Amanda M. Lietz *Curriculum vitae*

Contact Information

1906 Cooley Bldg.
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Research Interests

Plasma modeling, plasma chemistry, plasma liquid interactions, atmospheric pressure plasmas, low temperature plasmas

Education

University of Michigan, Ann Arbor, MI GPA: 4.00

Ph.D., Nuclear Engineering and Radiological Sciences, *Expected:* Summer 2019

- Plasmas and Nuclear Fusion Option
- Advisor: Mark J. Kushner, Ph.D

University of Illinois at Urbana-Champaign, Urbana, IL GPA: 3.91

B.S., Nuclear, Plasma and Radiological Engineering, May 2014

- Concentration in Plasma and Fusion Science and Engineering
- Physics Minor

Research Experience

Computational Plasma Science and Engineering Group August 2014 - present
University of Michigan

- Modeling of helium atmospheric pressure plasma jets with a 2-D model, *nonPDPsim*
- Upgraded *GlobalKin*, a 0-D plasma kinetics model, to address coupled liquid phase chemistry for medical and water treatment applications
- Modeling of ionization waves propagating over liquid water at moderate pressure
- Modeling of a plasma jet which splits a single ionization wave into several jets

Center for Plasma-Material Interactions September 2011 - June 2014
University of Illinois at Urbana Champaign

- Designed a new coil configuration using Maxwell simulations for a theta pinch
- Designed and constructed atmospheric pressure plasma jets
- Qualified chamber surface treatments for EUV mask blank defect reduction
- Developed and tested a benchtop system to quantify particles <120 nm

International Research Experience for Students, Botswana Summer 2013

- Worked on an interdisciplinary and intercultural team in sub-Saharan Africa
- Optimized a hybrid power supply design for a rural village using renewable sources

General Atomics Summer 2012

- Modeled the ablation of lithium pellets in a tokamak using Matlab
- Tested and calibrated lithium dropper hardware for the DIII-D tokamak

Refereed Journal Publications

1. **A. M. Lietz**, E. Johnsen, and M. J. Kushner. "Plasma-induced flow instabilities in atmospheric pressure plasma jets." *Applied Physics Letters* **111**, 114101 (2017).
2. **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).
3. 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).

4. 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).

Awards

National Awards

National Science Foundation Graduate Research Fellowship	2015
National Defense Science and Engineering Graduate Fellowship (declined)	2015
NSF Graduate Research Fellowship - Honorable Mention	2014

Conference Awards

International Symposium on Plasma Chemistry Student Oral Presentation Award	2017
International Symposium on Plasma Chemistry Poster Award	2015
American Vacuum Society Vacuum Technology Division Award	2014

Other Awards

Richard and Eleanor Towner Prize for Distinguished Academic Achievement	2017
University of Michigan Engineering Graduate Symposium Poster Award	2015
Michigan Institute of Plasma Science and Engineering Fellowship	2014
NPRE Department Outstanding Undergraduate Research Award	2014
NPRE Department Outstanding Academic Achievement Award	2014
Prof. Daniel F. Hang Outstanding Senior Design Award	2014
American Nuclear Society Best Paper for Senior Design Project	2014
George Miley Low Energy Nuclear Reactions Scholarship	2013
American Nuclear Society Scholarship	2013
James Scholar Honors Program (UIUC)	2010–2014

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. J. Kruszelnicki, **A. M. Lietz**, M. J. Kushner."Interaction Between Atmospheric Pressure Plasmas and Liquid Micro-Droplets" Oral Presentation, *International Conference on Plasmas with Liquids*, Prague, Czech Republic. March 8, 2017.
2. **A. M. Lietz**, M. J. Kushner."Electrode Configuration in Atmospheric Pressure Plasma Jets" Oral Presentation, *69th Gaseous Electronics Conference*, Bochum, Germany. October 13, 2016.
3. **A. M. Lietz**, 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.

4. **A. M. Lietz**, V. Petrischchev, I. V. Adamovich, and M. J. Kushner."Argon Dielectric Barrier Discharges Over Water at Moderate Pressure" Poster, *GRC Plasma Processing Conference*, Andover, NH. July 25, 2016.

5. **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.

6. **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. October 15, 2015.

7. **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.

8. **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.

9. I. A. Shchelkanov, **A. M. Lietz**, J. L. Pachicano, A. Antahoe, P. Kearney, and D. N. Ruzic. "Study of Potential Particle Generation by Ion Sources During EUV Mask Blank Deposition" Oral Presentation, *American Vacuum Society 61st International Symposium and Exhibition.* Baltimore, MD, USA. November 9-14, 2014.

10. **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.

11. **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.

12. S. M. Keniley, P. Piotrowics, G. Panici, **A. M. Lietz**. "Synthesis of Composite Particles for Fuel in BEUV Lithography" Oral Presentation, *American Nuclear Society Student Conference*, University Park, PA, USA. April 4, 2014.

13. **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.

14. **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.

Volunteer Activities

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

Illinois Biodiesel Initiative - President 2011-2013

- Maintained communication with all University groups, faculty, and staff involved in the project
- Ensured that the group maintained standards for safety, environmental compliance, and quality
- Procured a $28,000 grant for new equipment and upgrades
- Developed a sustainable business model with a team of MBA students for a competition

Women in Math Science and Engineering Learning Community Leader 2011-2012

- Planned and led the orientation for incoming freshmen residents

Professional Service

Session Chair
69th Annual Gaseous Electronics Conference

Manuscript Referee
The European Physical Journal Techniques and Instrumentation

Grant Referee
Czech Science Foundation