Mark J. Kushner

Publications and Presentations
(September 2020)

Contents

Refereed Journal Publications

1. M. J. Kushner and F. E. C. Culick, "Extrema of Electron Density and Output Pulse Energy in a CuCl/Ne Discharge and a Cu/CuCl Double Pulsed Laser," Appl. Phys. Lett. **33**, 728 (1978).

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4. M. J. Kushner and F. E. C. Culick, "A Model for the Dissociation Pulse, Afterglow, and Laser Pulse in the Cu/CuCl Double Pulsed Laser," J. Appl. Phys. **51**, 3020 (1980).

5. M. J. Kushner, "Characteristics of a UF_6-H_2/HF Nuclear Pumped Laser," J. Appl. Phys. **51**, 2421 (1980).

6. M. J. Kushner, W. M. Grossman and F. E. C. Culick, "Electron Collision Quenching of CO(v) Chemiluminescence in CS_2/O_2 and $CS_2/O_2/N_2O$ Flames," J. Appl. Phys. **52**, 3776 (1981).

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16. M. J. Kushner, "A Monte-Carlo Simulation of Electron Properties in Parallel Plate Capacitively Coupled RF Discharges," J. Appl. Phys. **54**, 4958 (1983).
17. M. J. Kushner, "Floating Sheath Potentials in Non-Maxwellian Plasmas," IEEE Trans. Plasma Sci. **PS-13**, 6 (1985).
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Plasmas at Different Specific Energy Deposition", submitted to Plasma Source Sci. Technol.

360. W. Ning, J. Lai, J. Kruszelnicki, J. E. Foster, D. Dai and M. J. Kushner, "Propagation of Positive Discharges in an Air Bubble Having an Embedded Water Droplet", submitted to Plasma Source Sci. Technol.

361. G. Parsey, A. M. Lietz and M. J. Kushner, "Guided Plasma Jets Directed Onto Wet Surfaces: Angular Dependence and Control", submitted to J. Phys. D.

Book Chapters, Monographs, Major Reports, Trade Publications, Special Issue Editorials

1. M. J. Kushner, "Modeling High Pressure Electric Discharges: Applications to Excimer Lasers", Non-Equilibrium Processes in Partially Ionized Gases, edited by M. Captielli and J. N. Bardsley, (Plenum, New York, 1990), pp. 63-90.
2. M. J. Kushner and 13 other members of the Panel on Plasma Processing of Materials of the National Research Council, "Plasma Processing of Materials: Scientific Opportunities and Technological Challenges", (National Academy Press, Washington DC, 1991).
3. M. J. Kushner and D. B. Graves, "Guest Editorial", Special Issue of Transactions on Modeling Collisional Low Temperature Plasmas, IEEE Trans. Plasma Science **19**, 63 (1991).
4. M. J. Kushner and 8 other members of the Naval Studies Board of the National Research Council, "Plasma Processing and Processing Science" (National Academy Press, Washington DC, 1994).
5. M. J. Kushner, "Progress in Plasma Equipment Modeling", Solid State Technology, June 1996, pp. 135-144.
6. M. J. Kushner and 5 other members of the Panel on Database Needs in Plasma Processing of the National Research Council, "Database Needs for Modeling and Simulation of Plasma Processing" (National Academy Press, Washington DC, 1996).
7. M. J. Kushner and D. N. Ruzic, Guest Editorial, "First Triennial Special Issue on Images in Plasma Science,", Trans. Plasma Sci. **24**, 4 (1996).
8. M. J. Kushner and S. Rauf, Guest Editorial, "Second Triennial Special Issue on Images in Plasma Science," Trans. Plasma Sci. **27**, 4 (1999).
9. M. J. Kushner, Guest Editorial, "Third Trieenial Special Issue on Images in Plasma Science", Trans. Plasma Science **30**, 5 (2002).
10. M. J. Kushner and G. A. Hebner, Guest Editorial, "Fourth Triennial Special Issue on Images in Plasma Science," Trans. Plasma Sci., **33**, 224 (2005).
11. M. J. Kushner and 17 other members of the Plasma 2010 Committee of the Board on Physics and Astronomy of the National Research Council, "Plasma Science: Advancing Knowledge in the Public Interest", (National Academy Press, Washington DC, 2007).
12. M. J. Kushner and D. B. Graves Co-Chairs, "Low Temperature Plasma Science: Not Only the 4th State of Matter but All of Them," Report of the Low Temperature Plasma Science Workshop, UCLA, March 2008, (DOE Office of Fusion Energy Science, Washington DC, 2008).
13. N. Yu. Babaeva and M. J. Kushner, Guest Editorial, "Fifth Triennial Special Issue of Transactions on Images in Plasma Science", Trans. Plasma Sci. **36**, 862 (2008).
14. N. Yu. Babaeva and M. J. Kushner, Guest Editorial, "Sixth Triennial Special Issue of Transactions on Images in Plasma Science", Trans. Plasma Sci. **39**, 2057 (2011).
15. M. J. Kushner and M. Kong, "Fundamentals of non-Equilibrium Plasmas" in Plasma Medicine: Applications of Low-temperature Gas Plasmas in Medicine and Biology", ed. M. Laroussi, M. G. Kong, G. Morfill and W. Stolz (Cambridge, United Kingdom, 2012).
16. "Plasma" At the Frontier of Scientific Discovery", Report of the Panel on Frontiers of Plasma Science, US Department of Energy, Office of Fusion Energy Science, February 2017. (Lead author on "Plasmas at the Interface of Chemistry and Biology")
17. "Enabling a Future Based on Electricity Through Non-Equilibrium Plasma Chemsitry", Report of the National Science Foundation Workshop on Science Challenges in Low-Temperature Plasma Science and Engineering, August 2016. (Lead author and editor.)
18. M. J. Kushner (and co authors), "Plasma Science: Enabling Technology, Sustainability, Security, and Exploration", Report of the Panel for the Plasma 2020 Decadel Assessment of Plasma Science, National

Academies of Science, Engineering and Medicine (National Academies Press, Washington DC, 2020).

Invited General Public Lectures and Publications

1. M. J. Kushner, "Core Values and the New Business Model", ASEE Prism Magazine **10**, 65 (2001).
2. P. Barry Butler and M. J. Kushner, “Iowa’s Colleges of Engineering: Building a Better World for All,” E-Week Public Lectures at Iowa Rotary Clubs (February – March, 2005): Mason City, Fort Dodge, Des Moines, Iowa City, Cedar Rapids, Ames
3. M. J. Kushner, “Fostering Intellectual Diversity in Technical Disciplines: Measures of Excellence,” Senate Spring Symposium, Iowa State University, April 2005.
4. M. J. Kushner, “The Role of Land Grant Colleges of Engineering in the 21st Century,” Marston Club Dinner, Ames, IA, April 2005.
5. M. J. Kushner, “Leveraging Universities for Economic Development,” Ames Economic Development Corp., Ames, Iowa, September 2005.
6. M. J. Kushner and P. Barry Butler, “Leverage Universities to Transform State Economy,” Editorial, Des Moines Register, September 2005.
7. M. J. Kushner, “How to Get an Academic Job,” Society of Women Engineers Annual Symposium, Anaheim, CA, November 2005.
8. P. Barry Butler and M. J. Kushner, “The Role of Colleges of Engineerig in Economic Development,” E-Week Public Lectures at Iowa Rotary Clubs (February – April 2006): Des Moines, Waterloo, Cedar Rapids West.
9. M. J. Kushner, "How to Get Tenure," Society of Women Engineeris Annual Symposium, Kansas City, KC, November 2006.
10. M. J. Kushner, "Defining the Academic Global Engineer: The 2050 Challenge," 9th Annual Symposium on International Engineering Education, Newport, Rhode Island, November 2006.
11. M. J. Kushner, "The 2050 Challenge: The Time is Now and the Place to Start is Iowa", The Greater Des Moines Partnership, Des Moines, IA, November 2006.
12. M. J. Kushner, "To Save the Planet, Support Engineering Programs," Editorial, Des Moines Register, January 2007.
13. P. Barry Butler and M. J. Kushner, “The Role of Iowa in the Gather Storm of International Competitiveness,” E-Week Public Lectures at Iowa Rotary Clubs (February – April 2007): West Des Moines, Davenport, Cedar Rapids Downtown, Bettendorf.

Invited Conference and Workshop Presentations with Proceedings

1. M. J. Kushner, J. J. Ewing, A. L. Pindroh, C. H. Fisher and T. Znotins, "Multi-Dimensional Modeling of the Mercury Bromide Laser," SPIE Symposium (476) East '84 - Excimer Lasers, Arlington, VA, 1984. "Excimer Lasers, Their Applications, and New Frontiers in Lasers," R. W. Waynant, Editor, SPIE Proceedings, Bellingham, WA, vol. 476, pp. 25-33, 1984.

2. M. J. Kushner, H. M. Anderson and P. J. Hargis, "Simulation of Spatially Dependent Excitation Rates and Power Deposition in RF Discharges for Plasma Processing," Plasma Synthesis and Etching of Electronic Materials, Symposia Proceedings, vol. 38, R.P.H. Chang and B. Abeles, Editors, Mat. Res. Soc., Pittsburgh, 1985.

3. M. J. Kushner, "A Plasma Chemistry and Surface Model for the Deposition of a-Si:H from RF Glow Discharges: A Study of Hydrogen Content," Plasma Proceedings, Symposia Proceedings, vol. 68, J. W. Coburn, R. A. Gottscho and D. W. Hess, Editors, Mat. Res. Soc., Pittsburgh, pp. 293-307, 1986.

4. M. J. Kushner and A. Garscadden "Important Considerations for Optimizing Production Rates in RF Discharge Chemistry", Gaseous Dielectrics V, Proceedings of the Fifth International Symposium on Gaseous Dielectrics, Knoxville, Tennessee 1987, L. G. Christophorou and D. W. Bouldin, eds. (Pergamon, New York, 1987), pp. 334-342.

5. M. J. Kushner, H. Pak and J. V. Dicarlo, "Nonequilibrium Issues in Modeling Low and High Pressure Pulse Power Devices", in Proceedings of the XIX International Conference on Phenomena in Ionized Gases, Belgrade, Yugoslavia, July 1989.

6. M. J. Kushner and H. Pak, "Scaling Laws for Optically Triggered Hollow Cathode Switches Obtained by Computer Simulation", Physics and Applications of Hollow Glow Switches, edited by M. A. Gundersen and G. Schaefer (Plenum, New York, 1990), pp. 219-232.

7. M. J. McCaughey and M. J. Kushner, "When Can Swarm Data Be Used to Model Gas Discharges?", Nonequilibrium Effects in Ion and Electron Transport, Proceedings of the Sixth International Swarm Seminar, edited by J. W. Gallagher, D. F. Hudson, E. E. Kunhardt and R. J. Van Brunt (Plenum, New York, 1990), pp. 143-156.

8. P. J. Stout and Mark J. Kushner, "Processes Leading to Filament Formation in Optically Switched Semiconductors", 9th Pulsed Power Conference, Albuquerque, NM, June 1993; in Digest of Technical Papers of Ninth IEEE International Pulsed Power Conference, edited by K. Prestwich and W. Baker (IEEE, New York, 1993), pp. 808-811

9. M. J. Rood, A. C. Gentile and M. J. Kushner, "Gas Phase Removal of NO from Gas Streams via Dielectric Barrier Discharges", 1993 Diesel Emissions Research Workshop, Department of Energy, La Jolla, CA, July 1993.

10. S. J. Choi, P. L. G. Ventzek, R. J. Hoekstra and M. J. Kushner, "Modeling Particle Transport in Capacitively and Inductively Coupled Discharges", NATO Advanced Research Workshop on Dusty Plasmas, France, September 1993.

11. M. J. Kushner, S. J. Choi, P. L. G. Ventzek and R. J. Hoekstra, "Simulation of Particle Transport in Plasma Processing Discharges", Proceedings of the Joint DOE/NSF Workshop on Flow Particulates and Fluids, Cornell University, Ithaca, New York, October, 1993.

12. A. C. Gentile and M. J. Kushner, "Optimization of Plasma Remediation of N_xO_y from Diesel Exhaust", American Chemical Society Symposium (I&EC Division), Atlanta, GA, Sept. 1994. in Proceedings of the Symposium on Emerging Technologies in Hazardous Waste Management Vol. I, edited by D. W. Tedder (American Chemical Society, Atlanta, 1994), pp. 214-218.

13. M. J. Kushner and A. C. Gentile, "Modeling of Plasma Remediation of SO_2, N_xO_y and VOCs: Progress Report and Databases", Workshop on the Treatment of Gaseous Emissions via Plasma Technology, NIST, Gaithersburg, MD, March 1995.

14. F. Y. Huang, H. H. Huang and M. J. Kushner, "Dust Particle Transport in RIE Etching Tools", in Proceedings of Tegal 21st Annual Plasma Technology Seminar, edited by L. Jerde, San Francisco, CA, July 1995.

15. M. J. Kushner, "3-Dimensional Integrated Plasma Equipment Models", International Conference on Reactive Plasmas, Nara, Japan, January 1997.

16. M. J. Kushner and J. Lu, "Plasma Equipment Modeling for Process Design", 17th International VLSI Multilevel Interconnection Conference, Santa Clara, CA, June 2000.

17. A. Sankaran, A. Vasenkov and M. J. Kushner, "Fluorocarbon Etching of Porous Silicon Dioxide: Plasma Chemistry and Surface Kinetics, " Advanced Metallization Conference, San Diego, CA, October 2002. [in Advanced Metallization Conference 2002, edited by B. M. Melnick, T. S. Cale, S. Zaima and T. Ohta (Material Research Society, Warrendale, PA, 2003), pp. 551-556.]

18. M. Kushner, "Modeling of Microdischarge Devices", 2nd International Workshop on Microdischarges, Stevens Institute of Technology, Hoboken, NJ, October 2004.

19. M. Kushner, "Application of Advanced Modeling Techniques to Plasma Etching," Semicon-Korea, Seoul, Korea, February 2005.

20. A. Bhoj, N. Yu Babaeva, R. Arakoni and M. J. Kushner, "Plasmas In (and around) Small Places," International Conference on Phenomena in Ionized Gases, Veldhoven, Netherlands, July 2005.

21. M. J. Kushner and Y. Yang, "A Case Study of Model Based Development of Plasma Sources: Multi-frequency MERIE Reactors," 27th International Dry Process Symposium, Jeju, Korea, November 2005.

22. Ananth Bhoj, Natalia Babaeva and Mark J. Kushner, "Functionalization of Surfaces at Low and High Pressures," Joint meeting of the 6th International Conference on Reactive Plasmas and 23rd Symposium on Plasma Processing, Matsushima/Sendai, Japan, January, 2006.

23. M. J. Kushner, "The Role of Modeling of Non-equilibrium Plasmas: Scientific Curiosity or Industrial Tool?", Plenary Address, 18th International Sympoisum on Plasma Chemistry, Kyoto, Japan, August 2007.

24. Y. Yang, J. Schoeb, M. Wang and M. J. Kushner, "Progress, Opportunities and Challenges in Modeling of Plasma Etching," International Interconnect Technology Conference, Burlingame, CA, June 2008.

25. N. Y. Babaeva and M. J. Kushner, "Consequences of Inhomogeneities on Branching of Streamers in High Pressure Gases", 19th Europhysics Conference on the Atomic and Molecular Physics of Ionized Gases, Granada, Spain, July 2008.

26. Y. Yang, J. Schoeb, M. Wang and M. J. Kushner, "Plasma Tools for Nanoresolution", 2nd International Workshop on Plasma Etch and Strip in Microelectronics, Leuven, Belgium, February 2009.

27. M. J. Kushner "Fundamentals of Gas Phase Plasmas for Treatment of Human Tissue", MMVR18/NextMed (Medicine Meets Virtual Reality Conference), Newport Beach, CA, February 2011.

28. Zhongmin Xiong, Natalia Yu. Babaeva, Wei Tian and Mark J. Kushner, "Interaction of High Pressure Plasmas with their Boundaries: Channels, Tubes, Liquids and Tissue", 30th Int. Conf. on Phenomena in Ionized Gases, Belfast, N. Ireland, Sept. 2011.

29. S-H. Song , M. D. Logue , Y. Zhang , P. Tian and M. J. Kushner, "Control of Electron, Ion and Photon Distributions in Low Pressure Plasmas Using Pulsed Power", XXI Europhysics Conference on the Atomic and MolecularPhysics of Ionized Gases, Viana de Castelo, Portugal, July 2012.

30. J. P. Booth, N. Sirse, P. Chabert, P. Indelicato, A. Surzhykov and M. J. Kushner, "Dynamics of Cl_2 Inductively Coupled Plasmas: The Role of Electronic and Vibrational Excitation", 10th Frontiers in Low Temperaure Plasma Diagnostics, Rolduc, Kerkrade, The Netherlands, April 2013.

31. J. P. Booth, P. Chabert, N. Sirse, P. Indelicato, A. Surzhykov and M. J. Kushner, "Optical Diagnostics of Low-Pressure Plasmas Sustained in Halogen Gases", 31st International Conference on Phenomena in Ionized Gases, Granada, Spain, July 2013.

32. M. J. Kushner, "Plasma-Surface Interactions with Complex Materials: Inorganic, Liquid and Organic (Living)

Surfaces", 8th International Conference on Reactive Plasmas, Fukuoka, Japan, (Plenary), February 2014.

33. S-H. Song, Y. Zhang, M. D. Logue, P. Tian and M. J. Kushner, "Pulsed Plasmas for Control of Reactive Fluxes in Microelectronics Fabrication", Plasma Etch and Strip Meeting, Grenoble, France, May 2014.

34. A. M. Lietz, J. Kruszelnicki, Z. Xiong, N. Babaeva, J. Wang and M. J. Kushner, "Confined Atmospheric Plasma Sources for Activating Liquids and Tissues", 15th International Symposium on High Pressure Low Temperature Plasma Chemistry (HAKONE XV), Brno, Czech Republic, Sept. 2016.

35. M. J. Kushner, "The Quest for Selectivity in Plasma Chemsitry", Plenary Lecture, 23rd International Symposium on Plasm Chemistry, Montreal, Canada, July 2017.

36. S. Huang, C. Huard, P. Tian, C. Qu, S. Lanham, G. Parsey, S. Mohades and M. J. Kushner, "High and Moderate Aspect Ratio Etching: Insights from Modeling", 39th International Symposium on Dry Process, Tokyo, Japan, December 2017.

37. J. Kruszelnicki, S. Huang, C. Huard, C. Qu, A. M. Lietz, S. Mohades, G. Parsey and M. J. Kushner, "Controlling Plasma Surface Interactiosn When Challenged by Statistics and Equilibrium", 22nd International Conference on Gas Discharges and Their Applications", Novi Sad, Serbia, Sept. 2018. [Plenary Lecture]

38. J. Kruszelnicki and M. J. Kushner, "Chemical Conversion in Atmospheric Pressure Plasmas Sustained in Packed Bed Reactors", 24th International Symposium on Plasma Chemistry, Naples, Italy, June 2019.

39. S. Huang, C. Qu, X. Wang, S. Lanham, J. Polito and M. J. Kushner, "Plasma Processing for Microelectronics Fabrication: Will Modeling and Simulation Help Maintain Moores Law?", 34th International Conference on Phenomena in Ionized Gases, Sapporo, Hokkaido, Japan, July 2019 [Plenary Lecture]

Invited Conference and Workshop Presentations with Abstracts Only

1. M. J. Kushner, "Energy Partitioning and Excitation Rates in RF Parallel Plate Discharges," 37th Gaseous Electronics Conference, Boulder, CO, 1984 (Bull. Amer. Phys. Soc. 30, 143 (1985)).
2. M. J. Kushner, "Modeling Plasma and Surface Chemistry in Deposition Plasmas," Gordon Research Conference on the Chemistry of Electronic Materials, Concord, New Hampshire, 1986.
3. M. J. Kushner, "Modeling of Transient and Multi-Dimensional Effects in Discharge Excimer Lasers", Workshop on Discharge Pumped Excimer Lasers", Los Alamos, New Mexico, 1987.
4. M. J. Kushner and L. E. Kline, "Models of Plasma Deposition and Etching", 1988 Gordon Conference on Plasma Chemistry, Tilton, NH, 1988.
5. M. J. Kushner, "Modeling High Pressure Electric Discharges: Applications to Excimer Lasers", Lecturer at the NATO-ASI on Non-Equilibrium Processes in Partially Ionized Gases, Bari, Italy, June 1989.
6. M. J. Kushner, "Low Pressure Plasma Switches", Lecturer at the NATO-ASI on Non-Equilibrium Processes in Partially Ionized Gases, Bari, Italy, June 1989.
7. M. J. Kushner, "Modeling Electron Kinetics in Low Temperature Partially Ionized Plasmas", 36th National Symposium of the American Vacuum Society, Boston, October 1989.
8. M. J. Kushner, "Current Understanding and Remaining Physics Issues of the Xe:Ar(He,Ne) Laser", 42nd Gaseous Electronics Conference, Palo Alto, October 1989 (Bull. Am. Phys. Soc. 35, 1826, (1990).
9. M. J. Kushner, "A Status Report on the Availability and Needs of Electron Impact Cross Sections for Modeling Plasma Deposition", 42nd Gaseous Electronics Conference, Palo Alto, October 1989 (Bull. Am. Phys. Soc. 35, 1835, (1990).
10. M. J. Kushner and T. J. Sommerer, "The Real Time Control of Plasma Parameters: How Well Can It Be Done?", SPIE Microelectronics Processing Integration Symposium, Santa Clara, CA, Oct. 1990.
11. M. J. Kushner, "Plasma Chemical Aspects of Modeling Low Temperature and Pressure Materials Processing Reactors", AIChE Annual Meeting, Chicago, IL, Nov. 1990.
12. M. J. Kushner, T. J. Sommerer and M. J. McCaughey, "Progress Towards Modeling Remote Plasma CVD", Washington Materials Forum, Washington, DC., Mar. 1991.
13. M. J. Kushner, Y. Weng and M. J. McCaughey, "Silicon Hydride Chemistry in Remote Plasma Activated CVD", American Chemical Society, Symposium on Silicon Hydride Chemistry, Atlanta, GA, April 1991.
14. S. J. Choi, M. J. McCaughey, T. J. Sommerer and M. J. Kushner, "Generation and Transport of Particles in rf and dc Discharges", 38th Annual American Vacuum Society Meeting, Seattle, WA, November 1991.
15. M. J. Kushner, "Progress Towards Modeling Plasma Assisted Materials Processing: Kinetic, Fluid and Hybrid Models", Annual Meeting of the Division of Plasma Physics, American Physics Society, Tampa, FL, November 1991. (Bull. Am. Phys. Soc. **36**, 2372 (1991).
16. M. J. Kushner, S. J. Choi, M. J. Hartig, H. H. Hwang and T. J. Sommerer, "Simulation of Plasma Chemistry and Transport in Remote and Direct Processing Tools", 4th Annual SCOE Coordination Meeting, SemaTech, Austin, TX, March 1992.
17. M. J. Kushner, "Modeling Issues in Remote Plasma Processing", Theory and Modeling Workshop, University of Wisconsin ERC for Plasma Aided Manufacturing, April, 1992.
18. M. J. Kushner, "The Use of Hybrids in Process Modeling: Problems and Benefits", Theory and Modeling Workshop, University of Wisconsin ERC for Plasma Aided Manufacturing, April, 1992.
19. M. J. Kushner, S. J. Choi and T. J. Sommerer, "Modeling Low Pressure Inductively Coupled Plasmas for Etching", SRC-Technical Research Conference on Plasma Etch, Princeton University, May, 1992.
20. M. J. Kushner, "A Review of Models for Plasma Processing", 18th International Symposium on Rarefied Gas

Dynamics", Vancouver, Canada, July 1992.

21. M. J. Kushner, "Models and Diagnostics of Plasma Processing Discharges", X International Conference on Gas Discharges and Their Applications", Swansea, Wales, September 1992.

22. M. J. Kushner, "Unifying Aspects of Discharge Physics and Gas Lasers", IEEE Lasers and Electrooptics Society Annual Meeting, Boston, MA, November 1993.

23. D. Evans, D. Storch and M. J. Kushner, "Modeling Studies of the Oxidation of Trichloroethylene and Formaldehyde in Gas Streams Using Dielectric Barrier Discharges", EPRI Symposium on Environmental Applications of Advanced Oxidation Technologies, San Francisco, CA, Feb. 1993.

24. M. J. Kushner, "Modeling Precursor Fluxes in RPECVD", Sematech Coordination Meeting, Austin, TX, April 1993.

25. M. J. Kushner, "Modeling Inductively Coupled Plasma Sources for Etching", High Plasma Density Workshop, Engineering Research Center for Plasma Aided Manufacturing, Madison, WI, June 1993.

26. P. L. G. Ventzek and M . J. Kushner, "A Model for Inductively Coupled Plasma Sources", AVS Symposium on High Plasma Density Sources, San Francisco, August 1993.

27. M. J. Kushner, “Modeling Inductively Coupled Plasmas,” Gaseous Electronics Meeting, Canberra, Australia, February 1994.

28. M. J. Kushner, “Plasma Equipment Modeling,” SRC/Sematech Workshop on Plasma Modeling, Dallas, TX, February 1994.

29. P. J. Stout and M. J. Kushner, "Two Dimensional Modeling of Optically Switched GaAs", IEEE Conference on Plasma Science, Santa Fe, NM, June 1994.

30. P. L. G. Ventzek and M. J. Kushner, "Modeling of Inductively Coupled Plasma Tools", Third World Congress on Computational Mechanics, Chiba, Japan, August 1994.

31. M. J. Kushner, "High Plasma Density Inductively Coupled Etching Tools: Computer Aided Design", 31st Annual Symposium of the New Mexico Chapter of the American Vacuum Society, Albuquerque, NM, April 1995.

32. M. J. Kushner, "Modeling of Plasma Remediation of SO_2, N_xO_y, and VOCs: Progress Report and Databases", NIST Workshop on the Treatment of Gaseous Emissions via Plasma Technology", Washington DC, March 1995.

33. M. J. Kushner, "Database Needs for Ion Processes and Neutral Chemistry in Plasma Processing", National Research Council Workshop on Database Needs in Plasma Processing, Washington DC, April 1995.

34. M. J. Kushner, "Modeling Plasma Chemistry: Present Status and Future Requirements", 12th International Symposium on Plasma Chemistry", Minneapolis, MN, August 1995.

35. M. J. Kushner, "Ion and Neutral Chemistry Databases for Plasma Processing: Current Status and Future Needs", 48th Gaseous Electronics Conference, Berkeley, CA, October 1995 (Bull. Am. Phys. Soc. **40**, 1564 (1995))

36. M. J. Kushner, "The Impact of Databases on Plasma Processing Modeling", 10th APS Topical Conference on Atomic Processes in Plasmas, San Francisco, January 1996

37. M. J. Kushner, J. Holland, W. Collison, M. J. Grapperhaus and M. S. Barnes, "3D Studies of Coil Properties in Transformer Coupled Plasma Etch Reactors-Modeling and Experiment", 1996 Symposium of the New Mexico Chapter of the American Vacuum Society, April 1996.

38. M. J. Kushner, "Particle Transport in Plasma Equipment", Improved Particle Performance in Equipment Through Contamination Modeling", Sematech Technology Transfer Workshop, San Jose, April 1996.

39. M. J. Kushner, "Plasma Equipment Modeling for Semiconductor Fabrication: Requirements and Applications", 1996 Joint American Physical Society/American Association of Physics Teachers Meeting,

Indianapolis, IN, May 1996.

40. M. J. Kushner, M. J. Grapperhaus, R. J. Hoekstra and S. Rauf, "One Approach to Resolving Reactor to Sub-Micron Scales in Simulation of Plasma Etching for Microelectronics Fabrication", Conference on Multiscale Phenomena in Science and Engineering, Baton Rouge, LA, February 1997.

41. M. J. Kushner, "Database Requirements for Modeling and Diagnostics of Plasmas Materials Processing", 24th Annual United Kingdom Plasma Physics Conference, Leeds, England, March 1997.

42. S. Rauf, M. J. Grapperhaus, R. J. Hoekstra and M. J. Kushner, "Simulation Tools for the Design and Analysis of Plasma Processing Equipment", International Conference on Plasma Science, San Diego, CA, May 1997.

43. M. J. Kushner, "A History of Modeling and Simulation for Plasma Processing: A Personal Perspective", 23rd Tegal Plasma Processing Symposium, San Francisco, July 1997.

44. M. J. Kushner, "Atomic and Molecular Physics Knowledge-Bases for Modeling of Plasma Processing of Materials", APS-Division of Atomic, Molecular and Optical Physics Annual Meeting, Santa Fe, May 1998.

45. M. J. Kushner, "3-dimensional Plasma Processing Modeling", Gordon Research Conference on Plasma Processing Science, Tilton, NH, August 1998.

46. M. J. Kushner, "Modeling of Plasma Processing and the Needs for Spectroscopic Data", 6th International Colloquium on Atomic Spectra and Oscillator Strengths", Victoria, BC, August 1998.

47. M. J. Kushner, "Modeling and Simulation of Plasma Processing: Status and Database Requirements", CECAM Workshop on Electron-Molecule Collision Data for Modeling and Simulation of Plasma Processing, Lyon, France, September 1998

48. M. J. Kushner, "Electron and Photon Chemistry in Plasma Processing", Electron and Photon Initiated Chemistry Workshop, Department of Energy, Lawrence Berkeley National Laboratory, October 1998.

49. M. J. Kushner, "Plasma Modeling for Design of Equipment, Processes and Real-Time-Control Strategies", AFOSR Computational and Applied Mathematics Meeting, St. Louis, August, 1999.

50. M. J. Kushner, " Strategies for Rapidly Developing Plasma Chemistry Model", 52nd Gaseous Electronics Conference, Norfolk, VA, October, 1999. (Bull. Am. Phys. Soc. **44**, 63 (1999))

51. M. Kushner, "Introduction to the Session in Honor of Will Allis", 52nd Gaseous Electronics Conference, Norfolk, VA, October, 1999. (Bull. Am. Phys. Soc. **44**, 41 (1999))

52. M. J. Kushner, "Plasma Equipment Modeling: Fundamentals and Applications", Applied Materials Engineering and Technology Conference, Whistler, BC, Canada, May 2000.

53. M. J. Kushner, "Modeling of Collisional, Low Temperature Plasmas: Fundamentals and Applications" (Plenary), 27th IEEE International Conference on Plasma Science, New Orleans, LA, June, 2000.

54. M. J. Kushner, "Sustaining Another Decade of Innovation in Equipment and Process Design: Needs and Challenges", 47th International Symposium of the American Vacuum Society, Boston, MA, October 2000.

55. M. J. Kushner, "Dealing with Uncertainty in Modeling Industrial Plasmas: No Data, No Experiments, No Time", DARPA-AIM Uncertainty Workshop, Annapolis, MD, August 2001.

56. M. J. Kushner, "Applying Fundamental Concepts to the Design of Plasma Processes: The Importance of Rigor" Southern California American Vacuum Society Symposium, Anaheim, CA, Sept. 2001.

57. R. Dorai and M. J. Kushner, "Plasma Surface Modification of Polymers", 29th IEEE International Conference on Plasma Science, Banff, Alberta, Canada, May 2002.

58. P. Subramonium and M. J. Kushner, "Consequences of Plasma Chemistry on the Uniformity of Neutral and Ion Temperatures in Inductively Coupled Plasmas", 29th IEEE International Conference on Plasma Science, Banff, Alberta, Canada, May 2002.

59. M. J. Kushner, "Sources of Non-Equilibirum in Plasma Materials Processing," 16th International Symposium on Plasma Chemistry, Taormina Italy, June 2003.

60. M. J. Kushner, “Continuity in Plasma Processing: Yesterday’s Accomplishments, Today’s Innovations, Tomorrow’s Challenges,” 50th International Symposium of the American Vacuum Society, Baltimore, MD, Nov. 2003.

61. M. J. Kushner, “Optimizing Plasma Processing from \$0.05/m^2 to \$1000/cm^2,” Gaseous Electronics Meeting, Murramarang, Australia, February 2004.

62. D. Shane Stafford and M. J. Kushner, “Scaling of Electrically Excited Chemical Oxygen Iodine Lasers,” Workshop on Electrically Excited COIL Lasers, Albuquerque, NM, May 2004.

63. D. Shane Stafford, June Lu, Ramesh Arakoni and Mark J. Kushner, “Thoughts About Controlling Aerodynamic Flows Using Plasmas,” Workshop on Aerodynamic Control Using Plasmas, Eglin Air Force Base, FL, May 2004.

64. M. J. Kushner, “Applications of Low Temperature Plasmas: Status, Scientific Issues and Opportunities,” 12th International Conference on Plasma Physics, Nice, France, October 2004.

65. A. Bhoj, N. Yu Babaeva, R. Dorai and M. J. Kushner, “New Opportunities in Plasma Surface Interactions for Functionalization of Surfaces,” Annual Meeting of the Division of Atomic, Molecular and Optical Physics, American Physical Society, Lincoln, Nebraska, May 2005.

66. A. Agarwal and M. J. Kushner, “Characteristics of Pulsed Plasma Doping Sources for Ultra Shallow Junction Formation,” 32nd International Conference on Plasma Science, Monterey, CA, June 2005.

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128. M. J. Kushner, "Enabling Technology Innovation through Plasma Modeling: Biotechnology as the Next Frontier", Plenary Lecture, 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 2016.

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133. M. J. Kushner, "Creating a Vision and Building Teams for NSF Science and Technology Centers", Workshop on Developing Science and Technology Centers, College of Engineering, University of Michigan, December 2016.

134. M. J. Kushner, "Contributions of Basic Plasma Physics to Technology Development Enabled by Modeling", 20th Anniversary Workshop for the NSF/DOE Partnership in Basic Plasma Science and Engineering, NSF Headquarters, Washington, DC, January 2017.

135. J. Kruszelnicki, A. M. Lietz and M. J. Kushner, "Interaction Between Atmospheric Pressure Plasmas and Liquid Micro-Droplets", International Conference on Plasmas and Liquids, Prague, Czech Republic, March 2017.

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140. M. J. Kushner, "Addressing Challenges in Selectivity and High Aspect Ratio Plasma Etching Through Modeling", Semicon-Korea, Seoul, Korea, February 2018.

141. M. J. Kushner, "From Plasmas Towards Surfaces: How Plasma Simulation Supports Materials Development", 45th International Conferences on Metallurgical Coatings and Thin Films, San Diego, CA, USA, April 2018.

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146. M. J. Kushner, "Case Studies in Delivering Plasma Produced Activation Energy to Surfaces: Liquids to Microelectronics", Asia-Pacific Conferences on Plasma and Terahertz Science, Xi'an China, August 2018 [Plenary Lecture]

147. M. J. Kushner, "Status of Integrated Reactor and Feature Scale Modeling for Plasma-based Semiconductor Fabrication", 2018 International Conference on Simulation of Semiconductor Processes and Devices (SISPAD), Austin, TX, Sept. 2018 [Plenary Lecture]

148. M. J. Kushner, "Time-Slicing in Multi-Physics Modeling:Using Hybrid Methods in Low Temperature Plasma Simulations to Address Disparate Time Scales", 1st Frontiers in Low-Temperature Plasma Simulations", Bad

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Springs, NY, October 2009.

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425. W. Tian and M. J. Kushner, "Simulations of Images and Optical Spectra of Plasmas Sustained in Bubbles in Water", 65th Gaseous Electronics Conference, Austin, TX, October 2012.

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436. C. M. Denning, G. Partridge, R. Urdahl, P. Tian and M. J. Kushner, "Thomson Scattering Diagnostics and Computational Modeling of a Low Pressure Microwave Excited Microplasma Source", 40TH International Conference on Plasma Science, San Francisco, CA, June 2013.

437. Z. Xiong and M. J. Kushner, "Atmospheric Pressure Plasmas Penetrating Through a Packed Bed Reactor", 40TH International Conference on Plasma Science, San Francisco, CA, June 2013.

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459. W. Tian and M. J. Kushner, "Atmospheric Pressure Dielectric Barrier Discharge Interaction with Wet Tissue – Modeling Long(er) Term Exposure", 1st International Workshop on Plasma for Cancer Treatment, Washington DC, March 2014.

460. S. A. Norberg and M. J. Kushner, "Plasma Jet Interactions with Dry and Wet Tissue", 1st International Workshop on Plasma for Cancer Treatment, Washington DC, March 2014.

461. S. A. Norberg, W. Tian and M. J. Kushner, "Controlling Plasma Jets with Gas Shields and Their Interactions with Water Covered Tissue", 5th International Conference on Plasma Medicine, Nara, Japan, May 2014.

462. W. Tian and M. J. Kushner, "Long-Term Exposure of Atmospheric Dielectric Barrier Discharges onto Wet Tissue," 41st IEEE Conference on Plasma Science, Washington DC, May 2014.

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465. Y. Zhang, M. J. Kushner and S. Shannon, "Control of Ion Energy Distributions Using Phase Shifting in Multi-Frequency Capacitively Coupled Plasmas", 41st IEEE Conference on Plasma Science, Washington DC, May 2014.

466. N. Yu. Babaeva, A. H. Markosyan, O. Zatsarinny, K. Bartschat and M. J. Kushner, "Plasma Formation during operation of a diode pumped alkali laser", 67th Gaseous Electronics Conference, Raleigh, NC, November. 2014.

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472. P. Tian, M. Denning, R. Urdahl and M. J. Kushner, "Dynamics of a Microwave Excited Microplasma Flowing into Very Low Pressures", 67th Gaseous Electronics Conference, Raleigh, NC, November. 2014.

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486. W. Tian and M. J. Kushner, "Controlling Fluences of Reactive Species Produced by Multipulse DBDs onto We Tissue: Frequency and Liquid Thickness", 68th Gaseous Electronics Conference, Honolulu, HI, October 2015.

487. A. H. Markosyan and M. J. Kushner, "Effects of Plasma Formation on the Cesium Diode (DPAL) and Excimer (XPAL) Pumped Alkali iLaser", 68th Gaseous Electronics Conference, Honolulu, HI, October 2015.

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489. A. R. Gibson, T. Gans, M. Foucher, D. Marinov, P. Chabert, M. Kushner and J-P. Booth, "Modelling the influence of neutral gas heating mechanisms on particle densities in inductively coupled chlorine discharges", 68th Gaseous Electronics Conference, Honolulu, HI, October 2015.

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62nd American Vacuum Society International Symposium, San Jose, CA, October 2015.

492. C. Qu, P. Tian and M. J. Kushner, "Customizing Arrays of Microplasmas for Controlling Properties of Electromagnetic Waves", 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 2016.

493. C. Huard, M. J. Kushner, Y. Zhang, S. Sriraman, J. R. Belen and A. Paterson, "Origins of Aspect Ratio Dependent Etching in Plasma Materials Processing", 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 2016.

494. J. Kruszelnicki, K. W. Engeling, J. E. Foster and M. J. Kushner, "Properties of Atmospheric Pressure Plasmas in Packed Bed Reactors", 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 2016.

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499. S. Huang, M. J. Kushner, V. Volynets, S. Lee, I.-C. Song and S. Lu, "Optimizing Remote Plasma Sources for Selective Etching", 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 2016.

500. C. Huard, M. J. Kushner, Y. Zhang, S. Sriraman and A. Paterson, "Investigating the role of neutral transport in ALE and RIE processes using a 3-dimensional Monte Carlo Feature Profile Model", Atomic Layer Etching Workshop, Dublin Ireland, July 2016.

501. A. M. Lietz, M. J. Kushner, V. Petrishchev and I. V. Adamovich, "Surface Ionization Waves over Water at Moderate Pressure", Gordon Research Conference on Plasma Processing Science, Plymouth, New Hampshire, July 2016.

502. C. Qu, P. Tian and M. J. Kushner, "Customizing Arrays of Microplasmas for Controlling Properties of Electromagnetic Waves", Gordon Research Conference on Plasma Processing Science, Plymouth, New Hampshire, July 2016.

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505. S. J. Lanham and M. J. Kushner, "Customized Bias Frequencey Waveforms to Control Ion Energy Distributions in ICP Reactors", Gordon Research Conference on Plasma Processing Science, Plymouth, New Hampshire, July 2016.

506. J.R. Hamilton, S. Huang, M. J. Kushner, S. Rahimi, C. Hill, A. Dzarasova, and J. Tennyson, "Quantemole Database of Validated Chemistry Datasets: Calculated Cross Sections for Electron NFx Collisions as an Example", 10th International Conference on Atomic and Molecular Data and Their Applications", Gusan, Korea, September 2016.

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510. J. Kruszelnicki, K. W. Engeling, J. E. Foster and M. J. Kushner, "Properties Influencing Plasma Discharges in Packed Bed Reactors", 69th Gaseous Electronics Conference, Bochum, Germany, October 2016.

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517. P. Tian, S. Huang, M. J. Kushner, V. Volynets, S-H. Lee, I-C. Song and S. Lu, "Control of uniformity and ion energy distributions in tri-frequency capacitively coupled plasmas accounting for finite wavelength effects", 63rd American Vacuum Society International Symposium, Nashville, TN, November 2016.

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520. N. Yu. Babaeva, G. V. Naidis, and M. .J. Kushner, "Simulation of Streamer Interaction with Bubbles on Liquid Surface", 16th International Workshop on Magneto-Plasma Aerodynamics, Moscow, Russia, April 2017.

521. K. W. Engeling, J. E. Foster, J. Kruszelnicki and M. J. Kushner, "Micro-Discharge Evolution in a 2-Dimensional Packed Bed Reactor", 44th International Conference on Plasma Science, Atlantic City, NJ, May 2017. (Best Student Paper Award)

522. S. Huang, C. Huard, M. J. Kushner, S. Shim, S-H. Lee, I-C. Song and S. Lu, "Contact Edge Roughness in the Etching of High Aspect Raio Contacts in SiO_2", 44th International Conference on Plasma Science, Atlantic City, NJ, May 2017.

523. C. M. Hurard, S. J. Lanham and M. J. Kushner, "Reactor Scale Uniformity Enabled by Atomic Layer Etching", Atomic Layer Deposition/Atomic Layer Etching Workshop, Denver, CO, July 2017 (Best Student Paper Award)

524. K. W. Engeling, J. E. Foster, J. Kruszelnicki and M. J. Kushner, "The Effects of Pressure Variations on Micro-Discharge Formation and Propagation in at 2-D Packed Bed Reactor, 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

525. J. Kruszelnicki, A. M. Lietz and M. J. Kushner, "Interactions Between Water Droplets and Atmospheric Pressure Plasmas", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

526. C. Qu, P. Tian, S. Huang and M. J. Kushner, "Customizing Capacitively Coupled Plasma Properties with Triple-Frequency Power Sources", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

527. A. M. Lietz, X. Damany, J-M. Pouvesle, E. Robert and M. J. Kushner, "Atmospheric Pressure Plasma Multi-Jets: Fundamental Properties", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

528. S. A. Norberg, G. Parsey, S. Daudlin, A. M. Lietz, E. Johnsen and M. J. Kushner, "Multi-Pulse Ooperation of an Atmospheric Pressure Plasma Jet onto a Reactive Liquid Layer", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

529. Y. Luo, A. M. Lietz, M. J. Kushner and P. J. Bruggeman, "Chemical Kinetics Mechanisms Study of High Electron Density Argon-Water Filamentary Discharges", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

530. K. Ford, J. Brandon, D. S. Kim, T. list, T. Ma, P. Arora, S. Huang, S. K. Nam, S. Shannon, V. Donnelly and M. J. Kushner, "Fundamental Studies of Pulsed Processing Plasmas", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

531. M. J. Kushner, "NSF Low Temperature Plasma Workshop on Sustainabiilty: Process, Findings, Path Forward", 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

532. G. Park, M. Y. Hur, C. Choi, H. Kim, M. J. Kushner and H. J. Lee, "Simulation of Large Area Inductively Coupled Plasmas using CF_4/O_2 Gas for Dry Etching of a Flat Panel Display, 70th Gaseous Electronics Conference, Pittsburgh, PA, October 2017.

533. C. Huard, Y. Zhang, S. Sriraman, A. Paterson and M. J. Kushner, "Effect of Non-Uniform Polymer Deposition on the Atomic Layer Etching of 3D Features in SiO_2", 64th American Vacuum Society International Symposium, Tampa, FL, November 2017.

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535. S. J. Lanham and M. J. Kushner, "Investigating Mode Transitions in Pulsed Inductively Coupled Plasmas", 64th American Vacuum Society International Symposium, Tampa, FL, November 2017.

536. S. J. Doyle, A. R. Gibson, R. W. Boswell, C. Charles, T. S. Ho, P. Tian, M. J. Kushner, and J. Dedrick, "Spatio-temporal plasma heating mechanisms in a radio-frequency electrothermal microthruster", Workshop on the Exploration of Low Temperature Plasmas, Keerkrade, Netherlands, November 2017.

537. J. Kruszelnicki, A. M. Lietz, G. Parsey, S. Mohades, and M. J. Kushner, "Consequences of Environmental Factors in Plams Treatment of Liquids, Tissues and Materials", International Workshop on Plasma Cancer Treatment, Griefswald, Germany, March 2018.

538. A. R. Gibson, S. Schroter, T. Gans, M. J. Kushner and D. O'Connell, "Insights into reactive species delivery using plamsas produced in high aspect ratio needles", IOP Plasma Physics Conference, Belfast, Northern Ireland, April 2018.

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543. S. Schröter, A. Wijaikhum, A. R. Gibson, J. Bredin, K. Niemi, A. West, Y. Gorbanev, H. Davies, N. Minesi, N. de Oliveira, L. Nahon, J. Dedrick, J.-P. Booth, V. Chechik, M. J. Kushner, E. Wagenaars, T. Gans, D. O'Connell, "Multi-species experimental validation of plasma chemistry models at atmospheric pressure", Frontiers in Low-Temperature Plasma Simulation Workshop, Dublin, Ireland, May 2018.

544. A. R. Gibson, S. Schröter, T. Gans, M. J. Kushner, E. Wagenaars, T. Gans, D. O'Connell, "Plasma simulations in the context of biomedical applications: chemical kinetics in needle-like plasma sources", Frontiers in Low-Temperature Plasma Simulation Workshop, Dublin, Ireland, May 2018.

545. A. R. Gibson, S. Schröter, T. Gans, M. J. Kushner and D. O'Connell, "Modelling reactive species production and delivery in high aspect ratio tubes for endoscopic applications", 7th International Conference on Plasma Medicine, Philadelphia, PA, June 2018.

546. G. M. Parsey, S. A. Norberg, A. M. Lietz and M. J. Kushner, "Multi-pulse Atmospheric Pressure Plasma Jet onto a Reactive Liquid Layer", 7th International Conference on Plasma Medicine, Philadelphia, PA, June 2018.

547. S. Mohades, A. M. Lietz, J. Kruszelnicki and M. J. Kushner, "The consequences of well plate geometry and gas flow on plasma jet interactions with liquid media", 7th International Conference on Plasma Medicine, Philadelphia, PA, June 2018.

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549. S. Huang, M. J. Kushner, S. Shim and S-K. Nam, "Optimizing Uniformity in Plasma Etching of High Aspect Ratio Features by Engineering the Focus Ring", 45th International Conference on Plasma Science, Denver, CO, June 2018.

550. A. M. Lietz, J. E. Foster, M. J. Kushner and E. V. Barnat, "Ionization Wave Propagation and Surface Interactions in a He Plasma Jet", 45th International Conference on Plasma Science, Denver, CO, June 2018.

551. C. Qu, P. Tian, S. J. Lanham, M. J. Kushner, T. Ma, T. Lis, P. Arora and V. M. Donnelly, "Ignition Time and Transport Properties of Inductively Coupled Plasmas Using Low-High Pulsed Power", 45th International Conference on Plasma Science, Denver, CO, June 2018.

552. J. Kruszelnicki, K. Engeling, J. E. Foster, and M. J. Kushner, "Impact of System Parameters on Plasma Formation and Production of Reactive Species in 2-D Packed Bed Reactors", International Symposium on Non-thermal/Thermal Plasma Pollution Control Technology and Sustainable Energy, Padova, Italy, July, 2018.

553. J. Kruszelnicki, A. M. Lietz, and M. J. Kushner, "Interactions Between Water Aerosols and DBD Plasmas", International Symposium on Non-thermal/Thermal Plasma Pollution Control Technology and Sustainable Energy, Padova, Italy, July, 2018.

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557. A. M. Lietz and M. J. Kushner, "Molecular Admixtures in Atmospheric Pressure Plasma Jets", Gordon Research Conference on Plasma Processing Science, Simithfield, RI, August 2018.

558. S. Mohades, A. M. Lietz, J. Kruszelnicki and M. J. Kushner, "Plasma jet interactions with Liquid-in-Plate",

Gordon Research Conference on Plasma Processing Science, Simithfield, RI, August 2018.

559. S. Mohades, S. Huang, M. J. Kushner, M. Wang and A. Mosden, "Flux and Energy of Reactive Species Arriving at the Etch Front in High Aspect Ratio Features During Plasma Etching of SiO_2 in $Ar/CF_4/CHF_3$ Mixtures 65th American Vacuum Society Symposium, Long Beach, CA, October 2018.

560. S. Huang, C. Huard, S.-K. Nam, S. Shim, W. Ko and M. J. Kushner, "Plasma Etching of High Aspect Ratio Oxide-Nitride-Oxide Stacks", 65th American Vacuum Society Symposium, Long Beach, CA, October 2018.

561. C. Qu, P. Tian, S. J. Lanham, M. J. Kushner, T. Ma, T. List, P. Arora and V. M. Donnelly, "Optimizing Transients Using Low-High Pulsed Power in Inductively Coupled Plasmas", 65th American Vacuum Society Symposium, Long Beach, CA, October 2018.

562. S. J. Doyle, A. R. Gibson, T. S. Ho, R. W. Boswell, C. Charles, M. J. Kushner and J. P. Dedrick, "Control of electron, ion and neutral dynamics in radio-frequency electrothermal microthrusters", 16th Technological Plasma Workshop, Loughborough University, UK, October 2018.

563. C. Smith, J. Brandon, S. Shannon, P. Tian, M. J. Kushner and S.-K. Nam,"Self-Consistent Circuit Model for Pulsed Inductively Coupled Plasmas", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

564. W. Gekelman, J. Han, J. Han, P. Pribyl, A. Paterson, M. J. Kushner and S. J. Lanham, "Three-dimensional Measurements of plasma properties in an industrial etch tool", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

565. K. Engeling, J. Kruszelnicki, M. J. Kushner and J. E. Foster, "A Spectroscopic Study of Discharge Species Produced in a Packed Bed Dielectric Barrier Discharge Reactor", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

566. J. Kruszelnicki, K. Engeling, J. E. Foster and M. J. Kushner, "Electric field emission and local surface heating in plasma packed bed reactors having metal catalyst-impregnated dielectric beads", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

567. G. Parsey, J. Kruszelnicki, A. M. Lietz and M. J. Kushner, "Variability of an Atmospheric Pressure Plasma Jet for Tissue Surface-Treatment", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

568. R. Ma, J. Kruszelnicki and M. J. Kushner, "Atmospheric Pressure Plasma Propagation through Porous Bone Scaffolding", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

569. S. Huang, C. Huard, S.-K. Nam, S. Shim, W. Ko and M. J. Kushner, "Optimizing Plasma Etching of High Aspect Ratio Oxide-Nitride-Oxide Stack", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

570. A. R. Gibson, S. Schroeter, T. Gans, M. J. Kushner and D. O'Connell, "Modelling plasma-produced reactive species delivery and scaling via prostate biopsy needles for application in prostate cancer therapy", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

571. A. M. Lietz, E. V. Barnat, C. Winters, J. E. Foster and M. J. Kushner, "Ionization wave dynamics of a plasma jet in contact with liquid water", 71st Gaseous Electronics Conference, Portland, OR, November 2018.

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573. G. M. Parsey, H. Razavi and M. J. Kushner, "Feedback Control Strategies for Plasmla Treatement of Biofluids: Angular Dependence", International Workshp on Plasma Treatment of Cancer, Antwerp, Belgium, April 2019.

574. S. Huang, M. J. Kushner, S. Shim, S-K. Nam and W. Ko, "Pattern Dependent Profile Distortion in Plasma Etching of High Aspect Ratio Features", 46th International Conference on Plasma Science/ IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 2019.

575. C. Qu, M. J. Kushner, P. Agarwal, Y. Sakiyama and A. LaVoie, "Plasma Properties in a High Pressure ALD Reactor", 46th International Conference on Plasma Science/ IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 2019.

576. C. Qu, M. J. Kushner, J. Brandon, C. Smoth, S. C. Shannon and D. Couomou, "Optimizing Power Delivery using Impendence Matching Networks with Set-Point and Frequency Tuning for Pulsed Inductively Coupled Plasmas", 46th International Conference on Plasma Science/ IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 2019.

577. J. Kruszelnicki, R. Ma and M. J. Kushner, "Modeling of Fluxes and Surface Coverage of Plasma-Produced Species on Artificial Bone Scaffolding", 46th International Conference on Plasma Science/ IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 2019.

578. Y. Fu, J. Krek, P. Zhang, J. P. Verboncoeur, G. M Parsey and M. J. Kushner, " Characterizing Breakdown Voltage in Micro-gaps with Multiple Emitters at Atmospheric Pressure", 46th International Conference on Plasma Science/ IEEE Pulsed Power and Plasma Science Conference, Orlando, FL, June 2019.

579. C. Qu, P. Agarwal, Y. Sakiyama, A. Lavoie and M. J. Kushner, "Modeling of SiO_2 PEALD Using Ar/O_2 CCP", Lam Research University Collaboration Showcase, Fremont, CA, August 2019.

580. C. Qu, J. Brandon, C. Smith, S. C. Shannon and M. J. Kushner, "Optimizing Power Delivery in a Pulsed Inductively Coupled Plasma Using Set-Point Impedance Match and Frequency Tuning", 66th AVS International Symposium, Columbus, OH, October 2019.

581. X. Wang, M. Wang, A. Mosden, P. E. Biolsi and M. J. Kushner, "Effects of Bias on Quasi-Atomic Layer Etching of Silicon Dioxide by Cyclic $Ar/C_4F_8/O_2$ and Ar Plasmas", 66th AVS International Symposium, Columbus, OH, October 2019.

582. C. Qu, P. Agarwall, Y. Sakiyama, A. LaVoie and M. J. Kushner, "Computational Investigation of Plasma Enhanced ALD of SiO_2", 66th AVS International Symposium, Columbus, OH, October 2019.

583. S. Huang, S-K. Nam, S. Shim and M. J. Kushner, "Pattern Dependent Profile Distortion in High Aspect Ratio Plasma Etching of SiO_2 and SiO_2-Si_3N_4-SiO_2 Stacks", 72nd Gaseous Electronics Conference, College Station, TX, October 2019.

584. J. Polito, S. Lanham, H. Andaraarachchi, Z. Li, Z. Xiong, U. Kortshagen and M. J. Kushner, "Reactor Scale Modeling of Nanoparticle Growth in Low Temperature Plasmas", 72nd Gaseous Electronics Conference, College Station, TX, October 2019.

585. J. Kruszelnicki, G. Parsey and M. J. Kushner, "Production of Reactive Species in 2-D Packed Bed Reactors -- Impact of System Parameters", 72nd Gaseous Electronics Conference, College Station, TX, October 2019.

586. N. Yu. Babaeva, G. V. Naidis and M. J. Kushner, "Control of Plasma Jet Dynamics by Externally Applied Electric Fields", 72nd Gaseous Electronics Conference, College Station, TX, October 2019.

587. S. Lanham, J. Polito, H. Andaraarachchi, Z. Li, Z. Xiong, U. Kortshagen and M. J. Kushner, "Kinetic Modeling of Nanoparticle Growth in Low Pressure Dusty Plasmas", 72nd Gaseous Electronics Conference, College Station, TX, October 2019.

588. C. Qu, M. J. Kushner, P. Agarwal, Y. Sakiyama and A. Lavoie, "Computational Investigation of Plasma Enhanced ALD of SiO2", International Online Plasma Seminar, January, 2020.

589. S. J. Doyle, A. R. Gibson, S. Leigh, G. J. Smith, R. W. Boswell, C. Charles4, M. J. Kushner and J. P. Dedrick, 47th IOP Plasma Physics Conference, Institute of Physics, London, April 2020.

590. C. Qu, M. J. Kushner, P. Agarwal, Y. Sakiyama and A. LaVoie, "The Role of Steric Hindrance During Plasma Enhanced ALD of SiO_2", AVS 20th International Conference on Atomic Layer Deposition, Ghent, Belgium (Virtual), June 2020.

Invited Symposia, Seminar and Short-Course Presentations

1. M. J. Kushner, "A Self Consistent Model for High Repetition Rate Copper Vapor Lasers", Lawrence Livermore National Laboratory, Livermore, CA, 1981.
2. M. J. Kushner, "A Model for Plasma Etching", California Institute of Technology, Pasadena, CA, 1982.
3. M. J. Kushner, "Plasma Etching Studies", Dupont Research Laboratories, Wilmington, Delaware, 1983.
4. M. J. Kushner, "Dimensional Effects in Gas Discharges for Plasma Processing," Non-Equilibrium Phenomena in Pulsed Discharges and Plasma Processing, GTE Laboratories, Waltham, MA, 1983.
5. M. J. Kushner, "Mechanisms for Power Deposition in RF Discharges for Plasma Processing", Standard Oil Research Laboratories, Naperville, IL, 1984.
6. M. J. Kushner, "Particle Simulations in Gaseous Electronics", Dept. of Chemical and Nuclear Engineering, University of New Mexico, Albuquerque, NM, 1986.
7. M. J. Kushner, "E-Beam Sustained Discharge Laser Modeling", Los Alamos National Laboratory, Los Alamos, NM, 1987.
8. M. J. Kushner, "Modeling of Plasma Enhanced Chemical Vapor Deposition", University of Wisconsin, 1987.
9. M. J. Kushner, "Simulation of the Deposition of Amorphous Silicon", Arco Solar Research Inc., Chatsworth, CA 1987.
10. M. J. Kushner, "Transient and Multi-Dimensional Effects in Excimer Lasers", Center for High Technology Materials, University of New Mexico, 1987.
11. M. J. Kushner, "Modeling of Plasma Enhanced Chemical Vapor Deposition", presented at Westinghouse Research and Development Center, Pittsburgh, PA, 1987.
12. M. J. Kushner, "A Computational Perspective of Plasma Enhanced Chemical Vapor Deposition", Department of Chemical Engineering Seminar Series, University of Illinois, 1988.
13. M. J. Kushner and L. E. Kline, "Models of Plasma Deposition and Etching", 1988 Gordon Conference on Plasma Chemistry, Tilton, NH, 1988.
14. M. J. Kushner, "Excimer Laser Technology", Spectra Physics, 1988).
15. M. J. Kushner, H. Pak, and J. DiCarlo, "Modeling Low Pressure Discharges for Pulsed Power Devices", Electrical Engineering Departmental Seminar, Old Dominion University, 1989.
16. M. J. Kushner, "Fission Fragment Excitation of the Ar/Xe Laser", Nuclear Engineering Departmental Seminar, University of Illinois, 1989.
17. M. J. Kushner, H. Pak, J. DiCarlo, and Y. Weng, "Modeling Low Pressure Gas Discharges: Thoughts on a Few Nagging Problems", Weber Institute Departmental Seminar, Polytechnic University, New York, 1989.
18. M. J. Kushner, "Modeling Technologically Relevant Gas Discharges: Nonuniformities, Beams, Walls and Gunk", Seminar at the Engineering Research Center for Plasma Aided Manufacturing, University of Wisconsin, November 1989.
19. M. J. Kushner, "Plasma Deposition of Amorphous Silicon", General Electric Corporate Research and Development Center, Schenectady, New York, November, 1989.
20. M. J. Kushner, "Modeling Electron Kinetics and Plasma Chemistry in Etching and Deposition: An Overview and Assessment", IBM East Fishkill Facility, January 1990.
21. M. J. Kushner, "Modeling Electron Kinetics and Plasma Chemistry in Etching and Deposition: An Overview and Assessment", Department of Chemistry Seminar, Indiana University, March 1990.
22. M. J. Kushner, "Modeling Electron Kinetics and Plasma Chemistry in Etching and Deposition: An Overview and Assessment", Department of Electrical and Computer Engineering, State University of New York at

Buffalo, April 1990.

23. M. J. Kushner, "Remote Plasma Activated Chemical Vapor Deposition", Distinguished Lecture Series, North Carolina State University Engineering Research Center, September 1990.
24. M. J. Rood and M. J. Kushner, "Simultaneous Removal of Gaseous Contaminants from (Simulated) Gas Streams", General Electric Research and Development Center, Schenectady, New York, November 1990.
25. M. J. Kushner, "Strategies for Modeling Plasma Processing: From the Ideal to the Real", Mechanical Engineering Department Seminar, California Institute of Technology, March 1991.
26. M. J. Kushner, "Hybrid Models for Plasma Processing Reactors", Expert Panel on Plasma Enhanced Processing, SemaTech Corp., Dallas, TX, September 1991.
27. M. J. Kushner, "Simulation of Direct and Remote Plasma Activated Materials Processing", University of Texas, Austin, TX, October 1991.
28. M. J. Kushner, "Switching, Holdoff and Cathode Heating in the Optically Triggered Pseudospark", University of Maryland, College Park, MD, March 1992.
29. M. J. Kushner, "Current Problems in Modeling Plasma Processing of Semiconductors: Direct and Remote Systems", University of Massachusetts, April 1992.
30. M. J. Kushner, "Scaling Considerations for the Atomic Xenon Laser", Los Alamos National Laboratory, June 1992.
31. M. J. Kushner, "Modeling Plasma Processing of Semiconductors: Remote and Direct Systems", Hokkaido University, Sapporo, Japan, July 1992.
32. M. J. Kushner, "Modeling Plasma Processing of Semiconductors: Remote and Direct Systems", Kyushu University, Fukuoka, Japan, July 1992.
33. M. J. Kushner, "Modeling Transport, Formation and Consequences of Particle Formation in Low Pressure Glow Discharges", Kyoto Institute of Technology, Kyoto, Japan, July 1992.
34. M. J. Kushner, "Modeling Plasma Processing of Semiconductors: Remote and Direct Systems", Nagoya University, Nagoya, Japan, July 1992.
35. M. J. Kushner, "Modeling Transport, Formation and Consequences of Particle Formation in Low Pressure Glow Discharges", Keio University, Yokahoma, Japan, July 1992.
36. M. J. Kushner, "Modeling Transport, Formation and Consequences of Particle Formation in Low Pressure Glow Discharges", Tokyo Institute of Technology, Tokyo, Japan, July 1992.
37. M. J. Kushner, "Status Report on Modeling of Contamination and Plasma Chemistry", Texas Instruments, Dallas TX, September 1992.
38. M. J. Kushner, "Particle Contamination in Etching Discharges", Sandia National Laboratories, Albuquerque, NM, September 1992.
39. M. J. Kushner, "New Techniques for Modeling Inductively Coupled Etching Tools", Lam Research, Fremont, CA, September 1992.
40. M. J. Kushner, "Modeling Techniques for Inductively Coupled Plasmas", Lawrence Livermore National Laboratory, Livermore, CA, September 1992.
41. M. J. Kushner, "Modeling Techniques for Low Pressure Plasmas", SRC Video Lecture Series, Research Triangle Park, NC, December 1992.
42. M. J. Kushner, "Two Problems in Plasma Processing: Selectivity and Particles", National Institute of Science and Technology, Gaithersburg, MD, January 1993.
43. M. J. Kushner, "Advanced Modeling Techniques for Plasma Processing", Texas Tech University, Lubbock, TX, April 1993.

44. M. J. Kushner, "Modeling Inductively Coupled Plasma Sources for Etching", Plasma Physics Division Seminar, Oak Ridge National Laboratory, Oak Ridge, TN, July 1993.
45. M. J. Kushner, “Transport of Dust in Plasmas,” Macquarie University, Sydney, Australia, February 1994.
46. M. J. Kushner, "The Role of Modeling in Solving Two Problems in Plasma Processing: Uniformity and Cleanliness", Physics Colloquium, Los Alamos National Laboratory, March 1994.
47. A. C. Gentile and M. J. Kushner, "Remediation of NO (N_xO_y) from Air Streams Using Dielectric Barrier Discharges", Institut Fur Niedertemperatur-Plasmaphysik, Greifswald, Germany, May 1994
48. A. C. Gentile and M. J. Kushner, "Remediation of NO (N_xO_y) from Air Streams Using Dielectric Barrier Discharges", Siemens, AG, Erlangen, Germany, May 1994
49. M. J. Kushner, "Modeling Inductively Coupled Plasma Tools: Uniformity and Dust Particle Transport", Advanced Micro Devices, Santa Clara, CA, June 1994.
50. M. J. Kushner, "Modeling Inductively Coupled Plasma Tools: Uniformity and Dust Particle Transport", Intel, Inc., Santa Clara, CA, June 1994.
51. M. J. Kushner, "Scaling of Inductively Coupled Plasma Tools", Materials Research Corporation, Congers, NY, July 1994.
52. M. J. Kushner, "Modeling Plasma Processes in Material Processing", Minnesota Supercomputer Institute, University of Minnesota, November, 1994.
53. M. J. Kushner, "Plasma Equipment Modeling", University of Michigan, December 1994.
54. M. J. Kushner, "Computer Modeling of Plasma Processing", Computer Science and Engineering Seminar Series, University of Illinois, February 1995.
55. M. J. Kushner, "Modeling Inductively Coupled Plasma Reactors", Nuclear Engineering Department Seminar, University of Illinois, February 1995.
56. M. J. Kushner, "Integrated Models of Plasma Processing", Semiconductor Research Corporation Board of Directors Meeting, Research Triangle Park, NC, June 1995.
57. M. J. Kushner, W. Z. Collison, M. J. Grapperhaus, and R. J. Hoekstra, "Progress Report on Plasma Equipment Modeling", LAM Research Corp., Fremont, CA, August 1995.
58. M. J. Kushner, W. Z. Collison, M. J. Grapperhaus, and R. J. Hoekstra, "Progress Report on Plasma Equipment Modeling", Applied Materials Corp., Fremont, CA, August 1995.
59. M. J. Kushner, "Simulation Tools for Plasma Processing: Status Report and Future Directions", LSI Logic, Corp., San Jose, CA, October 1995.
60. M. J. Kushner, "Strategies for Leap-Frogging Plasma Etching Technologies for Interconnect: One Person's Vision", SRC STAB Interconnect Meeting, Troy, New York, November 1995.
61. M. J. Kushner, "The ERC for Plasma Aided Manufacturing Confronts Virtual Manufacturing: A New Culture to Meet New Challenges", University of Wisconsin ERC for Plasma Aided Manufacturing Annual Meeting, Madison, WI, November 1995.
62. M. J. Kushner, "Requirements and Applications of Virtual Equipment Modeling in Plasma Processing", University of Kansas, Dept. of Electrical Engineering, March 1996.
63. M. J. Kushner, "Is Industrially Relevant University Research an Oxymoron?", University of Cincinnati, Department of Electrical and Computer Engineering, July 1996.
64. M. J. Kushner, "Status of Plasma Equipment Modeling", Becton-Dickinson Research Center, Research Triangle Park, NC., August 1996.
65. M. J. Kushner, "An Update on Integrated Plasma Equipment and Feature Profile Models", Los Alamos National Laboratory Theory Division, Los Alamos, New Mexico, November, 1996.

66. R. J. Hoekstra and M. J. Kushner, "3-Dimensional Modeling of Plasma Processing", LSI Logic, Inc, February 1997.

67. M. J. Kushner, "Modeling of Low and HIgh Pressure Technologically Important Plasmas", Department of Industrial Electrotechnology, Royal Institute of Technology, Stockholm, Sweden, May 1997.

68. M. J. Kushner, "Future Challenges in Engineering Education", Rutgers University, June 1997.

69. M. J. Kushner, "Tutorial on Low and High Pressure Technologically Important Plasmas", Dupont Central Research and Development, Wilmington, DE, June 1997.

70. M. J. Grapperhaus and M. J. Kushner, "Applications of Plasma Equipment Modeling to Ionized Metal PVD", Materials Research Corp., August, 1997.

71. M. J. Kushner, "Plasma Modeling for Microelectronics Fabrication: Can University Research Impact a Rapidly Evolving Industry", Electrical Engineering Department Seminar, University of Minnesota, January 1998.

72. M. J. Kushner, "A New Agenda for Colleges of Engineering", University of Arizona, May 1998.

73. M. J. Kushner, "Plasma Remediation of Toxins from Atmospheric Gas Streams: VOCs and NO_x", Ford Scientific Research Lab, Dearborn, MI, August 1998.

74. M. J. Kushner, "Plasma Equipment Modeling for Microelectronics Fabrication", Nuclear Engineering Seminar, University of Illinois, September 1998.

75. R. L. Kinder, J. Lu, S. Rauf, D. Zhang, X. Xu and M. J. Kushner, "Update on Integrated Plasma Equipment Modeling", LAM Research, Fremont, CA, January 1999.

76. R. L. Kinder, J. Lu, S. Rauf, D. Zhang, X. Xu and M. J. Kushner, "Update on Integrated Plasma Equipment Modeling", Applied Materials, Santa Clara, CA, January 1999.

77. M. J. Kushner, "Plasma Equipment Modeling for Microelectronics Fabrication" CEPS/ICAP/CCSM 1999 Spring Workshop, University of Illinois, April 1999.

78. M. J. Kushner, "A New Agenda for Schools of Engineering", Rensellaer Polytechnic Institute, June 1999.

79. M. J. Kushner, "Plasma Modeling Update: Gain Scheduling in Real Time Control, Magnetically Enhanced ICP and Si Etching", LAM Research, Fremont, CA, August 1999.

80. R. Dorai and M. J. Kushner, "NO_x Remediation from Diesel Exhaust: Effect of Propene and Propane", Ford Research Labs, Dearborn, MI, August 1999.

81. M. J. Kushner, "Waves, Fluxes and Polymers: Modeling and Simulation for Microelectronics Fabrication", Michigan State University, East Lansing, MI, November 1999.

82. M. J. Kushner, "Towards a Predictive Capability for Plasma Processing", NASA Ames Research Center, Moffet Field, CA, December 1999.

83. M. J. Kushner, "Electromagnetic and Electron Energy Waves in Inductively Coupled Plasmas", Sandia National Laboratory, January 2002.

84. V. Vyas and M. J. Kushner, "A Three-Dimensional Model to Investigate Dust Particle Transport in Plasma Processing Reactors", Sandia National Laboratories, March 2002.

85. M. J. Kushner, "Electromagnetic and Electron Energy Waves (and Radiation Transport) in Inductively Coupled Plasmas," Eindhoven University of Technology, Eindhoven, The Netherlands, May 2002.

86. M. J. Kushner, "Monte Carlo Methods for Electron Transport", Short Course on Computational Methods for Modeling Plasmas, 29th IEEE International Conference on Plasma Science, Banff, Alberta, Canada, May 2002

87. M. J. Kushner, "Plasmas and Polymers: From Frito Bags to Microelectronics Fabrication.", Chemical Engineering Department Seminar, University of Texas, Austin, TX, November 2002.

88. M. J. Kushner, "Modeling of Integrated Plasma Processing: Plasma Physics, Plasma Chemsitry and Surface Kinetics," CFDRC Users Conference, Huntsville, AL, May 2003.

89. M. J. Kushner, “Modeling Electronegative Processes in Plasmas”, International WE-Heraeus Summer School Master Class on Electronegative Plasmas, Bad Honnef, Germany, Sept. 2003.

90. M. J. Kushner, “Update on Plasma Equipment Modeling: An Integrated Approach”, Varian Semiconductor Equipment Associates, Gloucester, MA, Jan. 2004

91. M. J. Kushner, “Overview of New Plasma Applications: High Value to Commodity”, Agilent Technologies, Palo Alto, CA, June 2004.

92. M. J. Kushner, “Overview of New Plasma Applications: High Value to Commodity”, Northern California Chapter AVS Plasma Etching Users Group, Santa Clara, CA, June 2004.M. J. Kushner, “Overview of Modeling of Magnetically Enhanced Capacitively Coupled Plasmas,” Applied Materials, Santa Clara, CA, June 2004.

94. M. J. Kushner, “Overview of Modeling of Magnetically Enhanced Capacitively Coupled Plasmas,” Novellus Systems, San Jose, CA, August 2004.

95. M. J. Kushner, “What Can Modeling Tell You About Lighting Sources”, Lighting Technology Symposium, APL Engineered Materials, Urbana, IL, September 2004.

96. A. Agarwal and M. J. Kushner, “Computational Investigation of Pulsed Plasma Doping”, Varian Semiconductor Equipment Associates, Gloucester, MA, October 2004

97. M. Kushner, “Plasma Material Processing: Creating High Value,” Chemical Engineering Departmental Seminar, Iowa State University, January 2005.

98. M. J. Kushner, “Application of Advanced Modeling Techniques to Optimization of Plasma Processing,” Corporate Technical Symposium, Micron, Inc., February, 2005.

99. M. J. Kushner, “Applications of Low Temperature Plasmas: Status, Scientific Issues and Opportunities,” Pohang Institute of Science and Technology (POSTECH), Pohang, Korea, February 2005.

100. M. J. Kushner, “Modeling of Microdischarge Devices,” Pohang Institute of Science and Technology (POSTECH), Pohang, Korea, February 2005.

101. M. J. Kushner, “Plasmas In and Around Small Spaces: Microplasmas for Photons, Thrust and Materials Processing,” Physics Departmental Seminar, Iowa State University, September 2005.

102. M. J. Kushner, “What Might You Want To Do With Plasmas? Materials Processing!”, Iowa State University Osborn Club, September 2005.

103. M. J. Kushner, “Plasmas in and Around Small Spaces: Microplasmas for Photons, Thrust and Materials Processing,” Drexel Univeristy, Philadelphia, PA, February 2006.

104. M. J. Kushner, “Plasma Equipment and Processing Modeling Update: Getting Reactants with the Right Compositions and Energies Where You Want Them,” Semiconductor Research Corp. Electronic Workshop, February, 2006.

105. M. J. Kushner, “Making Plasmas Do Small Things: Functionalizing Nooks-and-Crannies in Polymers at Low and High Pressure,” University of Montreal, Montreal, Quebec, Canada, March 2006.

106. M. J. Kushner, “Making Plasmas Do Small Things: Functionalizing Nooks-and-Crannies in Polymers at Low and High Pressure,” Department of Chemical and Biomolecular Engineenrig, University of California, Los Angeles, CA, April 2006.

107. M. J. Kushner, "Plasmas for Functionalizing Nooks-and-Crannies in Polymers at Low and High Pressures: High Value Biocompatibility Using Commodity Materials," Department of Chemical Engineering, California Institute of Technology, Pasadena, CA, May 2006.

108. M. J. Kushner, "Controlling Reactive Fluxes During Plasma Processing of Microelectronics," Physics Department, Ruhr-Universität, Bochum, Germany, September 2006.

109. M. J. Kushner, "Delivering Activation Energy to Wafers and Walls in Plasma Processing Reactors," Corporate

Seminar, Quimonda AG, Dresden, Germany, March 2007.

110. M. J. Kushner, "Delivering Activation Energy to Wafers and Walls in Plasma Processing Reactors for Microelectronics Fabrication", Chinese Academy of Sciences, Beijing, China, May 2007.

111. M. J. Kushner, "Delivering Activation Energy to Wafers and Walls in Plasma Processing Reactors for Microelectronics Fabrication: Ions, Photons, Fields and Gaps," Corporate Seminar, KLA-Tenchor Inc., Milpitas, CA, August 2007.

112. M. J. Kushner, "Hybrid Modeling Techniques for Low Temperature Plasmas: Surface Interactions in Materials Processing," Sandia National Laboratory, Albuquerque, NM, November 2007.

113. M. J. Kushner, " Optimizing Plasma Surface Interactions for Materials Processing: Microelectronics to Polymers," ECE Futures Seminar Series, Electrical and Computer Engineering, University of Michigan, Ann Arbor, MI, January 2008.

114. M. J. Kushner, "Plasmas for Energy Efficient Materials Processing," A *Transforming Energy* Lecture, UM Energy Research Center, University of Maryland, College Park, MD, January 2008.

115. M. J. Kushner, "Acheiving Selectivity in Plasma Processing: Addressing the Physics While Still Making a Profit," Princeton Plasma Physics Laboratory, February 2008.

116. M. J. Kushner, "Optimizing Plasma Surface Interactions for Materials Processing:Considerations for Plasma Tools to Achieve Nanoscale Resolution", Ruhr-Universitat Bochum, Bochum, Germany, May 2008.

117. Y. Yang, M. Wang, J. Shoeb, N. Babaeva and M. J. Kushner, "Status of Plasma Modeling for Process Design", Semiconductor Research Corp. e-Workshop, August 2008.

118. M. J. Kushner "Overview of the Low Temperature Plasma Science Workshop: LTPS Priorities and Directions," Briefing to the Plasma Science Committee of Board on Physics and Astronomy, National Research Council, Washington, DC, October 2008.

119. M. J. Kushner "Overview of the Low Temperature Plasma Science Workshop: LTPS Priorities and Directions," Briefing to the Fusion Energy Science Advisory Committee, Office of Fusion Energy Science, Department of Energy, Gaithersberg, MD, November 2008.

120. M. J. Kushner, "Streamers Interacting with Small Objects" Slots, Particles and Bubbles", Center for Plasma Physics, Queens University, Belfast, N. Ireland, December 2008.

121. M. J. Kushner, "Plasmas for Materials Processing and the Environment: Modeling the Nonlinear and the Unknown," Dept. Atmospheric, Oceanic and Space Sciences, University of Michigan, January 2009.

122. M. J. Kushner, "Plasma Streamers Interacting with Small Objects: Slots, Particles and Bubbles", Dept. of Nuclear Engineering and Radiological Science, University of Michigan, March 2009.

123. Y. Yang, M. Wang, J. Shoeb, N. Babaeva and M. J. Kushner, "Update on Plasma Equipment and Process Modeling", Intel Video-Seminar, Sept. 2009.

124. M. J. Kushner, "Modeling for Tool and Process Design in Microelectronics Fabrication"-Short Course, Tokyo Electron, Ltd, TEL-University, Yamanashi, Japan, July 2010.

125. M. Wang, J. Shoeb, S-H. Song, and Mark J. Kushner, "Update on Plasma Equipment Modeling: Controlling Processes at Multiple Scales", Intel Video Seminar, November 2010.

126. M. J. Kushner, "Controlling Low Temperature Plasmas: From Nanofabrication to Plasma Medicine", Dept. Mechanical Engineering Seminar, University of Minnesota, January 2011.

127. M. Wang, J. Shoeb, S-H. Song, Y. Yang and M. J. Kushner, "Leveraging Plasma Equipment Modeling to Bridge Technology Gaps", Intel/SRC Annual Review, Intel, Inc., Hillsborough OR, March 2011.

128. M. J. Kushner "The DOE Plasma Science Centere on Predictive Control of Plasma Kinetics" Briefing to the Plasma Science Committee of Board on Physics and Astronomy, National Research Council, Washington, DC, March 2011.

129. M. J. Kushner, "Controlling Plasmas and Leveraging Technologies in Plasma Materials Processing: Nanofabrication to Plasma Medicine", Agilent Technologies, Palo Alto, CA, April 2011.

130. M. J. Kushner, "Controlling Low Temperature Plasmas: From Nanofabrication to Plasma Medicine", Electrical Engineering Department Symposium, Clemson University, Clemson, South Carolina, April 2011.

131. M. J. Kushner, "Controlling Low Temperature Plasmas: From Nanofabrication to Plasma Medicine", American Vacuum Society, Michigan Chapter, Ann Arbor, April 2011.

132. M. J. Kushner, "Delivering Activation Energy in Low Temperature Plasmas for Nanofabrication and Plasma Medicine", Chemical Engineering Department Symposium, University of Houston, Sept. 2011.

133. M. J. Kushner, "It is all about Control: Plasmas for Nanofabrication and Plasma Medicine", Applied Physics Program Seminar, University of Michigan, November 2011.

134. M. J. Kushner, "Plasma Equipment Modeling Update: Control, Pulsing, Scaling and Damage", Lam Research, Inc., Fremont, CA, January, 2012.

135. M. J. Kushner, "Controlling Fluxes to Surfaces in Atmospheric Pressure Plasmas: Printing, Polymer Processing, Liquids and Medicine", Hewlett-Packard Research Labs, Palo Alto, CA, February 2012

136. M. J. Kushner, "It is all about Control: Plasmas for Nanofabrication and Plasma Medicine", Plasma Physics Division Symposium, Naval Research Laboratory, Washington, DC, February 2012.

137. M. J. Kushner, "It is all about Control: Plasmas for Nanofabrication and Plasma Medicine", Dept. Seminar, Electrical and Computer Engineering, Michigan State University, February 2012.

138. M. J. Kushner, ""Plasmas for Microchips, Lighting, Medicine, Jet Engines…Just Not Worth Coming to Work Without Plasmas!", ECE Staff Symposium, University of Michigan, May 2012.

139. Y. Zhang and M. J. Kushner, "Ion Energy and Angular Distributions at Different Phases from the Bulk Plasma through the Sheath in Dual-Frequency Capacitively Coupled Plasmas",. Lam Research Inc., Fremont, CA, May 2012.

140. M. J. Kushner, "Low Temperature Plasmas and Surfaces: Microelectronics, Sterilization, Endoscopy and Printer Engines", Distinguished Lecture Series, University of Toronto, Dept. of Mechanical and Industrial Engr., Toronto, CA, Sept. 2012.

141. M. J. Kushner, "Low Temperature Plasmas and Surfaces: Microelectronics, Sterilization, Endoscopy and Printer Engines", Aerospace and Mechanical Engineering Dept. Seminar, University of Notre Dame, South Bend, IN, December 2012.

142. N. Yu. Babaeva, P. Tian, W. Tian and M. J. Kushner, "Low Temperature Plasmas and Photons (Ever Present, Always Important, Sometimes Neglected): Materials Processing, Plasma Medicine, Liquids", Agilent Technologies, Corporate Seminar, Palo Alto, CA, July 2013.

143. M. J. Kushner, "Atmospheric Pressure Discharges", Summer School on Fundamentals of Low Pressure and High Pressure Plasmas", 21st International Symposium on Plasma Chemistry, Cairns, Australia, August 2013.

144. M. J. Kushner, "Plasma Modeling Techniques", Summer School on Fundamentals of Low Pressure and High Pressure Plasmas", 21st International Symposium on Plasma Chemistry, Cairns, Australia, August 2013.

145. M. J. Kushner, "Low Temperature Plasma-Surface Interactions with Complex Materials: Inorganic, Liquid and Organic (Living) Surfaces", Plasma Physics Seminar, University of Wisconsin, March 2014.

146. M. J. Kushner, "Controlling Reactive fluxes in Low and High Pressure Plasmas" Microelectronics Fabrication and Plasma Medicine", Corporate Seminar, Samsung Semiconductors, Suwon, South Korea, January 2015.

147. M. J. Kushner, Short Course on Plasma Technologies, Part 1: "DC Electric Discharges, Coronas, Dielectric Barrier Discharges", Part 2: "Atmospheric Pressure Discharges and Plasma Chemistry", 3M Corporate Workshop, St. Paul, MN, February 2015.

148. S.-H. Song, Y. Zhang, M. D. Logue, P. Tian, W. Tian, S. A. Norberg and M. J. Kushner, "Pulsed Plasmas for

Control of Reactive Fluxes in Microelectronics Fabrication (and maybe for plasma medicine), Laboratoire de Physique de Plasma, Ecole Polytechnique, Palaiseau, France, February 2015.

149. Y. Zhang, S.-H. Song, P. Tian, S. Shannon and M. J. Kushner, "An Update on Process and Source Modeling: Phase to Profile Control", LAM Research Corporate Seminar, March 2015.

150. Y. Zhang, S-H. Song, P. Tian, S. Shannon and M. J. Kushner, "Update on Modelling of Pulsed Plasmas for Physical Vapor Deposition and Etching", SRC eWorkshop, 26 August 2015.

151. M. J. Kushner, "Low Temperature Plasma-Surface Interactions with Complex Materials: Inorganic, Liquid and Organic (Living) Surfaces", Physics Colloquium, Auburn University, 18 September 2015.

152. M. J. Kushner, "Nanodusty Plasmas", Presentation to Complex Plasmas Course, Auburn University, 18 September 2015.

153. M. J. Kushner, "Challenges in the Modeling of Low Temperature Plasmas: Techniques and Examples – A Microcourse", Instituto de Plasmas e Fusao Nuclear, Instituto Superior Tecnico, Lisbon, Portugal, 25 November 2015.

154. Y. Zhang, S.-H. Song, C. Hurad, S. Shannon and M. J. Kushner, "Update on Modeling of Pulsed Plasmas for Etching and Profile Control", Corporate Seminar, Samsung Semiconductors, Suwon, South Korea, January 2016.

155. M. J. Kushner, "Plasma-Surface Interactions with Complex (Inorganic, Liquid, Living) Materials", Bikerman Lecture, Dept. of Chemical and Biomolecular Engineering, Case Western Reserve University, Cleveland, OH, October 2016. (APS Division of Plasma Physics Distinguished Lecturer)

156. M. J. Kushner, "Plasma-Surface Interactions with Complex (Inorganic, Liquid, Living) Materials", Department of Electrical and Computer Engineering, Texas Tech University, Lubbuck, TX, November 2016. (APS Division of Plasma Physics Distinguished Lecturer)

157. C. Hurard, Y. Zhang, and M. J. Kushner, "Insights to Apect Ratio Dependent Etching and Atomic Layer Etching", Corporate Seminar, Samsung Semiconductors, Suwon, South Korea, January 2017.

158. M. J. Kushner, "Plasma-Surface Interactions with Complex (Inorganic, Liquid, Living) Materials", Department of Physics, The College of New Jersey, Ewing Township, New Jersey, February 2017. (APS Division of Plasma Physics Distinguished Lecturer)

159. M. J. Kushner, "Plasma-Surface Interactions with Complex (Inorganic, Liquid, Living) Materials", Distinguished Technical Lecture, Department of Physics, Nuclear Engineering Department, North Carolina State University, Raleigh, North Carolina, March 2017. (APS Division of Plasma Physics Distinguished Lecturer)

160. S. Huang, P. Tian, C. Huard, S. Lanham, J. Kruszelnicki and M. J. Kushner, "Plasma and Feature Scale Modeling Update: Requirements for Insertion of Modeling into the Critical Path", Corporate Seminar, Lam Research, Fremont, CA, May 2017.

161. M. J. Kushner, "Introduction to Plasma Processing", Summer School of the 23rd International Symposium on Plasma Chemistry, Montreal, Canada, July 2017.

162. M. J. Kushner, Enabling Technology Innovation through Plasma Modeling:Sustainability and Biotechnology as the Next Frontiers", Physics Colloquium, University of Colorado, Boulder, CO, September 2017.

163. M. J. Kushner, "Applying the Fundamentals of Plasma Science to Process and Equipment Design", Corporate Seminar, Samsung Semiconductors, Suwon, South Korea, January 2018.

164. M. J. Kushner, "Low Temperature Plasmas – Basics, Status, Opportunities", NSF EPSCoR CPU2AL Management and Center Meeting,, Auburn University, May 2018.

165. M. J. Kushner, "Modeling Enabled Advances in Plasma Processing for Semiconductor Fabrication", TSMC Corporate Seminar, Taiwan Semiconductor Manufacturing Corp., Hsinchu, Taiwan, May, 2018.

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