasmas", Q. Lou, S. Kaler, V. M. Donnelly, and D. J. Economou, J. Vac. Sci. Technol. A 33, 021305 (2015).
222. "Plasma Etching: Current Trends and Future Prospects" , V. M. Donnelly, Proceedings of the 7th International Symposium on Advanced Plasma Science and its Applications for Nitrides and Nanomaterials / 8th International Conference on Plasma-Nano Technology & Science (ISPlasma2015/IC-PLANTS2015), Nagoya, Japan, Mar. 26-31, 2015.
223. "Insights into the mechanism of in-plasma photo- assisted etching using optical emission spectroscopy" S. Sridhar, L. Liu, E. W. Hirsch, V. M. Donnelly and D. J. Economou, J. Vac. Sci. Technol. A, **34** 061303 (2016).
224. "Silicon nitride and silicon etching by CH3F/O-2 and CH3F/CO2 plasma beams", S. S. Kaler, Q. W. Lou, V. M. Donnelly and D. J. Economou, J. Vac. Sci. Technol. A, **34**, 041301 (2016).
225. "Y2O3 wall interactions in Cl2 etching and NF3 cleaning plasmas", T. Ma, T. List, and V. M. Donnelly, J. Vac. Sci. Technol. A, **35**, 031303 (2017).
226. "Atomic layer etching of silicon dioxide using alternating C4F8 and energetic Ar+ plasma beams", J. Phys. D: Appl. Phys. **50**, 234001 (2017).
227. "Review Article: Reactions of fluorine atoms with silicon, revisited, again", V. M. Donnelly, J. Vac. Sci. Technol. A, **35**, 05C202 (2017).
228. "Control of ion energy distributions on insulating surfaces", T. List, T. Ma, V. M. Donnelly and D. J. Economou, manuscript in preparation.
229. "Optical Emission Diagnostics of a Non-equilibrium Helium Plasma Jet at 1 atm in Ambient Air", T. Nguyen, E. Hernandez, V. M. Donnelly and D. J. Economou, manuscript in preparation.

PATENTS

1. "Radiation Induced Deposition of Metal on Semiconductor Surfaces," U.S. Patent 4,359,485, Nov. 16, 1982, V. M. Donnelly and R. F. Karlicek.
2. "Plasma-Assisted Etch Process with Endpoint Detection," U.S. Patent 4,377,436, March 22, 1983 V. M. Donnelly and D. L. Flamm.
3. "Spectroscopic Monitoring of Gas-Solid Processes," U.S. Patent 4,394,237, July 19, 1983 V. M. Donnelly, D. L. Flamm and R. F. Karlicek.
4. "Crystallographic Etching of III-V Semiconductor Materials,"U.S. Patent 4,397,711, Aug. 9, 1983, V. M. Donnelly, D. L. Flamm and D. E. Ibbotson (Bell Laboratories 20,000th Patent).
5. "Etching Techniques," U.S. Patent 4,498,953, Feb. 12, 1985, J. M. Cook, V. M. Donnelly, D. L. Flamm, D. E. Ibbotson, and J. A. Mucha.
6. "Deposition of III-V Semiconductor materials", U. S. Patent No. 4,645,687, February 24, 1987, V. M. Donnelly and R. F. Karlicek.
7. "Optical Interferometric Thermometry", U. S. Patent No. 5,229,303, July 20, 1993, V. M. Donnelly and J. A. McCaulley.
8. "Device Processing Involving Optical Interferometric Thermometry," U.S. Patent Number 5,467,732, Nov. 21, 1995, V. M. Donnelly and J. A. McCaulley.
9. “Multilevel Wiring Structure and Method of Fabricating a Multilevel Wiring Structure”, V. M. Donnelly and K. Ueno, U.S. Patent Number 6,143,658, Nov. 7, 2000.
10. “Etching of High-K Dielectric $Zr_{1-x}Al_xO_y$ Films in Chlorine Containing Plasmas”, U. S. Patent No. 6,511,872, Jan. 28, 2003, V. M. Donnelly, A. Kornblit, and K. Pelhos.
11. “Hyperthermal neutral beam source and method of operating” U. S. Patent No. 7,358,484, April 15, 2008, D. J. Economou, L. Chen, and V. M. Donnelly.
12. “Method and Apparatus for Nanopantography”, U. S. Patent No. 8030620, Oct. 4, 2011, V. M. Donnelly, D. J. Economou, R. Jain, P. Ruchhoeft, L. Xu.
13. “Atomic Layer Etching with Pulsed Plasmas”, V. M. Donnelly and D. J. Economou, US20110139748 A1; June 16, 2011.
14. “Low Electron Temperature Microwave Surface Wave Plasma (SWP) Processing Method and Apparatus”, March 3, 2015, U. S. Patent Number 8,968,588, V. M. Donnelly, D. J. Economou, L. Chen.

INVITED LECTURES

1. "Reactive Processes and Diagnostics for Silicon Etching by F and F_2", Semicon/East, Boston MA, Sept. 23-25, 1980.
2. "Chemical Considerations in the Choice of Plasma Etchant Gases", Tegal Corp. Seventh Annual Plasma Seminar, Novato CA, May 18, 1981.
3. "Plasma Etching: A review of Processing and Mechanisms", Bell Laboratories Semiconductor Series, Murray Hill NJ, Feb. 19, 1982.
4. "Mechanisms in Plasmas and Plasma Etching", Seventh Gordon Conference on Plasma Chemistry", Tilton NH, Aug. 16-20, 1982.
5. "Plasma Etching of III-V Compounds", 29th National Am. Vac. Soc. Nat'l Symp., Baltimore, MD, Nov., 1982.
6. "Laser Spectroscopic Investigation of Gas-Phase Processes Relevant to Semiconductor Device Fabrication", Materials Research Conference, Boston, MA, Nov., 1982.
7. "Laser Induced Epitaxy and Deposition of III-V Compound Semiconductor Films", Materials Research Society, Boston, MA, Nov. 26-30, 1983.
8. "Laser Enhancement and Probing of III-V Compound Semiconductor Chemical Vapor Deposition", SPIE Symposium, Washington D.C., May 1-4, 1984.
9. "Excimer Laser Induced Photochemical Deposition of III-V Compound Semiconductor Films", Informal Photochemistry Conference, Harvard University, Cambridge, MA, Aug. 20-24, 1984.
10. "Excimer Laser Induced Deposition of InP", International Dry Process Symposium, Tokyo, Japan, Oct. 24-25, 1985.
11. "Basic Mechanisms in Plasmas and Plasma Etching", Semicon East, Boston, MA, Sept. 17-19, 1985.
12. "Excimer Laser Induced Deposition of InP", 32nd American Vacuum Society Symposium, Houston, TX, Nov. 19-22, 1985.
13. "Excimer Laser Stimulated Growth of InP and GaAs thin Films", Symposium on Molecular Processes on Solid Surfaces: Chemistry Induced by energized Particles and Lasers, American Chemical Society National Meeting, New York, Apr. 14, 1986.
14. "Optical Diagnostic Studies in Plasmas and Plasma Processing", Materials Research Society Spring Synposium, Palo Alto, CA, Apr. 15-18, 1986.
15. "Using Lasers to Stimulate and Probe Gas-phase Processing of Microelectronics", Optical Society of America National Meeting, Seattle, Washington, Oct. 22, 1986.
16. "Excimer Laser-Stimulated Growth of III-V Compound Semiconductor Films", American Physical Society Meeting, New York, March 16-20, 1987.
17. "Mechanistic Studies of Excimer Laser Stimulated Growth of III-V Compound Semiconductor Films", American Conference on Crystal Growth, Monterey, CA, July 12 - 17, 1987.
18. "Laser Induced Fluorescence and Optical Emission Techniques for Low Pressure RF Discharges", Thirty-forth National Symposium of the American Vacuum Society, Anaheim CA, November 2-6, 1987.
19. "Plasma Chemistry and Etching Mechanisms", IEEE Workshop of Micrometer and Submicrometer Lithography, Marco Island, FL, April 7 - 10, 1987.
20. "Excimer Laser-Induced Epitaxy and Deposition of III-V Compound Semiconductor Films", Workshop on Plasma, Ion and Laser Assisted Chemical Processing of Electronic Materials, sponsored by the National Science Foundation and San Diego State University, February 23-24, 1987.
21. "Mechanisms in Laser-Stimulated Deposition of III-V Compound Semiconductor Films", Chemistry Department Industrial Symposium, University of California, Davis, January 9, 1987.
22. "Selected-Area Growth of GaAs by Laser-Induced Pyrolysis of Adsorbed Gallium-Alkyls", Materials Research Society Fall Meeting, Boston, MA, November 28 - December 3, 1988.
23. "UHV Studies of Laser Induced GaAs Epitaxial Layer Growth", Gordon Conference on the Chemistry and Physics of Microstructure Fabrication, Wolfeboro, NH, July 11 - 15, 1988.
24. "Mechanisms of Photo-CVD of III-V Compound Semiconductors", Gordon Conference on Crystal Growth, New London, NH, July 25 - 29, 1988.
25. "Optical Diagnostic Techniques for Low Pressure Plasmas and Plasma Processing", Plasma-Surface Interaction and Processing of Materials, NATO Advanced Study Institute, Alicante, Spain, September 4 - 16, 1988.

26. "UV Lasers for Epitaxial Growth of III-V Compound Semiconductors", LEOS '88 (Lasers and Electro-Optics Society Annual Meeting), Santa Clara, CA, November 2 - 8, 1988.
27. "Mechanisms of Laser Induced Decomposition of Adsorbed Gallium-Alkyls and Selected Area Deposition of GaAs Films," V. M. Donnelly, European Materials Research Society Meeting, Strassbourg, France, May 30 - June 2, 1989.
28. "Laser Induced Decomposition of Adsorbed Gallium-Alkyls and Selected Area Growth of GaAs Films," V. M. Donnelly, Electrochemical Society Meeting, Hollywood, Florida, October 16 - 20, 1989.
29. "Metalorganic Molecular-Beam Epitaxy: Growth Kinetics and Selective-Area Epitaxy," W. E. Tu, V. M. Donnelly and B. Liang, MRS International 1990, China, June 22, 1990.
30. "Optical Diagnostic Techniques for Plasma Etching Processes," V. M. Donnelly, Tegal Plasma Symposium, Redwood City, CA, May 20, 1991.
31. "IR Laser Interferometric Thermometry Applied to Real-Time Measurement of Semiconductor Wafer Temperature During Plasma Processing," V. M. Donnelly, T. R. Hayes, D. E. Ibbotson, C. P. Chang, C. S. Pai, American Vacuum Society, Seattle, WA, November 11-16, 1991.
32. "Kinetics of Thermal Decomposition of Triethylgallium on GaAs(100) and Implications for GaAs Film Growth," V. M. Donnelly, J. A. McCaulley and A. A. Robertson, American Chemical Society Meeting, New York, August 26-30, 1991.
33. "A Review of Cu CVD Developments," M. E. Gross, V. M. Donnelly, and A. D. Johnson, Advanced Metallization for ULSI Applications, Murray Hill, NJ, October 9, 1991.
34. "Kinetic Modelling of GaAs Chemical Beam Epitaxy," V. M. Donnelly and A. A. Robertson, SUNY State University of New York, Buffalo, NY, Nov. 16, 1992.
35. "Interferometric Thermometry for Real-Time Determination of Wafer Temperature", V. M. Donnelly, First International Symposium on In-Situ Film Thickness and Temperature Measurement Systems for Semiconductor Manufacturing, Erlangen, Germany, June 3-4, 1993.
36. "Chemical Topography in Anisotropic Plasma Etching of Polycrystalline Silicon", V. M. Donnelly and K. V. Guinn, SPIE Meeting, Monterey, CA, September, 1993.
37. "Chemical Topography in Anisotropic Plasma Etching of Polycrystalline Silicon", V. M. Donnelly, K. V. Guinn, and C-C. Cheng, Fall Meeting of the Materials Research Society, Boston, MA, December 1-5, 1993.
38. "Measurement of Silicon Wafer Temperature During Processing by Interferometric Thermometry", V. M. Donnelly, Plasma Etching Users Group (AVS Chapter), Varian Research Center, Palo Alto, CA, April 14, 1994.
39. "Surface Reactions and Chemical Topography of Si Etching in a Cl_2 Plasma," V. M. Donnelly, Lawrence Livermore National Laboratory, Livermore, CA, Aug. 15, 1994.
40. "Surface Reactions During Si Etching in a Cl_2 Plasma," V. M. Donnelly, Workshop on Plasma-Surface Modelling, Sandia National Laboratories, Livermore, CA, Aug. 16, 1994.
41. "Chemical Topography of Masked Poly-Silicon Films Etched in Cl_2 and HBr-Containing Plasmas", American Vacuum Society, Denver, CO, Oc. 24-28, 1994.
42. "Surface Chemistry During Etching of Si in Chlorine-Containing Plasmas," V. M. Donnelly, Engineering Research Center, University of Wisconsin-Madison, Mar. 31, 1995.
43. "Plasma-Surface Interactions During Etching,"V. M. Donnelly, C. C. Cheng, K. V. Guinn, and I. P. Herman, Chemistry of Materials Gordon Research Conference, Proctor Academy, Andover, NH, Jul. 30 - Aug. 4, 1995.
44. "Surface Chemistry During Plasma Etching of Si,"V. M. Donnelly, I. P. Herman, C. C. Cheng, and K. V. Guinn, International Symposium on Plasma Chemistry, Minneapolis, MN, Aug. 21 - 25, 1995.
45. "Optical and Mass Spectrometric Diagnostic Methods for Plasma Etching," V. M. Donnelly, Materials Research Society Symposium, Boston, MA, November 27 - December 1, 1995.
46. "Optical and Surface Diagnostics of Plasma Etching", V. M. Donnelly, Princeton Plasma Physics Laboratory, Princeton University, Dec. 21, 1995.
47. "Optical and Surface Diagnostics of Plasma Etching", V. M. Donnelly, University of California Los Angeles, Apr. 26, 1996.
48. "Cl_2 Plasma - Si Surface Interactions in Plasma Etching: X-Ray Photoelectron Spectroscopy After Etching, and Optical and Mass Spectrometry Methods During Etching," V. M. Donnelly, N. Layadi, J. T. C. Lee, I. P. Herman, K. V. Guinn, and C. C. Cheng, NATO ASI on Plasma Processing, Chateau de Bonas, Bonas, France, June 16-26, 1996.

49. "Plasma Etching in Chlorine: Surface Reactions," V. M. Donnelly, Plasma Etch 96, American Vacuum Society Northern California Chapter, San Jose, CA, Sept. 9, 1996.
50. "Copper Thin Film Growth on Low Dielectric Constant Polymers," M. Du, R. Opila, V. M. Donnelly, and T. Boone, 189th Electrochemical Society Meeting, Los Angeles, 1996.
51. "Surface Chemistry During Etching of Si in Chlorine-Containing Plasmas,"V. M. Donnelly, Engineering Research Center, University of Wisconsin-Madison, Mar. 31, 1995.
52. "Optical Emission and Mass Spectrometric Studies of Reactant and Product Densities During Etching of Si in a Cl_2 Helical Resonator Plasma," V. M. Donnelly, 42nd National Symposium of the American Vacuum Society, Minneapolis, MN, Oct. 16-20, 1995.
53. "Surface Analysis During Plasma Etching by Laser-Induced Thermal Desorption," I. P. Herman, V. M. Donnelly, C. C. Cheng, and K. V. Guinn, Dry Processing Symposium, Tokyo, Japan, Nov. 1 - 3, 1995.
54. "Optical and Mass Spectrometric Diagnostic Methods for Plasma Etching," V. M. Donnelly, Materials Research Society Symposium, Boston, MA, November 27 - December 1, 1995.
55. "Plasma Etching of Si Studied by In-Situ Laser-Induced Desorption and X-Ray Photoelectron Spectroscopy," C. C. Cheng, K. V. Guinn, I. P. Herman, and V. M. Donnelly, American Chemical Society Meeting.
56. "Chemical Topography of Masked Poly-Si Films Etched in Cl_2 and HBr-Containing, High Density Plasmas," V. M. Donnelly, C. C. Cheng, K. V. Guinn, and I. P. Herman, 41st National Symposium of the American Vacuum Society, Denver CO, Oct. 24-28, 1994.
57. "Measurement of Silicon Wafer Temperature During Processing by Interferometric Thermometry", V. M. Donnelly, Plasma Etching Users Group (AVS Chapter), Varian Research Center, Palo Alto, CA, April 14, 1994.
58. "Surface Reactions and Chemical Topography of Si Etching in a Cl_2 Plasma," V. M. Donnelly, Lawrence Livermore National Laboratory, Livermore, CA, Aug. 15, 1994.
59. "Surface Reactions During Si Etching in a Cl_2 Plasma," V. M. Donnelly, Workshop on Plasma-Surface Modelling, Sandia National Laboratories, Livermore, CA, Aug. 16, 1994.
60. "A Direct, New Approach to Patterned Silicon Dioxide: Plasma Polymerized Methylsilane as a Photodefinable Precursor," T. W. Weidman, A. Joshi, D. M. Boulin, O. Joubert, J. T-C. Lee, V. M. Donnelly, and G. E. Johnston, Materials Research Society Symposium, Boston, MA, November 28 - December 2, 1994.
61. "Optical and Surface Diagnostics of Plasma Etching", <u>Vincent M. Donnelly</u>, Princeton Plasma Physics Laboratory, Princeton University, Dec. 21, 1995.
62. "Optical and Surface Diagnostics of Plasma Etching", <u>Vincent M. Donnelly</u>, Bell Labs Division 111 Seminar, Mar. 4, 1996.
63. "Optical and Surface Diagnostics of Plasma Etching", <u>Vincent M. Donnelly</u>, University of California Los Angeles, Apr. 26, 1996.
64. “Plasma Etching Diagnostics”, <u>V. M. Donnelly</u>, Lucent Microelectronica, Madrid, Spain, June 27, 1996.
65. “Plasma Etching in Chlorine: Surface Reactions”, <u>V. M. Donnelly</u>, Plasma Etch 96, American Vacuum Society Northern California Chapter, San Jose, CA, Sept. 9, 1996.
66. “Control of Plasma Physics and Chemistry in High-Density Plasma Sources”, <u>V. M. Donnelly</u>, Lucent/NEC Executive Review, Murray Hill, NJ, July 23, 1996.
67. “Copper Thin Film Growth on Low Dielectric Constant Polymers”, <u>M. Du</u>, R. Opila, V. M. Donnelly, and T. Boone, 189th Electrochemical Society Meeting, Los Angeles.
68. “Surface and Plasma Diagnostics During Si Etching in a Cl_2 Plasma”, <u>V. M. Donnelly</u>, NEC/Lucent Executive Review, Sagamihara, Japan, Oct. 23, 1996.
69. “Optical and Surface Diagnostics of Plasma Etching”, <u>V. M. Donnelly</u>, University of California, Santa Barbara, Jan. 15, 1997.
70. “Optical and Surface Diagnostics of Plasma Etching”, <u>V. M. Donnelly</u>, California Institute of Technology, Jan. 16, 1997.
71. “Chemical and Physical Nature of the Surface Layer Formed During Plasma Etching of Si”, <u>V. M. Donnelly</u>, N. Layadi, J. T. C. Lee, and F. P. Klemens, 3rd International Conference on Reactive Plasmas and 14th Symposium on Plasma Processing, Nara, Japan, Jan. 21-24, 1997.
72. “Trace Rare Gas Optical Emission Spectroscopy for Electron Temperature Measurement and Advanced Actinometry“ Electrochemical Society Meeting, Montreal, May 5-9, 1997.

73. "Control of Plasma Physics and Chemistry in High-Density Plasma Sources", V. M. Donnelly, Lucent/NEC Executive Review, Murray Hill, NJ, July 23, 1996.
74. "Selected Topics in Plasma Processing Research", J. T. C. Lee, H. L. Maynard, H. Lee, F. P. Klemens, A. Kornblit, J. M. Lane, V. M. Donnelly, M. V. Malyshev, N. A. Ciampa, M. Vyyoda, and D. B. Graves, CNET/CNRS, Grenoble, France, Sept. 5, 1997.
75. "Trace Rare Gases Optical Emission Spectroscopy for Determination of Electron Temperatures and Species Concentrations in Chlorine-Containing Plasmas", V. M. Donnelly, M. V. Malyshev, A. Kornblit, N.A. Ciampa, J. I. Colonell, and J. T. C. Lee, Dry Process Symposium, Tokyo, Japan, Nov. 12-14, 1997, paper VIII-2.
76. "Trace Rare Gases Optical Emission Spectroscopy for Determination of Electron Temperatures and Species Concentrations in Chlorine-Containing Plasmas", V. M. Donnelly, M. V. Malyshev, A. Kornblit, N.A. Ciampa, J. I. Colonell, and J. T. C. Lee, Silicon Systems Research Laboratories, NEC Corp., Tsukuba, Japan, Nov. 10, 1997.
77. "Advanced Research Topics in Plasma Processing," J.T.C. Lee, H.L. Maynard, H. Lee, A. Kornblit, F.P. Klemens, J.M. Lane, V.M. Donnelly, and M.V. Maylshev, New England American Vacuum Society, Cambridge, MA, September 24, 1997.
78. "Advanced Research Topics in Plasma Processing", J.T.C. Lee, F.P. Klemens, A. Kornblit, F.H. Baumann, H. Lee, H.L. Maynard, D.M. Tennant, T.W. Sorsch, G.L. Timp, N. Layadi, M.V. Malyshev, V.M. Donnelly, and N.A. Ciampa, Tokyo Electron Corporation, Yamanashi, Japan, April 1, 1998.
79. "Selected Topics in Plasma Processing Research", J. T. C. Lee, J.I. Colonell, F.P. Klemens, A. Kornblit, F.H. Baumann, H. Lee, H.L. Maynard, D.M. Tennant, T.W. Sorsch, G.L. Timp, N. Layadi, M.V. Malyshev, V.M. Donnelly, and N.A. Ciampa, 193rd Meeting of the Electrochemical Society, San Diego, CA, May 3-8, 1998.
80. "Etching Nanogate Structures with Ultra-Thin Gate Oxide", A. Kornblit, F.H. Baumann, V. M. Donnelly, W. Evans, S.J. Hillenius, F.P. Klemens, N. Layadi, H. Lee, J.T.C. Lee, H.L. Maynard, J. Mytych, J. Sapjeta, T. Sorsch, W.W. Tai, D.M. Tennant, and G.L. Timp, Lam Research Corporation Technical Symposium, San Francisco, CA, July 14, 1998.
81. "Optical Measurements of Electron Temperatures and Species Concentrations in Several Types of Chlorine-Containing, High Density Plasmas", V. M Donnelly, M. V. Malyshev, A. Kornblit, N. A. Ciampa, J. I. Colonell, and S. Samukawa, Gaseous Electronics Conference, Maui, HI, Oct. 19-22, 1998.
82. "Spectroscopic Diagnostics of Processing Plasmas", V. M. Donnelly, Three guest lectures given as part of the "Frontiers in Spectroscopy" graduate course in Chemistry/Physics at The Ohio State University, Feb. 24-26, 1999.
83. "Overview of Plasma Etching Activities", J. T. C. Lee, F.H. Baumann, G.R. Bogart, K.H. Bogart, N.A. Ciampa, J.I. Colonell, R. Dail, V.M. Donnelly, J. Frackoviak, J.M. Hergenrother, I.C. Kizilyalli, F.P. Klemens, R.N. Kleiman, A. Kornblit, J.M. Lane, N. Layadi, M.V. Malyshev, H.L. Maynard, O. Nalamasu, A. Novembre, C. Pai, M.R. Pinto, E.A. Rietman, J.M. Rosamilia, S. Samukawa, T. Sorsch, C. Y. Sung, W. W. Tai, D. Tennant, A. Timko, G. Timp, and G. P. Watson, International Forum on Semiconductor Technology '99, Kyoto, Japan, March 11-12, 1999.
84. "Plasma Diagnosis and Charging Damage", M. V. Malyshev, V. M. Donnelly, J. I. Colonell, and S. Samukawa, 4th International Symposium on Plasma Process-Induced Damage, Monterey, CA, May 9-11, 1999.
85. "Sources of plasma induced damage in back-end VLSI processing", S. W. Downey, D. W. Hwang, P. W. Mason, A. Yen, V. M. Donnelly, M. V. Malyshev, and J. I. Colonell, 46th International Symposium of the American Vacuum Society, Seattle, WA, Oct. 25-29, 1999.
86. "Power modulated, inductively-coupled plasmas", M. V. Malyshev, V. M.Donnelly, J. I. Colonell, K. H. A. Bogart, and S. Samukawa, 46th International Symposium of the American Vacuum Society, Seattle, WA, Oct. 25-29, 1999.
87. "Advanced optical emission methods for plasma diagnostics and control", V. M Donnelly, American Vacuum Society Spring Meeting, Santa Clara, CA, Feb 10-11, 2000.
88. "Applications of electron impact cross sections in plasma processing diagnostics and modeling", V. M. Donnelly and M. V. Malyshev, Workshop on Electron-Driven Processes: Scientific Challenges and Technological Opportunities, Stevens Institute of Technology, Mar. 16-17, 2000.
89. "Silicon surface chemistry during chlorine plasma etching", V.M. Donnelly, Rutgers University, March 30, 2000.

90. "Plasma diagnostics relevant to damage", V. M. Donnelly, Workshop of the 5th International Symposium on Plasma Process-Induced Damage, Santa Clara, CA, May 22-24, 2000.
91. "Optical diagnostic techniques for commercial etching reactors", V. M. Donnelly, Semicon West, July 12, 2000.
92. "Measurements of charged and neutral species densities and energies in an inductively-coupled chlorine plasma", V. M. Donnelly and M. V. Malyshev, Gordon Conference on Plasma Processing Science, Tilton, NH, Aug. 13-17, 2000.
93. "Optical emission diagnostic techniques for plasma processing", V. M. Donnelly, UNY-VAC Thin Film Process Technology Symposium, Albany, NY, Sept 15, 2000.
94. "Quantitative Plasmas Diagnostics by Electron Impact Emission from Trace Rare Gases", V. M. Donnelly, American Physical Society, Division of Atomic Molecular and Optical Physics, London, Ontario, May 16-19, 2001.
95. "Optical Plasma Emission Spectroscopy of Etching Plasmas Used in Si-Based Semiconductor Processing", V. M. Donnelly, International Conference on Phenomena in Ionized Gases, Nagoya, Japan, July 17-22, 2001 (Plenary Lecture).
96. "Diagnostics of MEMS Etching Process", V. M. Donnelly, C. Labelle, and G. Bogart, Gaseous Electronics Conference, State College, PA, Oct. 8-12, 2001.
97. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, M. Schabel, and M. V. Malyshev, American Institute of Chemical Engineers Meeting, Reno, NV, Nov. 4-9, 2001.
98. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, University of Houston, 2001.
99. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, University of Texas Dallas, 2001.
100. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, University of Illinois, 2002.
101. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, University of Wisconsin, 2002.
102. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, University of Wisconsin, 2002.
103. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, Georgia Inst. Tech., 2002.
104. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, Pennsylvania State University, 2002.
105. "Determinations of Plasma Electron Temperatures, Electron Energy Distributions, and Densities of Positive and Negative Ions from Optical Emission Spectroscopy", V. M. Donnelly, Princeton Plasma Physics Laboratory, 2002.
106. "Diagnostics of MEMS Etching Process", V. M. Donnelly, C. Labelle, G. Bogart and A. Kornblit, New Mexico Chapter Regional AVS Meeting, Albuquerque, NW, Apr. 29-30, 2003.
107. "Diagnostics of High Pressure DC Helium Micro-plasma Discharges", Q. Wang, V. M. Donnelly, I. Koleva, and D. Economou, International Workshop on Microplasmas, Hoboken, NJ, Oct. 6-8, 2004.
108. "Recombination of Oxygen Atoms on an Anodized Aluminum Plasma Reactor Wall, Studied by a New Spinning Wall Method", V. M. Donnelly, P. F. Kurunczi, and J. Guha, International Conference on reactive plasmas, Sendai Japan, Jan 24-27, 2006.
109. "Quantitative Applications for Optical Emission Spectroscopy in Plasmas", V. M. Donnelly, Q. Wang, I. Koleva*, F. Doll, N. Sadeghi, and D. Economou, AIAA Symposium, Reno, NV, Jan. 8-12, 2006.
110. "Reactions on a Plasma Reactor Wall, Studied by a New 'Spinning Wall' Method", Vincent M. Donnelly, Peter Kurunczi, and Joydeep Guha, Electrochemical Society Symposium, May 8-12, 2006, Denver.

111. "Plasma-Surface Reactions at a 'Spinning Wall'", Vincent M. Donnelly, Peter Kurunczi, and Joydeep Guha, Tohoku University, Jan. 23, 2006, Sendai, Japan.
112. "Plasma-Surface Interactions on a "Spinning Wall" Probed by Mass Spectrometry and Auger Electron Spectroscopy", V. M. Donnelly and Joydeep Guha, Gaseous Electronics Conference, Columbus OH, Oct. 9-13, 2006.
113. "Plasma-Surface Interactions on a "Spinning Wall" Probed by Mass Spectrometry and Auger Electron Spectroscopy", V. M. Donnelly and Joydeep Guha, American Vacuum Society Symposium, San Francisco CA, Nov. 13-17, 2006.
114. "Plasma Etching: New Diagnostics and Methods, V. M. Donnelly, IBM Corp. East Fishkill, NY, Jan. 11, 2007.
115. "Plasma Etching: New Diagnostics and Methods, V. M. Donnelly, IBM Corp. Yorktown Heights, NY, Jan. 12, 2007.
116. "Cl and O Atom Recombination on a Plasma Chamber Wall, Studied in Near-Real-Time by Mass Spectrometry and Auger Electron Spectroscopy", V. M. Donnelly, J. Guha and Y-K. Pu, Frontiers in Low Temperature Plasma Diagnostics, Bishop Burton, United Kingdom, April 2007.
117. "Experimental Investigations of Reactions in Plasma Etching of Nanometer Size Structures", V. M. Donnelly, American Physical Society Division of Atomic Molecular and Optical Physics, Calgary, June 2007.
118. "Will recombination reaction probabilities at plasma chamber walls ever be non-adjustable parameters?", V. M. Donnelly, American Vacuum Society Symposium, Boston, MA, Oct. 19-24, 2008 (special session honoring Herbert Sawin).
119. "Selected Diagnostic Methods for Plasmas and Plasma-Surface Interactions", V. M. Donnelly, University of Montreal, Jan. 16, 2009.
120. "Plasma-Surface Interactions on a Spinning Wall", V. M. Donnelly, Colorado State University, Jan. 23, 2009.
121. "Laser Thomson Scattering, Raman Scattering and Laser-Absorption Probing of High Pressure Micro-Discharges", V. M. Donnelly, S.G. Belostotskiy, D.J. Economou, and N. Sadeghi, LAPD14, Castlebrando, Italy, Sept. 21, 2009.
122. "Nanopantography: A New Method for Parallel Writing of Etched or Deposited Nano-Patterns", V. M. Donnelly, Georgia Institute of Technology, Oct. 19, 2009.
123. "Plasma-Surface Interactions on a Spinning Wall", V. M. Donnelly, University of Texas, Austin, Oct. 29, 2009.
124. "Plasma-Surface Interactions on a Spinning Wall", V. M. Donnelly, University of Florida, Jan. 11, 2010.
125. "Plasma-Surface Interactions at a "Spinning Wall", Princeton Plasma Physics Lab", V. M. Donnelly, April, 2011. [invited]
126. V. M. Donnelly, "Electron Temperature and Energy DistributionMeasurements by Optical Emission Spectroscopy of Trace Rare Gases", Princeton Plasma Physics Lab, April, 2011. [invited]
127. "As Device Dimensions Continue to Shrink… A Journey Through Thirty Years of Plasma Etching Diagnostics and Mechanisms", V. M. Donnelly, 2011 American Vacuum Society's John A. Thornton Memorial Award Lecture, Nashville, TN, Nov. 2011.
128. "The Unwanted Emergence of Photo-Assisted Etching of Silicon Discovered and Possibly Suppressed, Using Advanced Ion and Electron Energy Control", Lam Research Corp. Sunnyvale, CA, Sept, 2012.
129. "Plasma-Surface Reactions During Etching", Lam Research Corp. Sunnyvale, CA, Sept, 2012.
130. "Etching Applications and Discoveries Made Possible by Advanced Ion Energy Control", V. M. Donnelly, Beam Plasma Workshop, 30th May to 3rd June 2013, Australian National University and Thredbo Village, NSW, (delivered via Skype).
131. "Introduction to Plasma and Surface Diagnostics", Vincent M. Donnelly, GEC Pre-Conference Tutorial, Princeton NJ, Sept. 28 2013. [invited]
132. "Plasma Surface Interactions at a Spinning Wall", V. M. Donnelly, GEC Pre-Conference Workshop, Princeton NJ, Sept. 28 2013. [invited]
133. "Effects of VUV photons in Si etching, and chamber wall interactions in Cl_2/HBr/O_2 plasmas, Nagoya University, Nagoya, Japan, March 25, 2015. [invited talk].
134. "Plasma Etching: Current Trends and Future Prospects", ISPlasma2015 and IC-Plants2015, Nagoya Japan, March 26-31, 2015. [plenary talk].

135. "Issues Impacting Future Etching Needs and New Nanopatterning Methods", Samsung Corp., Seoul, South Korea, Apr. 1, 2015 [invited talk].
136. "Plasma-Surface interactions at Low and high Pressure" American Vacuum Society, 62nd International Symposium, San Jose, CA, Oct. 21, 2015.