

CONTACT INFORMATION	Assistant Professor Department of Nuclear Engineering North Carolina State University	alietz@ncsu.edu
RESEARCH INTERESTS	Low temperature plasmas, plasma chemistry, fluid modeling, kinetic modeling, plasma-liquid interactions, atmospheric pressure plasmas, laser-produced plasmas, particle-in-cell modeling	
EDUCATION	<b>University of Michigan</b> , Ann Arbor, MI <span style="float: right;">2019</span> Ph.D., Nuclear Engineering and Radiological Sciences <i>Atmospheric Pressure Plasma Sources for Plasma Medicine</i> Plasmas and Nuclear Fusion Option Advisor: Mark J. Kushner	
	<b>University of Illinois at Urbana-Champaign</b> , Urbana, IL <span style="float: right;">2014</span> B.S., Nuclear, Plasma and Radiological Engineering Concentration in Plasma and Fusion Science and Engineering Physics Minor	
PROFESSIONAL EXPERIENCE	<b>North Carolina State University</b> <span style="float: right;">August 2022 - present</span> Assistant Professor Department of Nuclear Engineering	
	<b>Sandia National Laboratories</b> <span style="float: right;">October 2019 - August 2022</span> Postdoctoral Researcher Applied Optical and Plasma Sciences	
	<b>University of Michigan</b> <span style="float: right;">August 2014 - September 2019</span> Graduate Research Assistant Computational Plasma Science and Engineering Group	
	<b>Sandia National Laboratories</b> <span style="float: right;">January 2018 - May 2018</span> Visiting Student Researcher Applied Optical and Plasma Sciences	
	<b>University of Illinois at Urbana-Champaign</b> <span style="float: right;">September 2011 - June 2014</span> Undergraduate Researcher Center for Plasma-Material Interactions	
	<b>General Atomics</b> <span style="float: right;">Summer 2012</span> Undergraduate Intern	
GRANTS AND FELLOWSHIPS	Department of Energy Office of Science Graduate Student Research Program <span style="float: right;">2017</span> National Science Foundation Graduate Research Fellowship <span style="float: right;">2015</span> National Defense Science and Engineering Graduate Fellowship (declined) <span style="float: right;">2015</span> Michigan Institute of Plasma Science and Engineering Fellowship <span style="float: right;">2014</span>	
AWARDS	Conference Awards	
	International Symposium on Plasma Chemistry Student Oral Presentation Award <span style="float: right;">2017</span> International Symposium on Plasma Chemistry Poster Award <span style="float: right;">2015</span> American Vacuum Society Vacuum Technology Division Award <span style="float: right;">2014</span>	
	Other Awards	
	Journal of Physics D: Applied Physics, Emerging Leader <span style="float: right;">2021</span> Richard and Eleanor Towner Prize for Outstanding PhD Research <span style="float: right;">2018</span> Richard and Eleanor Towner Prize for Distinguished Academic Achievement <span style="float: right;">2017</span> University of Michigan Engineering Graduate Symposium Poster Award <span style="float: right;">2015</span>	

	NSF Graduate Research Fellowship - Honorable Mention	2014
PROFESSIONAL SERVICE	Conference Organization	
	Gaseous Electronics Conference Student Award for Excellence Committee	2018
	Gordon Research Seminar on Plasma Processing Science (co-chair)	2018
	Session Chair	
	74th Annual Gaseous Electronics Conference	2021
	73rd Annual Gaseous Electronics Conference	2020
	69th Annual Gaseous Electronics Conference	2016
	Journal Referee	
	IOP Trusted Reviewer	
	IEEE Transactions on Plasma Science	
	The European Physical Journal Techniques and Instrumentation	
	Journal of Applied Physics	
	Chemical Engineering Journal	
	Physics of Plasmas	
	Journal of Vacuum Science and Technology A	
Biological Chemistry		
Plasma Sources Science and Technology		
Journal of Physics D: Applied Physics		
Grant Referee		
Department of Energy Office of Fusion Energy Sciences	2021	
Czech Science Foundation	2017	
Guest Lecturer		
NERS 578 - Physical Processes in Plasmas	2017	
VOLUNTEER ACTIVITIES	Sandia Parents Group	2020
	· Lactation Accommodation Diversity Cinema Planning Team	
	Dissertation Writing Group Leader	2018
	Detroit Area Pre-College Engineering Program	2016-2017
	· Instructed for a 6-week Saturday program that provides high school students with an introduction to Nuclear Engineering	
	Science Olympiad of Southeast Michigan	2015-2016
· Judged and scored events at competitions for middle school teams		
REFEREED JOURNAL PUBLICATIONS	1. <b>A. M. Lietz</b> , E. V. Barnat, G. R. Nail, N. A. Roberds, A. S. Fierro, B. T. Yee, C. H. Moore, P. G. Clem, and M. M. Hopkins. "High-fidelity modeling of breakdown in helium: initiation processes and secondary electron emission" <i>Journal of Physics D: Applied Physics</i> , <b>54</b> , 334005 (2020).	
	2. G. M. Parsey, <b>A. M. Lietz</b> , and M. J. Kushner. "Guided Plasma Jets Directed Onto Wet Surfaces: Angular Dependence and Control" <i>Journal of Physics D: Applied Physics</i> , <b>54</b> , 045206 (2020).	
	3. <b>A. M. Lietz</b> , E. V. Barnat, J. E. Foster, and M. J. Kushner. "Ionization wave propagation in a He plasma jet in a controlled gas environment" <i>Journal of Applied Physics</i> , <b>128</b> , 083301 (2020).[Featured Article]	
	4. S. Mohades, <b>A. M. Lietz</b> , and M. J. Kushner. "Generation of reactive species in water film dielectric barrier discharges sustained in argon, helium, air, oxygen and nitrogen" <i>Journal of Physics D: Applied Physics</i> , <b>53</b> , 435206 (2020).	
	5. S. Mohades, <b>A. M. Lietz</b> , J. Kruszelnicki, and M. J. Kushner. "Helium plasma jet interactions with water in well plates" <i>Plasma Processes and Polymers</i> , <b>17</b> , e1900179 (2019).	

6. **A. M. Lietz**, X. Damany, E. Robert, J.-M. Pouvesle, and M. J. Kushner. “Ionization wave propagation in an atmospheric pressure plasma multi-jet” *Plasma Sources Science and Technology*, **28**, 125009 (2019).
7. J. Kruszelnicki, **A. M. Lietz**, and M. J. Kushner. “Atmospheric pressure plasma activation of water droplets” *Journal of Physics D: Applied Physics*, **52**, 355207 (2019).
8. Y. Luo, **A. M. Lietz**, S. Yatom, M. J. Kushner, and P. J. Bruggeman. “Plasma kinetics in a nanosecond pulsed filamentary discharge sustained in Ar-H<sub>2</sub>O and H<sub>2</sub>O.” *Journal of Physics D: Applied Physics*, **52**, 044003 (2018).
9. **A. M. Lietz** and M. J. Kushner. “Electrode Configurations in Atmospheric Pressure Plasma Jets: Production of Reactive Species.” *Plasma Sources Science and Technology*, **27**, 105020 (2018).
10. S. A. Norberg, G. Parsey, **A. M. Lietz**, E. Johnsen, and M. J. Kushner. “Multiple pulses of an atmospheric pressure plasma jet onto a reactive liquid layer.” *Journal of Physics D: Applied Physics*, **52**, 015201 (2018).
11. **A. M. Lietz** and M. J. Kushner. “Molecular admixtures and impurities in atmospheric pressure plasma jets.” *Journal of Applied Physics*, **124**, 153303 (2018). [Editor’s pick]
12. **A. M. Lietz**, E. Johnsen, and M. J. Kushner. “Plasma-induced flow instabilities in atmospheric pressure plasma jets.” *Applied Physics Letters* **111**, 114101 (2017). [Featured article]
13. **A. M. Lietz** and M. J. Kushner. “Air plasma treatment of liquid covered tissue: long timescale chemistry.” *Journal of Physics D: Applied Physics* **49**, 425204 (2016).
14. W. Tian, **A. M. Lietz**, and M. J. Kushner. “The consequences of air flow on the distribution of aqueous species during dielectric barrier discharge treatment of thin water layers.” *Plasma Sources Science and Technology* **25**, 055020 (2016).
15. G. L. Jackson, C. P. Chrobak, A. G. McLean, R. Maingi, D. D. Mansfield, A. L. Roquemore, P. Diwakar, A. Hassanein, **A. M. Lietz**, D. L. Rudakov, T. Sizyuk, and J. Tripathi. “Effect of lithium in the DIII-D SOL and plasma-facing surfaces.” *Journal of Nuclear Materials* **463**, 1160 (2015).

CONFERENCE  
PROCEEDINGS

1. **A. M. Lietz** and M. J. Kushner. “Mechanisms of Induced Turbulence in Atmospheric Pressure Plasma Jets” Oral Presentation, *International Symposium on Plasma Chemistry*, Montreal, Canada. August 1, 2017.
2. X. Damany, **A. M. Lietz**, J.-M. Pouvesle, M. J. Kushner, and E. Robert. “Atmospheric pressure plasma multi-jet dynamics” Poster, *International Symposium on Plasma Chemistry*, Montreal, Canada. July 30, 2017.
3. **A. M. Lietz** and M. J. Kushner. “Addressing Plasma-Liquid Interactions in a Global Model: Capabilities and Limitations” Oral Presentation, *International Symposium on Plasma Chemistry*, Antwerp, Belgium. July 6, 2015.
4. **A. M. Lietz**, S. A. Norberg, and M. J. Kushner. “Helium Atmospheric Pressure Plasma Jet Dynamics: Consequences of Ground Placement” Poster Presentation, *International Symposium on Plasma Chemistry*, Antwerp, Belgium. July 6 2015.

CONFERENCE  
PRESENTATIONS

1. **A. M. Lietz**, J. Prager, M. Hopkins “Modeling Capacitively Coupled Plasmas with Nanosecond Pulsed Bias Voltages” Poster Presentation, *American Vacuum Society 67 Virtual Symposium*, virtual. October 25, 2021.
2. **A. M. Lietz**, P. Tian, J. Kenney, S. Rauf “Two-Dimensional Particle-in-Cell Modeling of Low Pressure, High Voltage Capacitively Coupled Ar Plasmas” Poster Presentation, *American Vacuum Society 67 Virtual Symposium*, virtual. October 25, 2021.

3. **A. M. Lietz**, J. Musk, M. Hopkins, B. Yee, H. Moffat, D. Wiemann, T. Setteceri, D. Fergenson, M. Omana “Laser-Produced Aluminum Plasmas Expanding in an Applied Field: Plasma Generation in Single Particle Aerosol Mass Spectrometers” Oral Presentation, *Gaseous Electronics Conference*, virtual. October 8, 2021.
4. **A. M. Lietz**, “Estimating Secondary Electron Yields Using Plasma Discharge Modeling” Oral Presentation, *International Conference on Plasma Science*, virtual. December 8, 2020.
5. **A. M. Lietz**, J. Musk, M. Hopkins, B. Yee, H. Moffat, D. Wiemann, T. Setteceri, M. Omana. “Ionization Mechanisms in a Laser-Produced Plasma for Single Particle Aerosol Mass Spectrometers” Oral Presentation, *73rd Gaseous Electronics Conference*, virtual. October 8, 2020.
6. **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” Oral Presentation, *71st Gaseous Electronics Conference*, Portland, OR, USA. November 8, 2018.
7. **A. M. Lietz**, and M. J. Kushner. “Molecular Admixtures in Atmospheric Pressure Plasma Jets” Poster, *GRC Plasma Processing Conference*, Smithfield, RI, USA. August 6, 2018.
8. **A. M. Lietz**, E. V. Barnat, J. E. Foster, and M. J. Kushner. “Ionization Wave Propagation and Surface Interactions in a He Plasma Jet” Oral Presentation, *45th International Conference on Plasma Science*, Denver, CO, USA. June 27, 2018.
9. **A. M. Lietz**, X. Damany, J.-M. Pouvesle, E. Robert, and M. J. Kushner. “Student Excellence Award Finalist: Atmospheric Pressure Plasma Multi-jets: Fundamental Properties” Oral Presentation, *70th Gaseous Electronics Conference*, Pittsburgh, PA, USA. November 9, 2017.
10. **A. M. Lietz** and M. J. Kushner. “Electrode Configuration in Atmospheric Pressure Plasma Jets” Oral Presentation, *69th Gaseous Electronics Conference*, Bochum, Germany. October 13, 2016.
11. **A. M. Lietz** and M. J. Kushner. “Impact of Electrode Placement on RONS Production in Atmospheric Pressure Plasma Jets” Oral Presentation, *6th International Conference on Plasma Medicine*, Bratislava, Slovakia. September 9, 2016.
12. **A. M. Lietz**, V. Petrishchev, I. V. Adamovich, and M. J. Kushner. “Argon Dielectric Barrier Discharges Over Water at Moderate Pressure” Poster, *GRC Plasma Processing Conference*, Andover, NH, USA. July 25, 2016.
13. **A. M. Lietz** and M. J. Kushner. “An Array of Atmospheric Pressure Plasma Jets from a Single Ionization Wave” Oral Presentation, *43rd International Conference on Plasma Science*, Banff, Alberta, Canada. June 20, 2016.
14. **A. M. Lietz** and M. J. Kushner. “Breakdown in Atmospheric Pressure Plasma Jets: Nearby Grounds and Voltage Rise” Oral Presentation, *Gaseous Electronics Conference*, Honolulu, HI, USA. October 15, 2015.
15. **A. M. Lietz**, S. A. Norberg, and M.J. Kushner. “Ionization Waves and Breakdown in Two-Ring Electrode Atmospheric Pressure Plasma Jets” Oral Presentation, *6th International Workshop on Microplasmas*, Newark, NJ, USA. May 14, 2015.
16. **A. M. Lietz**, I. A. Shchelkanov, A. V. Hayes, S. M. Keniley, J. L. Pachicano, A. F. Press, and D. N. Ruzic. “Particle Defect Reduction in EUV Mask Blank Production Devices” Oral Presentation, *American Vacuum Society 61st International Symposium and Exhibition*. Baltimore, MD, USA. November 9-14, 2014.

17. **A. M. Lietz**, M. J. Kushner. “Dielectric Barrier Discharges in Humid Air” Poster, *Michigan Institute of Plasma Science and Engineering Graduate Student Symposium*, Ann Arbor, MI, USA. October 8, 2014.
18. **A. M. Lietz**, I. A. Shchelkanov, A. V. Hayes, S. M. Keniley, J. L. Pachicano, and D. N. Ruzic. “Particle Defect Reduction in EUV Mask Blank Production Devices” Poster, *GRC Plasma Processing Conference*, Smithfield, RI, USA. July 27 - August 1, 2014.
19. **A. M. Lietz**, D. Curreli, Hayes, A. Devashayam, D. N. Ruzic. “Selection of Materials and Surface Finishes for Reduced Particle Formation Upon Ion Beam Bombardment in EUV Mask Blank Production Devices” Poster, *AVS 60th International Symposium and Exhibition*. Long Beach, CA, USA. October 27-November 1, 2013.
20. **A. M. Lietz**, G. L. Jackson, W. Wu, L. R. Baylor, N. Commaux. “Modeling of Pellet Ablation and Deposition on Plasma Facing Surfaces” Poster, *54th APS Division of Plasma Physics Conference*, Providence, RI, USA, October 29 - November 2, 2012.

OTHER  
PRESENTATIONS

1. **A. M. Lietz**, R. Groenewald, P. Scherpelz, and M. M. Hopkins. “Thermionic Power Generation: Plasma Ignition and Sustainment” Oral Presentation, *International Online Plasma Seminar*, March, 2022.