Alec D. Gallimore, Ph.D.

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Office of the Dean
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Professional Interests:

Advanced spacecraft propulsion; plasma physics; plasma diagnostics (probe, microwave and optical); nanoparticle physics; plasma for environmental remediation; academic administration; national security; entrepreneurship; and higher education administration

Professor Gallimore is founder and director of the Plasmadynamics and Electric Propulsion Laboratory (PEPL).

Qualifications and Experience

Jul. 2016 to Present	**Robert J. Vlasic Dean of Engineering, University of Michigan:** Chief academic and executive officer of Michigan Engineering, one of the nation's largest engineering colleges with over 10,000 students, 1,400 employees (faculty and staff) and 75,000 living alums. Provides leadership and is responsible for all matters relating to the administration of the College of Engineering, including academic programs, personnel, budgets, alumni engagement, government and industry relations, and fundraising. Works collaboratively with faculty and staff to advance the College's mission. Represents the College within the University and manages a wide range of external constituencies.
Oct. 2015 to Present	**Richard F. and Eleanor A. Towner Professor of Engineering:** Endowed professorship in recognition of research excellence of a distinguished faculty member.
Jan. 2014 to June 2016	**Associate Dean for Academic Affairs, College of Engineering, University of Michigan:** Responsibilities related to the faculty, including oversight of the hiring, promotion, and tenure processes; merit review and overall budget review and planning; and space allocation and management. Works in close cooperation with the Dean, the other associate deans and the department chairs to sustain and advance the academic mission of the College of Engineering.
Sept. 2011 to Dec. 2013	**Associate Dean for Research and Graduate Education, College of Engineering, University of Michigan:** Oversees research and the large-scale research support facilities within the College of Engineering, manages all cost-sharing funds in support of sponsored research, and serves as the chief academic officer for graduate education in the College of Engineering.
Feb. 2006 to Present	**Arthur F. Thurnau Professor:** Named professorship in honor of teaching excellence.

Sept. 2005 to Aug. 2011	**Associate Dean for Academic Programs and Initiatives, Horace H. Rackham School of Graduate Studies, University of Michigan:** Plays a leadership role in developing and implementing Graduate School activities in engineering and the physical sciences at the University of Michigan.
Sept. 2004 to Present	**Professor, Department of Aerospace Engineering, University of Michigan** (Also holds an appointment in the Applied Physics Program) Professor Gallimore directs the Plasmadynamics and Electric Propulsion Laboratory, which is housed in the Department of Aerospace Engineering at the University of Michigan. Professor Gallimore also directs the NASA-funded Michigan Space Grant Consortium, and directed the USAF-funded MACEEP Center of Excellence in Electric Propulsion. Professor Gallimore is an experimental plasma physicist who specializes in advanced spacecraft propulsion. He has extensive experimental experience with a number of electric propulsion devices including ion thrusters, Hall thrusters (SPTs, TALs, and end-Hall thrusters), arcjets, MPD thrusters and multi-megawatt pulsed coaxial plasma accelerators. He has implemented a variety of plasma probe, microwave, optical and laser diagnostics. His current interests include: high-power electric propulsion thruster development; advanced time-resolved plasma diagnostics; cubesat electric propulsion; and plasma-wall interactions in electric propulsion devices.
Sept. 1998 to Aug. 2004	**Associate Professor, Department of Aerospace Engineering, Applied Physics Program, University of Michigan**
January 1992 to Sept. 1998	**Assistant Professor, Department of Aerospace Engineering, University of Michigan**

Education:

- Ph.D. in Aerospace Engineering, October 1992, Princeton University
- M.A. in Aerospace Engineering, May 1988, Princeton University
- B.S. in Aeronautical Engineering, May 1986, Rensselaer Polytechnic Institute

Ph.D. Dissertation Title:

- Anode Power Deposition in Coaxial MPD Thrusters — Advisor: Professor Robert G. Jahn

Awards & Honors:

- NASA Faculty Fellows Award, 1993
- Silver Shaft Award (Instructor of the Year), by the University of Michigan Sigma Gamma Tau chapter, 1994 and 1996
- Faculty Fellowship Award, by the University of Michigan Rackham Graduate School, 1994
- Crystal Image Award for Technical Achievement from the National Technical Association (NTA) for 1994 Science Educator of the Year, July 23, 1994
- Class of '38E Junior Faculty Outstanding Achievement Prize by the University of Michigan College of Engineering, 1996

- Best Paper Award in Electric Propulsion at the 1998 Joint Propulsion Conference, by AIAA, 1999
- Faculty Career Development Award, by the University of Michigan, 2000
- The Aerospace Engineering Award for Outstanding Accomplishment, 2002
- Outstanding Achievement in Academia, National GEM Consortium, 2004
- Trudy Huebner Service Excellence Award, by the University of Michigan College of
- Engineering, 2005
- Harold R. Johnson Diversity Service Award, by the University of Michigan, 2005
- Decoration for Meritorious Civilian Service, by the United States Air Force, 2005
- Arthur F. Thurnau Professorship, by the University of Michigan, 2006
- Exemplary Diversity Engagement Award, National Center for Institutional Diversity, the University of Michigan, 2009
- Fellow —American Institute of Astronautics and Aeronautics (AIAA), 2010
- Phi Kappa Phi, 2014
- Richard A. and Eleanor F. Towner Professor of Engineering, 2015
- Robert J. Vlasic Dean of Engineering, 2016

Professional Service:

- Member of the AIAA International Electric Propulsion Technical Committee**,** since 1994
- Member of the 1996-97 Institute for Defense Analyses (IDA) Defense Science Study Group (DSSG)
- Associate Editor, Journal of Propulsion and Power (AIAA), since 1997
- Member, Defense Science Board (Force Modernization Taskforce study), 1999
- Member, National Academy of Engineering Naval Studies Board (Undersea Weapons Science &
- Technology panel), 1999-2000
- Director, Michigan Space Grant Consortium (NASA), since 2000
- Member, United States Air Force Scientific Advisory Board, 2001-2005
- Member, High-Power Electric Propulsion Technology Assessment Group (NASA), 2001-2002
- Member, NRC Panel on NASA's In-Space Propulsion, and High-Energy Nuclear Power and Propulsion Capability Roadmaps, in preparation for the Moon/Mars Initiative, 2005
- Member, NRC Air Force Studies Board – Stealth/Speed Trade-off, 2005-2006
- Member, NRC Board on Army Science and Technology – Solid-State Laser C-RAM, 2006-2007
- Member, NRC Naval Studies Board – Conventional Prompt Global Strike, 2007-2008
- Member, Space and Missile Propulsion Science and Technology: Independent Review Team 2008, Institute for Defense Analyses on behalf of the Office of the Deputy Under Secretary of Defense, 2008
- Guest Editor, Special Issue on Plasma Propulsion, IEEE Transaction on Plasma Science, 2008
- Associate Editor, JANNAF Journal, 2009
- Chair, 2009 International Electric Propulsion Conference, Ann Arbor, MI, 2009
- Section Editor, Encyclopedia of Aerospace Engineering, John Wiley & Sons Ltd,
- Member, NRC Committee for an Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison with Other Alternatives, January 2010-June 2011
- Member, NASA Study to Evaluate the use of the International Space Station at an Electric Propulsion Testbed, March-July 2011
- Member, NRC NASA Technology Roadmap: Propulsion and Power Panel, September 2010 – April 2012
- Member, NRC Space Technology Industry-Government-University Roundtable (STIGUR), September 2014 – March 2016
- Holder of a Department of Defense TOP SECRET Security Clearance

Professional and Honor Societies:

- American Institute of Aeronautics and Astronautics (Fellow)
- American Society for Engineering Education
- Electric Rocket Propulsion Society (Board Member)
- Phi Kappa Phi
- Sigma Gamma Tau
- Sigma Xi
- Tau Beta Pi

Single-Author Classified Government Report (DOD):

- "Use of Hypervelocity, Supercavitating Projectiles for Submarine Defense," Institute for Defense Analyses Technical Report (SECRET), Dec. 1997.

Book Chapters:

- Marrese, C. M., Polk, J. E, Jensen, K. L., **Gallimore, A. D.,** Spindt, C., Fink, R. L., and Devereux, W., "Performance of Field Emission Cathodes in Xenon Electric Propulsion System Environments," Chapter 11 in Micropropulsion for Small Spacecraft, Michael M. Micci and Andrew D. Ketsdever, Editors, Paul Zachan, Editor-in-Chief, Progress in Astronautics and Aeronautics, Volume 187, AIAA, ISBN 1-56347-448-4, 2000.

- Marrese, C. M., Wang, J., **Gallimore, A. D.,** and Goodfellow, K. D., "Space-Charge-Limited Emission from Field Emission Cathodes for Electric Propulsion and Tether Applications," Chapter 18 in Micropropulsion for Small Spacecraft, Michael M. Micci and Andrew D. Ketsdever, Editors, Paul Zachan, Editor-in-Chief, Progress in Astronautics and Aeronautics, Volume 187, AIAA, ISBN 1-56347-448-4, 2000.

Special Issue Editor:

- M. Keidar, **A. D. Gallimore,** Y. Raitses and J.P. Bouef, Editors, **Special Issue on Plasma Propulsion**, IEEE Transaction on Plasma Science, November 2008.

- W. Hargus, J. Blandino, and **A. Gallimore**, **JANNAF Special Section for the BHT-200 on the USAF TacSat-2 Mission**, 2010

- Encyclopedia of Aerospace Engineering, John Wiley & Sons Ltd, Editor of the *Alternative Space Propulsion* section, 2010

Patents:

- *LINEAR GRIDLESS ION THRUSTER*, **A. D. Gallimore** and B. Beal, U.S. Patent No. 6,640,535, *I*ssued: Nov. 4, 2003.

- *SCALABLE FLAT-PANEL NANOPARTICLE MEMS/NEMS THRUSTER,* B. E. Gilchrist, **A. D. Gallimore**, M. Keidar, L. Musinski, and T. M. Lui, U.S. Patent No. 7,516,610, *I*ssued: April 14, 2009.

- *NANOPARTICLE FIELD EXTRACTION THRUSTER*, B. E. Gilchrist, **A. D. Gallimore**, T. M. Lui, L. Musinski, and J. Mirecki-Mullunchick, U.S. Patent No. 8,453,427, *I*ssued: June 24, 2013.

- *ELECTRODELESS PLASMA THRUSTER,* **A. D. Gallimore,** B. W. Longmeier, J. P. Sheehan, U.S. Patent Pending.

Television/Video Appearances:

- Panel Member in the 1993 GEM annual telecast entitled **"Graduate School: The Role of the Advisor,"** broadcast from the Georgia Institute of Technology, Atlanta, GA on October 28, 1993.

- Numerous YouTube videos on electric propulsion and space exploration.

Educational Compact Disc Appearance:

- Described the principles of momentum conservation in terms of spacecraft propulsion in an educational compact disc (CD) geared for high school physics students in the San Diego, CA school district. The CD is entitled **"Physics for the Computer Age"** and was produced by Maxwell Laboratories Inc. S-Cubed Division with Glencoe / McGraw-Hill serving as the publisher (1995).

Entrepreneurship:

Co-founder of *ElectroDynamic Applications, Inc.* (EDA), a high-tech engineering firm in Ann Arbor, MI that specializes in plasma device engineering and defense-related R&D.

Leadership Positions, University of Michigan:

Robert J. Vlasic Dean of Engineering, College of Engineering (Ju1. '16 - Present)
Chief academic and executive officer of the College. Provides leadership and is responsible for all matters relating to the administration of the College, including academic programs, personnel, budgets, alumni engagement, government and industry relations, and fundraising. Works collaboratively with faculty and staff to advance the College's mission. Represents the College within the University and manages a wide range of external constituencies. Recent initiatives he led or helped lead include:

- Creation of the College's Diversity, Equity and Inclusion Strategic Plan

- Creation of the College's Mission, Vision and Values

- Creation of the College of Engineering "Great to Best" Strategic Plan

Associate Dean for Academic Affairs, College of Engineering (Jan. '14 —Present)
The Office of the Associate Dean for Academic Affairs (ADAA) has primary responsibilities related to the oversight of the hiring, merit review and promotion (including granting tenure) processes associated with over 400 tenured and tenure-track professors, 130 research scientists and research professors, and 120 lecturers in the College of Engineering. The ADAA assists the Dean in the overall budget review and planning for all departments and offices in the College, and has the primary responsibility for space

allocation and management. The ADAA works in close cooperation with the Dean, the other associate deans and the department chairs to sustain and advance the academic mission of the College. Recent ADAA-sponsored initiatives that I led or helped lead include:

- Faculty Development Efforts:
    - Established the CoE Faculty Fellows Program, where five associate and full professors spent a year at 20% effort working in the Dean's office
    - Designed and implemented faculty pathways to national leadership workshop
    - Organized multiple events with the Center for Research, Learning and Teaching performance group (CRLT Players), including facilitated discussion
- Three-Year Faculty Hiring Process – to enhance faculty excellence/diversity: Allocated faculty hiring slots for a three-year period with annual reviews of progress.
- Re-Focus of CoE IT on Business Processes: Took a student/research focused IT organization and revamped its mission to include business processes, to reduce the administrative burden on the faculty and staff.
- Played an active role in the formation of the campus-wide Advanced Research Computing Office
- Transitioned Space Physics Research Laboratory (SPRL) into College-wide resource for research and education: Applied SPRL's unique engineering talent in the space arena to assist major research initiatives to to support the College's educational mission
- College of Engineering Diversity Strategic Plan Co-Lead: Co-led extensive Diversity, Equity and Inclusion strategic planning process for the College
- Re-focused mission of the Center for Engineering Diversity and Outreach (CEDO): Conducted a review of the office, and developed assessment metrics for its programs, a fundraising plan and a leadership transition process.

Associate Dean for Research and Graduate Education, College of Engineering (Sept. '11 — Dec. '13)
The Associate Dean for Research and Graduate Education (ADRGE) reports to the Dean of Engineering and oversees the College's >$260M/year research enterprise, and is responsible for the education and welfare of the College's >3,500 graduate students and 250 postdoctoral fellows. The ADRGE establishes and enforces policies to manage the College's research and postgraduate education enterprises. The Office of the Associate Dean for Research and Graduate Education is led by the ADRGE and includes a professional staff for government relations, corporate relations, foundation relations, international relations (for research and graduate education), graduate student matters, including recruiting, management of the College's postdoctoral fellows, and implementation of the College's Responsible Conduct for Research and Scholarship (RCRS) programming. The ADRGE manages the College's cost-sharing funds (>$3M/year) and all college-wide research facilities such as the $60M Lurie Nanofabrication Laboratory (LNF) and the Michigan Center for Materials Characterization* (MC2). The ADRGE develops research initiatives to support the College strategically, assists the Dean in preparing the annual budget document for the Provost, in fundraising and campaign planning, and plays a central role in implementing the College's strategic plan, especially with regard to major research initiatives,

* Then known as the Electron Microbeam Analysis Laboratory (EMAL).

graduate student fellowships and facilities/infrastructure needs. Recent ADRGE-sponsored initiatives that I led or helped lead include:

- Center Proposal Enhancement Program: Offers seed funding and assistance in the form of technical writers, graphic artists, and seasoned budget developers to teams pursuing major research centers such as NSF Engineering Research Centers.

- Graduate Recruitment: Developed a suite of activities to recruit outstanding graduate students to the College. The most recent entering Ph.D. class under my watch as ADRGE of ~230 averaged an undergraduate GPA of nearly 3.75, was 57% domestic and 25% women. Underrepresented minorities (URMs) made up 19% of the domestic student body.

- MCubed: Co-created a unique $15M campus-wide interdisciplinary seed funding program where two or more schools or colleges are represented in a single three-person "cube." MCubed became the first program in Michigan's Third Century Initiative program to mark the University's bicentennial in 2017.

- Foundation Relations Focus: To diversify the College's sponsored research portfolio, I hired the College's first fulltime staff member to be dedicated to research fundraising from foundations.

- International Focus: Using data-driven reasoning, I added an international component to the College's research development portfolio with a focus on three countries/regions of strategic interest to the College.

- Research Initiatives: advanced manufacturing, robotics and autonomous systems, and transportation.

- NextProf: Developed and led a number of diversity initiatives for faculty recruitment including this unique "future faculty" workshop for URMs and women.

- Master's Fellowship Program: Used the findings and recommendations of the Master's Taskforce report to create new initiatives for the College's master's programs including the establishment of over $1M in master's fellowships.

Associate Dean for Academic Programs and Initiatives, Horace H. Rackham School of Graduate Studies (Sept. '05 — Aug. '11)

I coordinated all graduate school activities in the physical sciences and engineering throughout the Ann Arbor campus, and served as the liaison to the engineering school on the Flint campus. I led the $6 million NSF-funded Alliances for Graduate Education and the Professoriate (AGEP) project to increase the number of URM (African American, Hispanic and American Indian/Alaskan Native) students receiving doctoral degrees in STEM in order to diversify the professoriate. I served on the Provost's campus-wide Promotion and Tenure committee, which reviews casebooks after they have cleared the schools and colleges. I served as a senior representative for Rackham on campus, nationally and internationally, and developed a number of new initiatives and programs, including:

- Mentoring Others Results in Excellence (MORE): A committee of faculty members I founded that offers workshops on graduate student mentoring to faculty members and graduate students.

- AGEP Diversity Initiatives: Developed a number of programs, workshops and conferences to enhance the recruitment and retention of URM graduate students and postdocs with an eye towards convincing them to enter academia.

- College of Engineering Graduate Initiatives: Worked with the College of Engineering's Associate Dean for Research and Graduate Education of the time to transition engineering to a fully-funded Ph.D. program, and to increase its emphasis and effectiveness on domestic/URM student recruitment.

- Program Review: Extensively reviewed all 25 graduate programs in the physical sciences and engineering division over the course of a four-year cycle. Offered grants and worked with departments to improve their graduate programs.

- Graduate Student Cost-Sharing: Initiated a pilot program with the College of Engineering and Michigan Office of the Vice President for Research (OVPR) to run a $3M three-year graduate student cost-sharing program for large centers.

Director, Michigan/AFRL Center of Excellence in Electric Propulsion (MACEEP) (Sept. '09 — August 2016)
The MACEEP was the first USAF Center of Excellence dedicated to advanced spacecraft propulsion. The $6M (for 5 years) center is comprised of Michigan (lead), UCLA, Michigan Tech, Penn State, and Colorado State, and focuses on four thrust areas: 1) Advanced Plasma Propulsion Systems for large spacecraft; 2) Plasma-Wall/Electrospray Processes; 3) Time-Resolved Probe and Optical Diagnostics; and 4) Modeling and Simulation, to support the Center's experimental efforts.

Director, Michigan Space Grant Consortium (MSGC) (Sept. '00 —Present)
The NASA-funded MSGC's mission is to create, develop, and promote programs that support STEM education and public outreach in areas of NASA's strategic interests. The MSGC issues ~90 grants a year to students, professors, teachers and citizen STEM activists. The MSGC is comprised of Michigan (lead), Calvin College, Central Michigan University, Eastern Michigan University, Grand Valley State University, Hope College, Michigan State, Michigan Tech, Oakland University, Saginaw Valley State University, Wayne State University, and Western Michigan University. The MSGC's annual funding ranges between approximately $600K-$850K.

Director/Founder, Plasmadynamics and Electric Propulsion Laboratory (PEPL) (Sept. '00 —Present)
In Founded in 1992, the Plasmadynamics and Electric Propulsion Laboratory is one of the world's leading electric propulsion research centers. The centerpiece of the laboratory is the Large Vacuum Test Facility (LVTF), a 9-m-long by 6-m-diameter cylindrical stainless-steel clad vacuum chamber. The Chicago Bridge and Iron Company built the chamber in 1961 for the Bendix Corporation. The chamber was donated to the University of Michigan in 1982 and remained dormant until I came to the university to turn the facility into a state-of-the-art electric propulsion laboratory. The chamber's original oil diffusion pumps have been replaced by a series of seven liquid-N_2 baffled reentrant cryogenic pumps that reach a base pressure of 0.2 microTorr with a combined pumping speed of over 500,000 liters/sec on air. The LVTF is used mostly to test Hall thrusters and ion thrusters. PEPL also houses a number of smaller vacuum chambers for plasma physics and electric propulsion research that range in size from a 30-cm UHV spherical chamber, to a 3-m by 1-m chamber for cubesat propulsion development.

Journal Publications:

1. **Gallimore, A. D.**, Kelly, A. J., and Jahn, R. G., "Anode Power Deposition in Quasi-steady MPD Thrusters,'" Journal of Propulsion and Power (AIAA), Vol. 8, No. 6 Nov. - Dec. 1992, 1224-1231.

2. **Gallimore, A. D.**, Kelly, A. J., and Jahn, R. G., "Anode Power Deposition in MPD Thrusters," Journal of Propulsion and Power (AIAA), Vol. 9, No. 3 May - June 1993, 361-368.

3. **Gallimore, A. D**., Myers, R. M., Kelly, A. J., and Jahn, R. G., "Anode Power Deposition in an Applied-Field Segmented Anode MPD Thruster," Journal of Propulsion and Power (AIAA) Vol. 10, No. 2 March - April 1994, 262-268.

4. Tilley, D. L., **Gallimore, A. D.**, Kelly, A. J., and Jahn, R. G., "The Adverse Effect of Ion Drift Velocity Perpendicular to a Cylindrical Triple Probe," Review of Scientific Instruments (AIP), Vol. 65, No. 3 March 1994, 678-681.

5. **Gallimore, A. D.**, Kelly, A. J., and Jahn, R. G., "Power Deposition in a Hall Parameter Suppression Anode," Journal of Propulsion and Power (AIAA), Vol. 10, No. 4 July - Aug. 1994, 554-561.

6. Ohler, S. G., Gilchrist, B. E., and **Gallimore, A. D.**, "Non-intrusive Electron Number Density Measurements in the Plume of a 1 kW Arcjet Using a Modern Microwave Interferometer," IEEE Transactions on Plasma Science, Vol. 23, No. 3, June 1995, 428-435.

7. **Gallimore A. D.**, Kim, S. W., King, L. B., Foster, J. E., and Gulczinski III, F. S., "Near and Far-Field Plume Studies of a 1 kW Arcjet,'" Journal of Propulsion and Power (AIAA), Vol. 12, No. 1, Jan.--Feb. 1996, 105-111.

8. Foster, J. E., and **Gallimore, A. D.**, "An Investigation into the Role that a Transverse Magnetic Field Plays in the Formation of Large Anode Sheath Potentials," Physics of Plasmas, **3** (11) November 1996, 4239-4249.

9. King, L. B., and **Gallimore, A. D.**, "Approximating Collisional Free-stream Attenuation at Transitional Knudsen Numbers," AIAA Journal, Vol. 35, No. 3, Mach 1997, 574-576.

10. King, L. B., and **Gallimore, A. D.**, "A Gridded Retarding Pressure Sensor for Ion and Neutral Particle Analysis in Flowing Plasmas," Review of Scientific Instruments, Vol. 68, No. 2, February 1997, 1183-1188.

11. Gilchrist, B. E., Ohler, S. G., and **Gallimore, A. D.**, "Flexible Microwave System to Measure the Electron Number Density and Quantify the Communications Impact of Electric Thruster Plasma Plumes," Review of Scientific Instruments (AIP), Rev. Sci. Inst., Vol. 68, No. 2, February 1997, 1189-1194.

12. Foster, J. E., and **Gallimore, A. D**., "The Effect of an Auxiliary Discharge on Anode Sheath Potentials in a Transverse Discharge," Journal of Applied Physics, April 1997, 3422-3432.

13. Kusamoto, D., Mikami, K., Komurasaki, K., and **Gallimore A. D.,** "Exhaust Beam Profiles of Hall Thrusters," Transactions of Japanese Society for Aeronautical and Space Sciences, Vol. 40, No. 130, 1998, 238-247.

14. King, L. B., **Gallimore, A. D.**, and Marrese, C. M., "Transport Property Measurements in the Plume of an SPT-100 Hall Thruster," Journal of Propulsion and Power (AIAA), Vol. 14, No. 3, May - June 1998, 327- 335.

15. Domonkos, M. T., **Gallimore, A. D.,** and Bilen, S., "A Hall Probe Diagnostic for Low Density Plasma Accelerators," Review of Scientific Instruments (AIP), Vol. 69, No. 6, June 1998, 2546-2549.

16. Ohler, S. G., Gilchrist, B. E., **Gallimore, A. D.,** "Microwave Plume Measurements of a Stationary Plasma Thruster, "Journal of Propulsion and Power (AIAA), Vol. 14, No. 6, Nov.-Dec. 1998, 1016-1021

17. Ohler, S. G., Gilchrist, B. E., and **Gallimore, A. D.**, "Electromagnetic Signal Modification in a Localized High-Speed Plasma Flow: Simulations and Experimental Validation of a Stationary Plasma Thruster (SPT)," IEEE Transactions on Plasma Science, Vol. 27, No. 2, April 1999, 587-593.

18. Oh, D. Y., Hastings, D. E., Marrese, C., Haas, J., and **Gallimore, A. D.**, "PIC-DSMC Modeling of SPT-100 Thruster Plumes and Implications for Spacecraft Design," Journal of Propulsion and Power (AIAA), Vol. 15, No. 2, March -April 1999, 345-357.

19. King, L. B., and **Gallimore, A. D.,** "Identifying Charge-Exchange Collision Products within the Ion-Energy Distribution of Electrostatically Accelerated Plasmas," Physics of Plasmas, Vol. 6, No. 7, July 1999, 2936-2941.

20. Domonkos, M. T., Marrese, C. M., Haas, J. M., **Gallimore, A. D.,** "Very Near-Field Plume Investigation of the Anode Layer Thruster," Journal of Propulsion and Power (AIAA), Vol. 16, No. 1, January - February 2000, 91-98.

21. Van Noord, J., **Gallimore, A. D.,** and Rawlin, V. K., "Numerical Thermal Model of a 30-cm NSTAR Ion Thruster," Journal of Propulsion and Power (AIAA), Vol. 16, No. 2, March-April 2000, 357-364.

22. King, L. B., and **Gallimore, A. D.,** "Ion-Energy Diagnostics in the Plasma Plume of a Hall Thruster," Journal of Propulsion and Power (AIAA), Vol. 16, No. 5, September-October 2000, 916-922.

23. Williams, G. J., Smith, T. B., Domonkos, M. T., **Gallimore, A. D.**, and Drake, R. P., "Laser-Induced Fluorescence Characterization of Ions Emitted from Hollow Cathodes," IEEE Transactions on Plasma Science, Vol. 28, No. 5, October 2000, 1664-1675.

24. Haas, J. M., **Gallimore, A. D.,** and McFall, K., and Spanjers, G., "Development of a High-Speed, Reciprocating Electrostatic Probe System for Hall Thruster Interrogation," Review of Scientific Instruments, Vol. 71, No. 11, November 2000, 4131-4138.

25. King, L. B., and **Gallimore, A. D.,** "Mass Spectral Measurements in the Plume of an SPT-100 Hall Thruster," Journal of Propulsion and Power (AIAA), Vol. 16, No. 6, November-December 2000, 1086-1092.

26. Marrese, C. M., Polk, J. E, Jensen, K. L., **Gallimore, A. D.,** Spindt, C., Fink, R. L., and Devereux, W., "Performance of Field Emission Cathodes in Xenon Electric Propulsion System Environments," Chapter 11 in Micropropulsion for Small Spacecraft, Michael M. Micci and Andrew D. Ketsdever, Editors, Paul Zachan, Editor-in-Chief, Progress in Astronautics and Aeronautics, Volume 187, AIAA, ISBN 1-56347-448-4, 2000, 271-302.

27. Marrese, C. M., Wang, J., **Gallimore, A. D.,** and Goodfellow, K. D., "Space-Charge-Limited Emission from Field Emission Cathodes for Electric Propulsion and Tether Applications," Chapter 18 in Micropropulsion for Small Spacecraft, Michael M. Micci and Andrew D. Ketsdever, Editors, Paul Zachan, Editor-in-Chief, Progress in Astronautics and Aeronautics, Volume 187, AIAA, ISBN 1-56347-448-4, 2000, 423-447.

28. Haas, J. M., and **Gallimore, A. D.,** "Internal Plasma Potential Profiles in a Laboratory-Model Hall Thruster," Physics of Plasmas, Vol. 8, No. 2, February 2001, 652-660.

29. Gulczinski, F. S. and **Gallimore, A. D.,** "Near Field Ion Energy and Species Measurements of a 5 kW Laboratory Hall Thruster " Journal of Propulsion and Power (AIAA), Vol. 17, No. 2, March-April 2001, 418-427.

30. Bilen, S. G., Domonkos, M. T., and **Gallimore, A. D.,** "Simulating Ionospheric Plasma with a Hollow Cathode in a Large Vacuum Chamber," Journal of Spacecraft and Rockets (AIAA), Vol. 38, No. 4, July-August 2001, 617-621.

31. **Gallimore, A. D.**, "Near- and Far-Field Characterization of Hall Thruster Plumes" Journal of Spacecraft and Rockets (AIAA), [Invited Article] Vol. 38, No. 3, May-June, 2001, 441-453.

32. Gilchrist, B. E., Jensen, K. L., **Gallimore, A. D.,** and Severns, J., "Space Based Applications For FEA Cathodes (FEACs)," Materials Issues in Vacuum Microelectronics: Symposium Proceedings, (Materials Research Society, Warrendale, PA, 2000) 621, pp. R481-487, 2000.

33. Williams, G. J., Smith, T. B., Gulczinski, F. S., and **Gallimore, A. D.,** "Correlating Laser-Induced Fluorescence and Molecular Beam Mass Spectrometry Ion Energy Distributions," Journal of Propulsion and Power (AIAA), Vol. 18, No. 2, March-April 2002, 489-491.

34. Haas, J. M., and **Gallimore, A. D.,** "Considerations on the Role of the Hall Current in a Laboratory-Model Thruster," IEEE Transactions on Plasma Science (2001), Vol. 30, No. 2, April 2002, 687-697.

35. Peterson, P. Y., **Gallimore, A. D.,** and Haas, J. M., "An Experimental Investigation of the Internal Magnetic Field Topography an Operating Hall Thruster," Physics of Plasmas, Vol. 9, No. 10, Oct. 2002, 4354-4362.

36. Kim, S. W., and **Gallimore, A. D.**, "Plume Study of a 1.35 kW SPT-100 using an ExB Probe," Journal of Spacecraft and Rockets, Vol. 39, No. 6, November-December 2002, 904-909.

37. Gilchrist, B. E., Bilen, S. G., Choiniére, E., **Gallimore**, **A. D.,** and Smith, T. B., "Analysis of Chamber Simulations of Long Probes in High-Speed, Dense Plasmas," IEEE Transactions on Plasma Science, (2002), Vol. 30, No. 5, October 2002, 2023-2034.

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253. Reid, B. M., Shastry, R., **Gallimore, A. D.,** Hofer, R. R., "Angularly-Resolved ExB Probe Spectra in the Plume of a 6-kW Hall Thruster," AIAA-2008-5287, 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Hartford, Connecticut, July 2008.

254. Longmier, B. W., **Gallimore, A.D.,** Reid, B. M., "Validating a Momentum Flux Sensor with a Hall Thruster Mounted on an Inverted Pendulum Thrust Stand," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Hartford, Connecticut, July 2008.

255. Ngom, B. B., Huang, W., Smith, T. B., and **Gallimore, A. D.,** "Numerical Simulation of the Magnetic Field Topology of the H6 Hall Thruster from Near-infrared LIF of Neutral Xenon," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Hartford, Connecticut, July 2008.

256. Ngom, B. B., Reid. B., and **Gallimore, A. D.,** "Study of the Effect of Hall Current on the Magnetic Field Topology of the H6 Hall Thruster," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Hartford, Connecticut, July 2008.

257. Liu, T., Musinski, L., **Gallimore, A.,** and Gilchrist, B., "Developmental Progress of the Nanoparticle Field Extraction Thruster," AIAA-2008-5096, 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, July 2008.

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Extraction Thruster," AIAA-2008-5096, 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, 21-23 July 2008.

259. Morris, S., Liu, T., Biehle, T., Gilchrist, B., and **Gallimore, A.,** "Reduced Gravity Testing of the Nanoparticle Field Extraction Thruster Concept," AIAA-2008-4995, 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, July 2008.

260. Lobbia, R. B., and **Gallimore, A. D.,** "A Method of Measuring Transient Plume Properties," AIAA-2008-4650, 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Hartford, CT, July 21-23, 2008.

261. Shastry, R., **Gallimore, A.D.,** Hofer, R.R., Goebel, D.M., and Watkins, R.M., "Interpretation of Wall- Mounted Probe Characteristics in Hall Thrusters," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, July 2008.

262. Shastry, R., Hofer, R. R., Reid, B. M., and **Gallimore, A. D.,** "Method for Analyzing ExB Probe Spectra from Hall Thruster Plumes," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, July 2008.

263. A.P. Yalin, L. Tao, R. Sullenberger, M. Oya, N. Yamamoto, T.B. Smith, **A.D. Gallimore**, "High-Sensitivity Boron Nitride Sputter Erosion Measurements by Continuous-Wave Cavity Ring-Down Spectroscopy," 44th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Hartford, CT, July 2008.

264. Lobbia, R. B., Liu, T. M., **Gallimore, A. D.,** "Correlating Time-Resolved Optical and Langmuir Probe Measurements of Hall Thruster Dynamics," SPS-III-36, Presented at the 6th Modeling and Simulation / 4th Liquid Propulsion / 3rd Spacecraft Propulsion Joint Subcommittee JANNAF Meeting, Orlando, FL, December 8-12, 2008.

265. Brown, D. L., Larson, C. W., Nakles, M. R., **Gallimore, A. D.,** "Evaluation of Faraday Probe Design and Scattering Effects on Current Density Measurements of a 200 W Hall Thruster," SPS-III-25, 3rd JANNAF Spacecraft Propulsion Joint Subcommittee Meeting, Orlando, FL, December, 2008.

266. Brown, D. L., **Gallimore, A. D.,** "Low Voltage Characteristics and Cathode Coupling Effects in the H6 Hall Thruster," SPS-III-26, 3rd JANNAF Spacecraft Propulsion Joint Subcommittee Meeting, Orlando, FL, December, 2008.

267. Massey, D., Musinski, L., Liu, T., **Gallimore, A.,** and Gilchrist, B., "The Nanoparticle Field Extraction Thruster: NanoFET," Presented at the 6th Modeling and Simulation / 4th Liquid Propulsion / 3rd Spacecraft Propulsion Joint Subcommittee JANNAF Meeting, Orlando, FL, December 8-12, 2008.

268. Spencer, L. F. **Gallimore, A. D.,** and Nguyen, S. V. T., "Dissociation of CO2 in a Radio Frequency Plasma Source," 4th International Congress on Cold Atmospheric Pressure Plasmas: Sources and Applications, Ghent, Belgium, June 2009.

269. Lobbia, R. B., **Gallimore, A. D.,** "Fusing Spatially and Temporally Separated Single-point Turbulent Plasma Flow Measurements into Two-dimensional Time-resolved Visualizations," Presented at 12th International Conference on Information Fusion, Seattle, WA, July 6-9, 2009.

270. Huang, W., Drenkow, B., and **Gallimore, A. D.,** "Laser-Induced Fluorescence of Singly-Charged Xenon inside a 6-kW Hall Thruster," 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Denver, CO, August 2-5, 2009.

271. Shastry, R., **Gallimore, A.,** and Hofer, R. R., "Near-Wall Plasma Properties and EEDF Measurements of a 6-kW Hall Thruster," AIAA-2009-5356, 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Denver, CO, August 2-5, 2009.

272. Lobbia, R. B., Liu, T. M., and **Gallimore, A. D.,** "Temporally and Spatially Resolved Measurements in the Plume of Clustered Hall Thrusters," AIAA-2009-5354, 45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, Denver, CO, August 2-5, 2009.

273. Linnell, J. A., and **Gallimore, A. D.,** "Hall Thruster Electron Motion Characterization Based on Internal Probe Measurements," IEPC-2009-105, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

274. Brown, D. L., **Gallimore, A. D.,** "Evaluation of Plume Divergence and Facility Effects on Far-Field Faraday Probe Current Density Profiles," 31st International Electric Propulsion Conference, IEPC-2009-030, Ann Arbor, MI, September 20-24, 2009.

275. Brown, D. L., Larson, C. W., Nakles, M. R., **Gallimore, A. D.,** "Investigation of Low Discharge Voltage Hall Thruster Operating Modes and Ionization Processes," 31st International Electric Propulsion Conference, IEPC-2009-074, Ann Arbor, MI, September 20-24, 2009

276. Reid, B. M., and **Gallimore, A. D.,** "Near-field Ion Current Density Measurements of a 6-kW Hall Thruster," IEPC-2009-124, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

277. Huang, W., and **Gallimore, A. D.,** "Laser-induced Fluorescence Study of Neutral Xenon Flow Evolution inside a 6-kW Hall Thruster," IEPC-2009-087, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

278. Huang, W., and **Gallimore, A. D.,** "Using Nonlinear Zeeman Spectroscopy to obtain In-Situ Magnetic Field Measurement in a Hall Thruster," IEPC-2009-088, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

279. Lemmer, K. M., **Gallimore, A. D.,** and Smith, T. B., "Use of a Helicon Source to Simulate Atmospheric Re-entry Plasma Densities," IEPC-2009-236, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

280. Shastry, R., **Gallimore, A. D.,** and Hofer, R. R., "Near-Wall Plasma Characterization of a 6-kW Hall Thruster," IEPC-2009-133, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, 20-24, 2009.

281. Liang, R., and **Gallimore, A.D.,** "A 6-kW Laboratory Hall Thruster with Two Concentric Discharge Channels," IEPC-2009-104, Proceedings of the 31st International Electric Propulsion Conference, Ann Arbor, MI, September 20-24, 2009.

282. Donchev, K., Heywood, M, Cutler, J., Gilchrist, B., and **Gallimore, A.,** "A CubeSat Design to Validate the Virtex-5 FPGA for Spaceborne Image Processing," Proceedings of the 2010 IEEE Aerospace Conference, Big Sky, MT, March 6-13, 2010.

283. McDonald, M., S, **Gallimore, A.D.**, Hofer, R. R., and Goebel, D. M., "Development of a 3D Electron Trajectory Model with Monte Carlo Neutral Collisions for the Hall Thruster Near-Field Plume," JANNAF-2010-1192, Proceedings of 57th JANNAF Propulsion Meeting, Colorado Springs, CO, May 3-7, 2010.

284. Liang, R., and **Gallimore, A.D.,** "Performance of a Laboratory Hall Thruster with Two Concentric Discharge Channels," JANNAF-2010-1190, Proceedings of 57th JANNAF Propulsion Meeting, Colorado Springs, CO, May 3-7, 2010.

285. Huang, W., Smith, T. B., Durot, C. J., **Gallimore A. D.,** and Yalin A. P., "Development of a Cavity Ring-Down Diagnostic for Studying Hall Thruster Channel Erosion," JANNAF-2010-1202, Proceedings of 57th JANNAF Propulsion Meeting, Colorado Springs, CO, May 3-7, 2010.

286. Shastry, R., **Gallimore, A. D.** and Hofer, R. R., "Erosion Characterization via Ion Power Deposition Measurements in a 6-kW Hall Thruster," Proceedings of the 57th JANNAF Propulsion Meeting, JANNAF-2010-1205, Colorado Springs, CO, May 3 - 7, 2010.

287. Liang, R. and **Gallimore, A.D.** "Far-Field Plume Measurements of a Nested-Channel Hall Thruster," 49th AIAA Aerospace Sciences Meeting, Orlando, Florida, 4-7 January 2011.

288. A. Shabshelowitz and **A. D. Gallimore**, "Ion Energy Distribution Measurements of a Radiofrequency Plasma Source Immersed in Vacuum," 38th International Conference on Plasma Science, Chicago, IL, June 26-30, 2011.

289. Trent, K. R., Shabshelowitz, A., **Gallimore, A. D.,** "EEDF Control Through Gas Injection into a Plasma Plume," 04.308, 38th EPS (European Physical Society) Conference on Plasma Physics, Strasbourg, France, 27 June- 1 July 2011.

290. Spencer, Laura and **Gallimore, A.D.,** "Investigation of Atmospheric Pressure Plasma Source for CO2 Dissociation," 20th International Symposium on Plasma Chemistry (ISPC), Philadelphia, PA, July 2011

291. Huang, W., **Gallimore, A. D.,** Smith, T. B., Tao L., and Yalin, A. P., "Initial Cavity Ring-Down Density Measurement on a 6-kW Hall Thruster," *47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit*, San Diego, CA, 31 Jul.-3 Aug., 2011.

292. Shastry, R., **Gallimore, A. D.** and Hofer, R. R., "Experimental Characterization of the Near-Wall Plasma in a 6-kW Hall Thruster and Comparison to Simulation," AIAA-2011-5589, Proceedings of the 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, San Diego, CA, July 31 - August 3, 2011.

293. McDonald, M. S., Bellant, C. K., St. Pierre, B. A., and **Gallimore, A. D.**, "Measurement of Cross-Field Electron Current in a Hall Thruster Due to Rotating Spoke Instabilities," AIAA 2011-5810, 47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference & Exhibit, San Diego, CA July 31 - August 3, 2011.

294. Huang, W., **Gallimore, A. D.,** Smith, T. B., and Yalin, A. P., "The Technical Challenges of using Cavity Ring-Down Spectroscopy to Study Hall Thruster Channel Erosion," 32nd International Electric Propulsion Conference, Wiesbaden, Germany, September 11-15, 2011.

295. R. Florenz, **A.D. Gallimore** and P.Y. Peterson, "Developmental Status of a 100-kW Class Nested channel Hall Thruster," IEPC-2011-246. 32nd International Electric Propulsion Conference, Wiesbaden, Germany, September 11-15, 2011.

296. Liang, R. and Gallimore, A.D. "Performance and Plume Measurements of a Nested-Channel Hall-Effect Thruster Operating at Constant Power," 32nd International Electric Propulsion Conference, Wiesbaden, Germany, September 11-15, 2011.

297. Trent, K. R., McDonald, M. S., **Gallimore, A. D**., "Time-Resolved Langmuir Probing of a New

Lanthanum Hexaboride (LaB6) Hollow Cathode," IEPC-2010-245, 32nd International Electric Propulsion Conference, Wiesbaden, Germany, September 11-15, 2011.

298. Trent, K. R., McDonald, M. S., Lobbia, R. B., **Gallimore, A. D.,** "Predictive control of plasma kinetics: Time-resolved measurements of inert gas mixing in a hollow cathode discharge," IAC-11.C4.4.10, 62nd International Astronautical Congress (IAC2011), Cape Town, South Africa, 3-7 October 2011.

299. Shabshelowitz, A., and **Gallimore, A. D**., "Plasma Properties in the Far-Field Plume of a Radiofrequency Plasma Thruster," 39th International Conference on Plasma Science, Edinburgh, United Kingdom, July 2012.

300. Florenz, R., **Gallimore, A.D.**, "Electric Propulsion of a Different Class: The Challenges of Testing for Megawatt Missions," AIAA-2012-3942, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Atlanta, GA, July 29 - August 1, 2012.

301. Huang, W., **Gallimore, A.D.**, "A Low-Cost Optical Approach to Evaluate the Life Time of Hall Thruster Discharge Channel," AIAA-2012-4035, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Atlanta, GA, July 29 - August 1, 2012.

302. Shabshelowitz, A., **Gallimore, A.D.**, and Peterson, P.Y., "Performance of a Helicon Hall Thruster Operating with Xenon, Argon, and Nitrogen," AIAA-2012-4336, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Atlanta, GA, July 29 - August 1, 2012.

303. McDonald, M. S., Sekerak, M. J., **Gallimore, A. D.**, and Hofer, R. R., "Plasma Oscillation Effects on Nested Hall Thruster Operation and Stability," IEEE-2012-2502, 34th IEEE Aerospace Conference, Big Sky, Montana, 2-9 March 2013.

304. Sekerak, M. J., McDonald, M. S., Hofer, R. R., and **Gallimore, A. D.**, "Hall Thruster Plume Measurements from High-Speed Dual Langmuir Probes with Ion Saturation Reference," IEEE-2012-2129, 34th IEEE Aerospace Conference, Big Sky, Montana, 2-9 March 2013.

305. M. Sekerak, B. Longmier, **A. Gallimore**, D. Brown, R. Hofer and J. Polk, "Mode Transitions in Hall Effect Thrusters," AIAA-2013-4116, presented at the 49th AIAA Joint Propulsion Conference, San Jose, CA, July 14-17, 2013.

306. Florenz, R., Hall, S**., Gallimore, A.**, Kamhawi, H., Griffiths, C., Brown, D., Hofer, R., Polk, J., "First Firing of a 100-kW Nested-channel Hall Thruster," IEPC-2013-394, 33rd International Electric Propulsion Conference, Washington, D.C., October 6-10, 2013.

307. Durot, C., **Gallimore, A.**, Smith, T., "Development and Validation of a Novel Time-Resolved Laser-Induced Fluorescence Technique," IEPC-2013-356, 33rd International Electric Propulsion Conference, Washington, D.C., October 6-10, 2013.

308. McDonald, M., Liang, R., **Gallimore, A.**, "Practical Application of Wide Bandwidth Floating Emissive Probes and Wavelet Analysis to the X2 Nested Hall Thruster," IEPC-2013-352, 33rd International Electric Propulsion Conference, Washington, D.C., October 6-10, 2013.

309. McDonald, M., **Gallimore, A.,** "Comparison of Breathing and Spoke Mode Strengths in the H6 Hall Thruster Using High Speed Imaging," IEPC-2013-353, 33rd International Electric Propulsion Conference, Washington, D.C., October 6-10, 2013.

310. M. Sekerak, B. Longmier, **A. Gallimore,** D. Brown, R. Hofer and J. Polk, "Azimuthal Spoke Propagation in Hall Effect Thrusters," IEPC-2013-143, 33rd International Electric Propulsion

Conference, Washington, D.C., October 6-10, 2013.

311. M. Sekerak, B. Longmier, **A. Gallimore**, D. Brown, R. Hofer and J. Polk, "Mode Transition Characteristics and Oscillation Frequencies in Hall Effect Thrusters," presented at the AIAA Propulsion and Energy Forum and Exposition 2014: 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Cleveland, OH, 28 – 30 July 2014.

312. Hall, S., Florenz, R., Hall, S**., Gallimore, A.**, Kamhawi, H., Brown, D., Polk, J., Goebel, D., and Hofer, R., "The X3 100-kW Class Nested-Channel Hall Thruster: Motivation, Implementation, and Initial Testing," presented at the AIAA Propulsion and Energy Forum and Exposition 2014: 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Cleveland, OH, 28 – 30 July 2014.

313. Trent, K. R., **Gallimore, A. D.**, "Performance Analysis of a Hall Thruster with a Downstream Reverse Orientation Cathode" JANNAF-4043, 62nd JANNAF Propulsion Meeting (JANNAF2015), Nashville, Tennessee, June 1-5, 2015.

314. Trent, K. R., **Gallimore, A. D.**, "EEDF Control of a Hall Thruster Plasma Using a Downstream Reverse Orientation Cathode" 2015-b/IEPC-41, 34th International Electric Propulsion Conference, Kobe-Hyogo, Japan, July 4-10, 2015.

315. Sekerak, M. J., Brown, D. L., Lobbia, R. B., Hartley, K. D., King, D. Q., Peterson, P. Y., Dale, E., Cusson, S., **Gallimore, A. D.,** "The XR-5 and XR-5A Hall Thrusters, Part 2: Oscillation Behavior," 7th JANNAF SPS Joint Subcommittee Meeting, Nashville, TN, June 1-5, 2015.

316. Lobbia, R. B., Brown, D. L., Sekerak, M. J., Hartley, K. D., King, D. Q., Peterson, P. Y., Dale, E., Cusson, S., **Gallimore, A. D.**, "The XR-5 and XR-5A Hall Thrusters, Part 3: Time-Resolved Plasma Measurements," 7th JANNAF SPS Joint Subcommittee Meeting, Nashville, TN, June 1-5, 2015.

317. Hartley, K. D., Lobbia, R. B., Brown, D. L., Beal, B. E., King, D. Q., Peterson, P. Y., Dale, E., Cusson, S., **Gallimore, A. D.**, "The XR-5 and XR-5A Hall Thrusters, Part 4: Plume Properties," 7th JANNAF SPS Joint Subcommittee Meeting, Nashville, TN, June 1-5, 2015.

318. Hall, S.J., Florenz, R.E., **Gallimore, A.D.**, Kamhawi, H., Brown, D.L., Peterson, P.Y., Polk, J.E., and Hofer, R.R., "Design Details of a 100-kW class Nested-channel Hall Thruster", 62nd Joint Army Navy NASA Air Force Propulsion Meeting, Nashville, TN, June 1-5, 2015.

319. Hall, S.J., Cusson, S.E., and **Gallimore, A.D.**, "30-kW Performance of a 100-kW Class Nested-channel Hall Thruster", IEPC-2015-125, 34th International Electric Propulsion Conference and Exhibit, Kobe, Japan, July 6-10, 2015.

320. Ebersohn, F.H., Sheehan, J.P., **Gallimore, A.D.**, Shebalin, J.V., "Quasi-one-dimensional particle-in-cell simulation of magnetic nozzles," IEPC-2015-357, 34th International Electric Propulsion Conference, Kobe, Japan, July 4-10, 2015.

321. Georgin, M., Durot, C., and **Gallimore, A. D.**, "Preliminary Measurements of Time Resolved Ion Velocity Distributions Near a Hollow Cathode," IEPC-2015-106, 34th International Electric Propulsion Conference, Kobe, Japan, July 4-10 2015.

322. Dale, E., **Gallimore, A**., Huang, W., "High-Speed Image Analysis and Filtered Imaging of Nested Hall Effect Thruster Oscillations," IEPC-2015-90369, 34th International Electric Propulsion Conference, Hyogo-Kobe, Japan, July 4-10, 2015.

323. Cusson, S., Dale, E., and **Gallimore A.,** "Investigation of Channel Interactions in a Nested Hall Thruster Part II: Probes and Performance" AIAA-2016-5029, 34th International Electric Propulsion Conference, Hyogo-Kobe, Japan, July 4-10, 2015.

324. Collard T.A, Sheehan, J.P., and **Gallimore, A.D.** "Pressurized Xenon Propellant Management System for the CubeSat Ambipolar Thruster", IEPC-2015-364/ISTS-2015-b-364, presented at the Joint Conference of 30th International Symposium on Space Technology and Science, 34th International Electric Propulsion Conference and 6th Nano-satellite Symposium, Hyogo-Kobe, Japan, 2015.

325. Collard, T.A., Ebersohn, F.H., Sheehan, J.P., **Gallimore, A.D.,** "Ion Acceleration Modes in a Miniature Helicon Thruster," presented at the 68th Annual Gaseous Electronic Conference/9th International Conference on Reactive Plasma/33rd Symposium on Plasma Processing, Honolulu, HI, 2015.

326. Hall, S.J., Florenz, R.E., **Gallimore, A.D.,** Kamhawi, H., Brown, D.B., Peterson, P.Y., Polk, J.E., Hofer, R.R., "Design Details of a 100-kW class Nested-Channel Hall Thruster," 62nd Joint Army Navy NASA Air Force (JANNAF) Propulsion Meeting/10th MSS/8th LPS/7th SPS Joint Subcommittee Meeting, Nashville, TN, June 1-5, 2015.

327. Georgin, M., Dhaliwal, V., **Gallimore, A**. "Investigation of Channel Interactions in a Nested Hall Thruster Part I: Acceleration Region Velocimetry," 52nd Joint Propulsion Conference, Salt Lake City, UT, July 25-27, 2016.

328. Hara, K., Boyd, D., Sekerak, M., and **Gallimore, A.,** "Discharge oscillation mode transition of a Hall thruster", 41st IEEE International Conference on Plasma Science and the 20th International Conference on High-Power Particle Beams, Washington D.C., May 25-29, 2014.

329. Hara, K., Sekerak, M., **Gallimore, A.,** and Boyd, D., "Breathing mode in Hall effect thrusters," IEPC-2015-283, 34th International Electric Propulsion Conference, Hyogo-Kobe, Japan, July 4-10, 2015.

330. S. Cusson, E. Dale, and **Gallimore**, **A.,** "Investigation of Channel Interactions in a Nested Hall Thruster," Journal of Propulsion and Power, 2016.

331. Hall, S.J., Jorns, B.A., **Gallimore, A.D.,** Kamhawi, H., Peterson, P.Y., "High-Power Performance of a 100-kW class Nested Hall Thruster", IEPC-2017-228, 35th International Electric Propulsion Conference, Atlanta, GA, October 8-12, 2017.

332. Collard, T.A., Sheehan, J.P., and **Gallimore, A.D.**, "A Miniature Magnetic Nozzle Plasma Source for Investigation of Plume Detachment," AIAA-2017- XXXX, presented at the 53rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Atlanta, GA, 2017.

333. Collard, T.A., Sheehan, J.P., and **Gallimore, A.D.**, "Plasma Detachment from a Miniature Magnetic Nozzle Source," IEPC-2015- 335, presented at the 35th International Electric Propulsion Conference, Atlanta, GA, 2017.

334. Dale, E.T., Jorns, B.A., **Gallimore, A.D.,** "Experimental investigation of the stability criteria for the breathing mode in Hall Effect Thrusters", IEPC 2017-265, 35th International Electric Propulsion Conference, Atlanta, Georgia, October 8-12, 2017.

335. Cusson, Sarah. E, Hofer, Richard R., Lobbia, Robert, Jorns, Benjamin A., and **Gallimore, Alec D**., "Performance of the H9 Magnetically Shielded Hall Thrusters," 35th International Electric Propulsion Conference, Atlanta, GA, October 8-12, 2017.

336. Cusson, Sarah. E, Hall, Scott J., Hofer, Richard R., Jorns, Benjamin A., and **Gallimore, Alec D.,** "The Impact of Magnetic Field Coupling Between Channels in a Nested Hall Thruster," 35th International Electric Propulsion Conference, Atlanta, GA, October 8-12, 2017.

337. Georgin, M., Byrne, M., Jorns, B., and **Gallimore, A**., "Passive High-speed Imaging of Ion Acoustic Turbulence in a Hollow Cathode," AIAA-2017-XXXX 53nd AIAA/SAE/ASEE Joint Propulsion Conference, Atlanta, Georgia, July 10-12, 2017.

338. Georgin, M., Sarver-Verhey, T., Jorns, B., **Gallimore, A.D.,** "Low Frequency Hollow-Cathode Plume Mode Oscillations", IEPC 2015-106 , 35th International Electric Propulsion Conference, Atlanta, Georgia, October 8-12, 2017.

339. Cusson, S., Durot, C., Jorns, B., and **Gallimore, A.,** "Impact of Cathode Flow Fraction on the Location of the Acceleration Region," 53rd AIAA/SAE/ASEE Joint Propulsion Conference, 2017 AIAA Propulsion and Energy Forum and Exposition.

Selected Conference Posters and Presentations:

1. "Experiments with High-Pressure Field Emission Cathodes for Electric Propulsion Application," presentation by C. M. Marrese, **A. D. Gallimore**, W. A. Mackie, and D. E. Evans, at the 24th IEEE International Conference on Plasma Science (ICOPS), San Diego, CA, May 1997 AND at the JPL Workshop on Advanced Propulsion Concepts on May 21, in Pasadena, CA.

2. "Very-Near-Field Magnetic Field Measurements of an Anode Layer Thruster," presentation by M. T. Domonkos, **A. D. Gallimore**, and S. Bilen, 24th IEEE International Conference on Plasma Science (ICOPS), San Diego, CA, May 1997.

3. "Enhanced current collection characteristics of the Tethered Satellite System missions: prospects for laboratory simulation," Gilchrist, B. E., N. Stone, W.J. Raitt, C. Bonifzai, M. Dobrowolny, J. Laframboise, **A. Gallimore**, IPELS, Maui, HI, June, 1997.

4. "Laboratory experiments to investigate the effects of high speed bulk plasma drift on current collection physics in a space magnetoplasma: a feasibility assessment," Gilchrist, B.E., J. Laframboise, **A. Gallimore**, URSI National Radio Science Meeting, Boulder, CO, Jan. 5-9, 1998.

5. "Field-Emitter Array Cathodes (FEACs) for Space-Based Applications," presentation by B. E. Gilchrist, K. L. Jensen, **A. D. Gallimore**, and J. Severns, 26th IEEE International Conference on Plasma Science (ICOPS), Monterey, CA, June 1999.

6. "Plasma Density Measurements Inside a Laboratory Model Hall Thruster Using Resonance Probe Diagnostic," presentation by J. M. Haas, B. E., Beal, and **A. D. Gallimore**, 27th IEEE International Conference on Plasma Science (ICOPS), New Orleans, Louisiana, June 2000.

7. "Experimental Investigation of Hall Thruster Magnetic Field Topography," presentation by P. Y. Peterson, J. M. Haas, and **A. D. Gallimore**, 27th IEEE International Conference on Plasma Science (ICOPS), New Orleans, Louisiana, June 2000.

8. "Spectroscopic Characterization of FMT-2 Discharge Ionization Processes," presentation by T. B. Smith, G. J. Williams, and **A. D. Gallimore**, 27th IEEE International Conference on Plasma Science (ICOPS), New Orleans, Louisiana, June 2000.

9. "Optimization of Hall Thruster Magnetic Field Topography" poster presented by R. R. Hofer, P. Y. Peterson, and **A. D. Gallimore**, 27th IEEE International Conference on Plasma Science (ICOPS), New Orleans, Louisiana, June 2000.

10. "Performance Comparison of a Hall Thruster Operating with Xenon and Krypton, presented by J. A. Linnell and **A. D. Gallimore**, 46th Annual Meeting of the Division of Plasma Physics – American Physical Society, Savannah, GA, November 2004.

11. Smith, T. B., Nguyen, S., Tang, R., and **Gallimore, A. D.,** "Breakdown and ignition limits in LaB6 hollow cathode discharges," ICOPS-2006-89141, 33rd IEEE International Conference on Plasma Science, Traverse City, MI, June 2006.

12. Smith, T. B., Ngom, B. B., and **Gallimore, A. D.,** "Optogalvanic spectroscopy of the Zeeman effect in singly-ionized xenon," ICOPS-2006-6882, 33rd IEEE International Conference on Plasma Science, Traverse City, MI, June 2006.

13. Lemmer, K. M., **Gallimore, A. D.**, Morris, D. P., Davis, C., Boyd, I., and Keidar, M. "Development, Fabrication and Testing of a 15 cm Diameter Helicon Source," 8th Asia Pacific Conference on Plasma Science and Technology, Cairns, Queensland, Australia, July 2006.

14. Lemmer, K. M., **Gallimore, A. D.**, Morris, D.P., Davis, C., Boyd, I., and Keidar, M. "Development, Fabrication and Testing of a 15 cm Diameter Helicon Source," 33rd IEEE International Conference on Plasma Science, Traverse City, MI, June 2006.

15. Lemmer, K. M., **Gallimore, A. D.,** Smith, T. B., Nguyen, S., Austin, D. R., Morris, D., Davis, C., and Zagel, J., "Simulating Hypersonic Atmospheric Conditions in a Laboratory Setting Using a 6-in-Diameter Helicon Source." ICOPS 2007 Oral Presentation, Albuquerque, NM, June 2007.

16. Nguyen, S. V. T., Lemmer, K. M., **Gallimore, A. D.,** and Thompson, L. T., "An Experimental Study of Hydrogen Production by Dissociation of Water Vapor in a Helicon Plasma Source," ICOPS 2007 Oral Presentation, Albuquerque, NM, June 2007.

17. Nguyen, S. V. T., Foster, J. E., and **Gallimore, A. D.,** "Characterization of a Water Vapor Radio-Frequency Plasma —An Experimental Investigation," ICOPS 2009 Oral Presentation, San Diego, CA, June 2009.

18. Nguyen, S. V. T., Kushner, M. J., and **Gallimore, A. D.,** "Study of Reaction Kinetics of a Water Plasma Using a 0-D Global Model," ICOPS 2009 Oral Presentation, San Diego, CA, June 2009.

19. Liang, R. and **Gallimore, A.D.**, "A 6-kW Laboratory Hall Thruster with Two Concentric Discharge Channels," 31st International Electric Propulsion Conference Poster Session, Ann Arbor, Michigan, 20-24 September 2009.

20. Spencer, L. F. and **Gallimore, A. D.,** "Mass Spectrometric Analysis of CO2/Ar Plasma in a Radio Frequency Discharge," 37th IEEE International Conference on Plasma Science, Norfolk, VA, June 2010.

21. "Erosion Characterization via Ion Power Deposition Measurements in a 6-kW Hall Thruster," poster by R. Shastry, **A. D. Gallimore**, and R.R. Hofer, 1st Annual MIPSE Graduate Student Symposium, Ann Arbor, Michigan, September 2010.

22. McDonald, M.S., **Gallimore, A.D.,** Hofer, R.R., and Goebel, D.M., "Development of A Monte Carlo Hall Thruster Electron Trajectory Model," 63rd Annual Gaseous Electronics Conference and 7th International Conference on Reactive Plasmas, Paris, France, October 2010.

23. McDonald, M.S., **Gallimore, A.D.,** "On the Relation Between Rotating Spokes and Electron Transport in a Crossed-Field Plasma", 52nd Annual Meeting of the APS Division of Plasma Physics, Chicago, IL, November 2010.

24. Spencer, L. and **Gallimore, A.,** "Mass Spectrometric Analysis of CO_2/Ar and CO/Ar Plasma in a Radio Frequency Discharge," 37th International Conference on Plasma Science, Norfolk, VCA, June 20 - June 24, 2010.

25. C. J. Durot and **A. D. Gallimore,** "Development of a Novel Time-Resolved Laser-Induced Fluorescence Technique," 54th Meeting of the APS Division of Plasma Physics, Providence, RI, Oct. 29-Nov. 2, 2012.

26. M. Sekerak, **A. Gallimore**, and J. Polk, "High-speed Dual Langmuir Probe with Ion Saturation Reference (HDLP-ISR) for Hall Thruster Plume Measurements," Poster presented at the NASA Technology Days, Cleveland, OH, November 28-30, 2012.

27. C. J. Durot and **A. D. Gallimore**, "Development of a Novel Time-Resolved Laser-Induced Fluorescence Technique," 40th IEEE International Conference on Plasma Science, San Francisco, CA, June 16-21, 2013.

28. M. Sekerak, B. Longmier, A. Gallimore, "**Hall Effect Thruster Oscillatory Modes**," Poster presented at the 4th Michigan Institute for Plasma Science and Engineering Student Symposium, Ann Arbor, MI, September 25, 2013.

29. C. Durot, A. Gallimore, "**Development of a Novel Time-Resolved Laser-Induced Fluorescence Technique**," Poster presented at the 4th Michigan Institute for Plasma Science and Engineering Student Symposium, Ann Arbor, MI, September 25, 2013.

30. M. Georgin, V. Dhaliwal, and **A. Gallimore,** "Acceleration Region Measurements in a Nested Channel Hall Thruster," Poster presented at the International Conference On Plasma Science, Banff, Alberta, Canada, June 19-23, 2016.

31. S.E. Cusson, S.J. Hall, E.T. Dale, and **A.D. Gallimore,** "Performance Analysis of Nested Hall Thrusters", Poster presented at the 43rd IEEE International Conference on Plasma Science, Banff, Alberta, Canada, June 19-23, 2016.

32. T.A. Collard, J.P. Sheehan, **A.D. Gallimore,** "Ion Energetics of the Modes of the CubeSat Ambipolar Thruster," Poster presented at the 6th Annual Michigan Institute of Plasma Science and Engineering Graduate Student Symposium, Ann Arbor, MI, 2015.

33. S. Hall, R. Florenz, **A. Gallimore**, "Initial Observations of Channel Interaction in a 100-kW-Class Nested-Channel Hall Thruster", Poster Presented at the 5th Annual Michigan Institute of Plasma Science and Engineering Graduate Student Symposium, Ann Arbor, MI, October 8, 2014.

34. S. Hall, R. Florenz, **A. Gallimore**, "Channel Interaction in a 100-kW-Class Nested-Channel Hall Thruster", Poster presented at the University of Michigan Engineering Graduate Symposium, Ann Arbor, MI, November 14, 2014.

35. S. Hall, S. Cusson, **A. Gallimore**, "30-kW Constant-Current-Density Performance of a 100-kW-Class Nested Hall Thruster", Poster presented at the 6th Annual Michigan Institute of Plasma Science and Engineering Graduate Student Symposium, Ann Arbor, MI, October 7, 2015.

36. Collard, T.A., Sheehan, J.P., **Gallimore, A.D.,** "Ion Energetics of the Modes of the CubeSat Ambipolar Thruster," Poster presented at the 6th Annual Michigan Institute of Plasma Science and Engineering Graduate Student Symposium, Ann Arbor, MI, 2015.

Doctoral Students Graduated:

1. Foster, J. E., Dissertation Title — "An Investigation of the Influence of a Transverse Magnetic Field on the Formation of Large Anode Fall Voltages in Low-Pressure Arcs," 1996. *Currently Professor of Nuclear Engineering, University of Michigan.*

2. King, L. B., Dissertation Title — "Transport-Property and Mass Spectral Measurements in the Plasma Exhaust Plume of a Hall-Effect Space Propulsion System," 1998. *Currently the Ron and Elaine Starr Professor in Space Systems Engineering, Michigan Technical University, director of the Ion Space Propulsion (ISP) Laboratory.*

3. Marrese, C. M., Dissertation Title — "Compatibility of Field Emission Cathodes and Electric Propulsion Technologies; Theoretical and Experimental Performance Evaluations and Cathode Requirements," 1999. *Currently Technical Staff Member in electric propulsion, NASA Jet Propulsion Laboratory.*

4. Kim, S. W., Dissertation Title — "Experimental Investigations of Plasma Parameters and Species-Dependent Ion Energy Distribution in the Plasma Exhaust Plume of a Hall Thruster," 1999. *Currently Chief Engineer in electric propulsion, Advanced Technology Institute, Japan.*

5. Gulczinski III, F. S., Dissertation Title – "Examination of the Structure and Evolution of Ion Energy Properties of a 5 kW Class Laboratory Hall Effect Thruster at Various Operational Conditions," 1999. *Currently Deputy Chief Energy, Power, and Thermal Division, Air Force Research Laboratory (Wright Patterson AFB).*

6. Van Noord, J. L., Dissertation Title — "Thermal Model of an Ion Thruster," 1999. *Currently Member of the Technical Staff, Space Physics Research Laboratory, College of Engineering, University of Michigan.*

7. Domonkos, M. T., Dissertation Title — "Evaluation of Low-Current Orificed Hollow Cathodes," 1999. *Recently Research Scientist in electric propulsion at NASA Glenn Research Center. Currently Technical Staff Member in directed energy, Air Force Research Laboratory (Kirtland AFB)*

8. Williams Jr., G. J., Dissertation Title — "The Use of Laser-Induced Fluorescence to Characterize Discharge Cathode Erosion in a 30 cm Ring-Cusp Ion Thruster," 2000. *Currently Technical Staff Member in electric propulsion, NASA Glenn Research Center.*

9. Haas, J. M., Dissertation Title — "Low-Perturbation Interrogation of the Internal and Near-field Plasma Structure of a Hall Thruster using a High-Speed Probe Positioning System," 2001. *Currently Member of the Technical Staff, Air Force Research Laboratory (Wright Patterson AFB).*

10. Smith, T. B. Dissertation Title — "Deconvolution of Ion Velocity Distributions from Laser Induced Fluorescence Spectra of Xenon Electrostatic Thruster Plumes," 2002. *Currently Lecturer, Department of Aerospace Engineering, University of Michigan.*

11. Beal, B. E. Dissertation Title — "Clustering of Hall Effect Thruster for High-Power Electric Propulsion," 2004. *Currently Technical Staff Member, Air Force Research Laboratory (Edwards AFB).*

12. Hofer, R. R. Dissertation Title — "Development and Characterization of High-Efficiency, High Specific Impulse Xenon Hall Thrusters," 2004. *Currently Group Leader, Electric Propulsion Section, NASA Jet Propulsion Laboratory.*

13. Peterson, P. Y. Dissertation Title — "The Development and Characterization of a Two-Stage Hybrid Hall/Ion Thruster," 2004. *Currently a member of the technical staff in electric propulsion, NASA Glenn Research Center.*

14. Walker, M. L. R., Dissertation Title — "Effects of Facility Backpressure on the Performance and Plume of a Hall Thruster," 2005. *Currently Professor of Aerospace Engineering, Georgia Institute of Technology, director of the High-Power Electric Propulsion Laboratory.*

15. Herman, D. A., Dissertation Title — "The Use of Electrostatic Probes to Characterize the Discharge Plasma Structure and Identify Discharge Cathode Erosion Mechanisms in Ring-Cusp Ion Thrusters," 2005. *Currently Technical Staff Member in electric propulsion, NASA Glenn Research Center.*

16. Rovey, J. L., Dissertation Title — "A Multiple-Cathode, High-Power, Rectangular Ion Thruster Discharge Chamber for Increasing Thruster Lifetime," 2005. *Currently Associate Professor of Aerospace Engineering, Missouri University of Science and Technology, (formerly University of Missouri, Rolla), conducting electric propulsion research in his laboratory.*

17. Victor, A. L., Dissertation Title — "Design and Utilization of a Top Hat Analyzer for Hall Thruster Plume Diagnostics," September 2006. *Currently Senior Member of the Technical Staff, Aerospace Corporation, Los Angeles, CA* (co-advised with T. Zurbuchen).

18. Linnell, J. A., Dissertation Title — "An Evaluation of Krypton Propellant in Hall Thrusters," February 2007. *Currently Member of the Technical Staff, Sandia National Laboratory, Albuquerque, NM.*

19. Kirtley, D. E., Dissertation Title — "Study of the Synchronous Operation of an Annular Field Reversed Configuration Plasma Device," Ph.D. Dissertation, University of Michigan, 2008: *Currently Propulsion Research Scientist* at MSNW, LLC, Seattle, WA.

20. Musinski, L., Dissertation Title — "Investigation of a Micro- and Nano-Particle In-Space Electrostatic Propulsion Concept," Ph.D. Dissertation, University of Michigan, 2009: *Currently Member of the Technical Staff, MIT Lincoln Laboratory, Lexington, MA* (co-advised with B. Gilchrist).

21. Reid, B. M. Dissertation Title — "The Influence of Neutral Flow Rate in the Operation of Hall Thrusters," Ph.D. Dissertation, University of Michigan, 2009: *Currently Member of the Technical Staff, MIT Lincoln Laboratory, Lexington, MA*.

22. Lemmer, K. M. Dissertation Title — "Use of a Helicon Source for Development of a Re-Entry Blackout Amelioration System," Ph.D. Dissertation, University of Michigan, 2009: *Currently Assistant Professor of Mechanical Engineering, Western Michigan University.*

23. Brown, D. L. Dissertation Title — "Investigation of Low Discharge Voltage Hall Thruster Characteristics and Evaluation of Loss Mechanisms," 2009. *Currently Technical Staff Member in rocket propulsion, Air Force Research Laboratory (Edwards AFB).*

24. Nguyen, S. V. T. Dissertation Title — "Hydrogen Production in a Radio-Frequency Plasma Source Operating on Water Vapor," 2009. *Currently Member of the Technical Staff, MIT Lincoln Laboratory, Lexington, MA* (co-advised with J. Foster).

25. Ngom, B. B. Dissertation Title — "Magnetic Field Simulation and Mapping Based on Zeeman-Split Laser-Induced Fluorescence Spectra of Xenon in the Discharge Channel of 5-6 kW Co-Axial Stationary-Plasma Hall Thrusters," 2009.

26. Lobbia, R. B. Dissertation Title — "A Time-Resolved Investigation of the Hall Thruster Breathing Mode," 2010. *Currently Member of the Technical Staff in electric propulsion, NASA Jet Propulsion Laboratory.*

27. Liu, T. M. Dissertation Title — "The Design Space of a Micro/Nano-Particle Electrostatic Propulsion System," 2010. *Currently a research scientist at the High-Power Electric Propulsion Laboratory, Georgia Institute of Technology,* (co-advised with B. Gilchrist).

28. Shastry, R. Dissertation Title — "Experimental Characterization of the Near-Wall Region in Hall Thrusters and its Implications on Performance and Lifetime," 2011. *Currently Technical Staff Member in electric propulsion, NASA Glenn Research Center.*

29. Tang, R. Dissertation Title — "Study of the Gasdynamic Mirror (GDM) Propulsion System," 2011 (co-advised with T. Kammash).

30. Huang, W. Dissertation Title — "Use of Cavity Ring-Down Spectroscopy to Characterize Hall Thruster Erosion," 2011. *Currently Technical Staff Member in electric propulsion, NASA Glenn Research Center.*

31. Spencer, L., Dissertation Title — "The Study of CO_2 Conversion in a Microwave Plasma/Catalyst System," 2012. *Currently Technical Staff Member at Federal Mogul.*

32. McDonald, M., Dissertation Title — "Electron Transport in Hall Thrusters," 2012. *Currently Technical Staff Member at the* U.S. *Naval Research Laboratory.*

33. Shabshelowitz, A., Dissertation Title — "Study of RF Plasma Technology Applied to Air-Breathing Electric Propulsion," 2012. *Currently Member of the Technical Staff, MIT Lincoln Laboratory, Lexington, MA.*

34. Liang, R., Dissertation Title — "The Combination of Two Concentric Discharge Channels into a Nested Hall-Effect Thruster," 2013. *Currently Technical Staff Member at Space Systems/Loral.*

35. Florenz, R., Dissertation Title — "The X3 100-kW Class Nested-Channel Hall Thruster: Motivation, Implementation, and Initial Performance," 2014. *Currently serving his country in the U.S. Marine Corps.*

36. Sekerak, M., Dissertation Title — "Plasma Oscillations and Operational Modes in Hall Effect Thrusters," 2014. *Currently Technical Staff Member in spacecraft systems engineering, NASA Goddard Space Flight Center.*

37. Trent, K., Dissertation Title – "Control of the Electron Energy Distribution Function (EEDF) in a Hall Thruster Plasma," 2016. *Currently a postdoc with the Plasmadynamics and Electric Propulsion Laboratory.*

38. Durot, C., Dissertation Title – "Development of a Time-Resolved Laser-Induced Fluorescence Technique for Nonperiodic Oscillations," 2016. *Currently a postdoc with the Plasmadynamics and Electric Propulsion Laboratory.*

39. Ebersohn, F., Dissertation Title – "Kinetic Method for Quasi-One-Dimensional Simulation of Magnetic Nozzle Plasmadynamics," 2016. *Currently an Aerospace Engineer at Lockheed Martin Skunk Works.*

Master's Students Graduated:

1. Clauss, C., September 1991 - May 1993, Research Topic - "Arcjet operations & PEPL build-up," (graduation date: May 1993) *Currently a Technical Staff Member at the* Naval Center for Space Technology at the U.S. *Naval Research Laboratory.*

2. Rudra, D., January 1992 - December 1993, Research Topic - "Thrust measurement of electric thrusters," (graduation date: December 1993). *Currently an engineer at the Daimler-Chrysler Company*.

3. Spieth, J., September 1992 - December 1993, Research Topic - "Arcjet performance measurements," (graduation date: December 1993). *Currently an engineer at the Boeing Airplane Company*.

4. Reichenbacher, M., September 1992 - December 1994, Research Topic - "End-Hall thruster plume diagnostics," (graduation date: December 1994). *Currently an engineer at Detroit Diesel Corporation*.

5. Majumdar, N., January 1996 - May 1997, Research Topic - "Development of a single-aperture retarding potential analyzer for Hall thruster plume characterization." *Currently an engineer at Space Systems/Loral working on electric propulsion.*

6. Malone, S., September 1997 - May 1998, Research Topic - "Development of a neutral particle flux probe for Hall thruster plume characterization." *Currently at Space Systems/Loral.*

7. Craig, L., September 2000 - September 2001, Research Topic - "ExB probe operations," *Currently an engineer in the NASA Mars exploration program, NASA Jet Propulsion Laboratory.*

8. McFarlane, D., September 2002 - December 2003, Research Topic - "Supporting tests to make internal ion engine." *Currently an engineer in family-owned general aviation aircraft parts supplier.*

9. Talerico, L., September 2002 - December 2003, Research Topic - "Supporting plasma-wind tunnel tests on the NASA URETI project." *Currently a development engineer at Blue Origins in Seattle, WA.*

10. Stindl, T., June 2003 - November 2003,Visiting Graduate Student from the University of Stuttgart, M.S. Thesis Research Topic - "Plasma temperature and number density measurements in the plume of a high-power Hall thruster plume." [U.S. ADVISOR, Professor Monika Auweter-Kurtz of the University of Stuttgart is the PRINCIPAL ADVISOR].

11. Gritter, L., January 2003 - May 2005, Research Topic - "Plasma-wind tunnel measurements for the NASA SVETI project." *Currently an engineer at Accurate Automation Corporation, Chattanooga, TN*.

12. Li, Y., September 2006 - December 2007, Research Topics - "Numerical Simulation of Hall Thruster Anode Injection," and "NanoFET PIC Modeling," *Currently an engineer at Space Exploration Technologies (SpaceX), Hawthorne, CA*.

13. Bellant, C., September 2009 – January 2013, Research Topic – "Plasma-Material Interactions for Electric Propulsion Devices," *Currently in the Advanced Flight Planning group for Human Space Exploration, NASA Johnson Space Center, Houston, TX.*

14. Goglio, I., September 2012 – May 2014, Research Topic – "Cubesat Ambipolar Thruster development," *Currently at Los Alamos National Laboratory, Los Alamos, NM*.