CURRICULUM VITAE

Andrew David Ketsdever

Interim Vice President
Oregon State University - Cascades
Bend, OR

Leadership Profile and Accomplishments

1. Oregon State University – Cascades

Interim Vice President

- Pursuing an active interim role marked by vision and impactful decisions to maintain the momentum of the campus' growth trajectory. Centering academics as the core mission of the University.
- Leading efforts in collaboration with OSU leadership to define, develop, and operationalize the "One OSU" concept by which OSU-Cascades is meant to be an innovative branch campus that is a strategic opportunity for all of OSU.
- Leading and supporting an effort to fund the initial development of an Innovation District on the Cascades campus. Worked with local legislators to secure $10M in state funding for land remediation required to start the project and OSU administration to secure an additional $24M in OSU backed revenue bonds to complete the infrastructure development of the site. Actively working on investigating a public-private-partnership agreement that may be a vehicle to bring 6 additional buildings to the OSU-Cascades campus that will house co-located industry opportunities for students, faculty and staff.
- Working with campus leadership to strategically tie the University budget to priorities and initiatives of the campus. Funded new positions in the Career Development Office for the Cascades Edge initiative. Funded consultants to provide additional assistance to further the Innovation District and the development of new degree programs.
- Supporting effort to resource Cascades Edge, a multifaceted and engaging career development program. All students are envisioned to see career development options every term, giving them an advantage when seeking a career.
- Led effort to secure $2M in OSU funding for the student success center (SSC) to preserve the scope of the building as the central hub for academic, career and co-curricular student success activities. Preserved academic and career advising space and created a visible career function within the SSC. Preserved health and wellness and diversity and inclusion spaces for students.
- Managing and engaging in donor, governmental, and community relations for all of OSU-Cascades including advocacy of student's needs, programs, and facilities. Managed complex partnerships with Central Oregon Community College and

other community stakeholders to further the University's connections within the community.

- Founded a Student Advisory Board (SAB) consisting of 12 students from diverse backgrounds. Current student board members represent all academic years including first year students and graduate students. Students represented diverse ethnic backgrounds, first generation and Pell Grant eligible students. The Board also includes a military veteran and a member of the Confederated Tribes of Warm Springs. The SAB has been convened multiple times to discuss ways to better engage students from the Vice President's Office.
- Developed an Executive Director of Strategic Diversity Initiatives position for the campus to address the growing needs of the campus in diversity, equity and inclusion. Hired inaugural executive director and developed a multi-year plan for diversity on the campus. Currently working with the Corvallis Office of Institutional Diversity to develop more DEI-related opportunities for the Cascades campus community. Currently focusing on a student-facing DEI position within the Student Engagement Office.
- Collaboratively re-organized the campus Leadership Team into a more comprehensive and coherent structure that focused on the strengths of current leadership and providing more sustainable workloads with a "One OSU" emphasis.
- Developed relationships both internally and externally to bring forward new degree programs in Nursing, Mechanical Engineering, Biochemistry and Molecular Biology, Economics, Political Science and Speech Communications. Worked with community partners at COCC and St. Charles to push Nursing forward through the Statewide Provost's Council.
- Oversaw a compensation equity process for all faculty and staff on campus to stem a higher rate of resignations during the COVID crisis.
- Managed the return to campus of all classes from COVID remote course modalities. Managed campus expectations within the reality of the pandemic.
- Provided main campus leadership with an OSU-Cascades vision for enrollment growth and investment opportunities within the branch campus. Envision:3000 was developed in collaboration with the Cascades campus community and external stakeholders. Envision:3000 developed into a framework for "One OSU" that is meant to better connect programs and processes across all OSU locations throughout the State of Oregon.
- Serving on the Boards of local organizations including EDCO, Better Together, US Bank, and the High Desert ESD.

<u>Dean of Academic Affairs</u>

- Provided strategic leadership for the development of new academic programs at OSU-Cascades. Developed plans for the rollout of new academic programs including all faculty and academic staff hiring.

- Provided leadership in the strategic planning for the academic mission of the campus and its relation to campus functions and facilities.
- Supervised nearly 70 full-time and over 100 associated (part-time) faculty in nine college's programs on the Cascades campus.
- Supervised and provided strategic leadership for all academic advisors.
- Supervised and provided strategic leadership for all career advisors.
- Developed a Director of Research position that represents the faculty research enterprise for the first time on the Cascades campus.
- Rebuilt academic leadership structure to include Program Directors responsible for overseeing operations of academic programs. Program Directors and other key academic leaders formed Dean's Executive Council.
- Championed shared governance through support of the Academic Faculty Council. Assisted in re-envisioning a stronger Council within the campus governance structure.
- Strategically developed and enacted through shared governance a new work allocation guideline for faculty teaching, research and service loads.
- Provided calm and strategic leadership during the uncertainty of the COVID-19 pandemic. Orchestrated a pivot to fully remote and synchronous courses and a pivot back to in-person instruction with the required flexibility needed due to variants.

<u>Associate Dean of Academic Affairs</u>

- Supervised faculty and oversaw curriculum for degree programs in the Colleges of Engineering, Science, Forestry, Earth, Oceans and Atmospheric Sciences, and Public Health and Human Sciences.
- Transformed relationships with the College of Science and College of Engineering Leadership Teams through engagement as an active participant in monthly/quarterly meetings. Continually seeking forums to engage on issues that are relevant to the Cascades campus.
- Navigated approval process for two new degrees in the College of Engineering requiring an innovative approach to the traditional approval process. Exercised important relationships with the Dean, Associate Deans, School Heads, and individual faculty. Worked with Vice President and Vice Provost of Undergraduate Programs to get programs on accelerated approval schedule.
- Engaged in collaborative visioning for new academic programs and facilities with campus stakeholders. Providing a vision for unwavering academic rigor and quality in the face of budgetary challenges. Working to create a positive and resilient culture towards the future growth of campus.
- Engineered innovative solutions to the challenging problems presented by enrollment growth. Working on plans to execute programs with additional section requirements that require a deep understanding of individual programs and pedagogy.

- Implemented support structure for faculty in many areas including classroom management, program development and execution, new program approvals, and hiring strategies. Formed a Classroom Behavior Task Force to strategize around a growing problem with student behaviors. Worked with faculty in several programs to modify curricula to better meet the needs of students. Providing a welcoming environment for faculty and staff with an open-door policy and meaningful offers of support.
- Developed a vision for supporting faculty in research through comprehensive research support guidelines. Engaging faculty in shared-governance in addressing research metrics and support policies. Providing general knowledge and information to faculty on pre-award and post-award strategies informed by years of research experience from both the funding agency and research execution perspectives.
- Enhanced research vision by involving external partners in the research community and also in the local Bend community. Assembled a small but effective Research Advisory Board of community members to help execute the research vision including the integration of the future Innovation District.
- Navigated and managed complex relationship between the Cascades (branch) campus and main campus. Aligning Cascade's vision with realities of main campus constraints.
- Fostered relationship with Central Oregon Community College by regularly meeting with Instructional Deans and faculty. Regular meetings allow important discussions about resource sharing and other areas of mutual benefit.

2. University of Colorado Colorado Springs

Department Chair

- Managed corporate, government and donor relationships in all Aerospace and Engineering areas with a direct report from University Advancement. Secured funds for program development, creation of a summer STEM Academy for K-12 students, advanced faculty research, and student scholarships in excess of $300k.
- Designed and managed innovative solutions for unprecedented student enrollment growth from 120 undergraduate students in 2011 to over 500 students in 2015. Hiring authority for 5 faculty and 2 classified staff. Successfully on-boarded 2 additional diverse faculty hires.
- Facilitated strategic planning process for the System-wide Ethnic and Minority Affairs Committee that included aspects of support for faculty, staff, and students of varied backgrounds and experiences.
- Implemented strategies to increase retention of vulnerable student populations. Provided support for co-curricular activities, peer mentoring and tutoring and talked through classroom strategies to improve poor Department retention of women and first generation students.
- Mentored all faculty in research within the Department. Responsible for starting research projects worth approximately $400k in research funding with

government and industry for 5 tenured and tenure-track faculty in Mechanical and Aerospace Engineering with varying degrees of personal involvement.

- Directed program improvements and resource allocation responsible for increasing enrollments in the Department's Masters program from 8 to 40 students. Established a viable PhD program by increasing enrollment from 1 to 10 students. Graduated Department's first PhD student while developing policies and procedures for the Department's PhD program.
- Advocated for and secured stable funding for graduate student teaching assistants for the first time in the Department in the face of challenging budget constraints. Funded stipend and tuition for over 20 graduate students in MAE during my tenure as Department Chair.
- Pioneered a professional development structure for faculty and staff through creative resource allocation for first time in Department's history. Established the Tenure-Track Support Committee for Departmental mentoring of tenure-track faculty.
- Galvanized faculty and staff around a Department strategic plan. Facilitated multifaceted discussions around teaching, research and service strategies.
- Funded an MAE peer-tutoring program to enhance student success. Freshman-to-Sophomore retention rates increased by 9% and Sophomore-to-Junior retention rates increased by 7% after the first 2 years of the program.
- Maintained active research program and teaching loads while Department Chair. Developed an "everyone does research" and "everyone teaches" philosophy to lead by example and to fully understand challenges within all phases of the Department's operation.

<u>Director of the Center for Laser, Energy and Exploration Research (CLEER)</u>

- Directed 5 faculty from different Departments in a collaborative research environment and the only Center in the College of Engineering and Applied Science. Founding Director.
- Provided professional development opportunities for faculty and students through the dedicated use of overhead return.
- Developed Center by-laws in collaboration with all stakeholders. Provided leadership roles for junior faculty within the Center's structure.
- Established vision for future research directions and funding. Provided stable research portfolio while exploring future research trends and advances.
- Secured over $2M in research funding for Center related research enterprise.

<u>Director of Engineering Online Graduate Programs</u>

- Directed 2 full-time faculty and over 25 adjunct (part-time) faculty in delivering 4 unique online degree programs including Energy Engineering, Systems Engineering, Engineering Management, and Space Operations to 135 students.
- Responsible for student admissions, program assessment, curriculum development, and student recruitment and retention.

- Improved quality by executing first comprehensive review of existing programs with external reviewers. Identified and addressing specific issues related to program quality including delivery methods and instructional deficiencies.
- Guided on online course delivery best practices to faculty and implemented rigorous hiring practices to ensure quality. Program ranked by US News and World Reports for the first time. Currently (late 2019) ranked #29 nationally in online graduate programs and #17 in experienced faculty.
- Developed a program vision that reversed declining enrollments. Enrollments increased by 10% over the lowest enrollment point in the 2 years of my Directorship.

3. Air Force Research Laboratory

Program Manager

- Created and advocated for a multi-million dollar program in Advanced Propulsion and Power Concepts within the Air Force Research Lab. Awarded $1M in first year of program to develop propulsion and power concepts for the next 50 years of Air Force missions. Sustained budget through severe budget pressures by constantly communicating the uniqueness and productivity of the program.
- Created only program of its kind within the Air Force research community requiring vision and leadership in an area that had no previous model or operating philosophy. Partnered on several projects with industry and universities while managing program outcomes.
- Provided vision for a group of 5 PhD researchers, 2 technical staff, and 2 Air Force officers in advanced concepts research. Strategic vision included guiding research by academic, government, and industry partners.
- Provided vision and innovation that led to first MEMS-fabricated propulsion system to be launched into space in 2005. Led collaboration between AFRL, the Jet Propulsion Laboratory, Arizona State University, and the University of Southern California. Propulsion system launched on inaugural Delta-IV Heavy. Managed 4 PhD engineers, 5 graduate students and 10 undergraduate students for this $2.3M project.

Group Leader

- Led group of 4 PhD researchers in Non-Equilibrium Flows Branch. Largest program funded by the Air Force Office of Scientific Research (AFOSR). Developed innovative approach to team building with government and government-sponsored University employees.
- Provided research vision that led to being named an AFOSR Star Team every year of the project's existence. The Star Team designation is reserved for the top 5% of research programs within AFOSR.

- Increased funding year-over-year by creating innovative research paths and directions to diversify the group's research portfolio. Increased funding by nearly 70% between program creation and completion of my involvement.
- Increased funding from $225k to over $600k per year through new proposals funded by various government agencies including the Office of Naval Research, the Army Research Office, and the DoD High Performance Computing Center.

Education

Ph.D., University of Southern California, Aerospace Engineering, August 1995.
Dissertation: The Production of Energetic Atomic Beams via Charge Exchange for the Simulation of the Low-Earth Orbit Environment.

M.S., University of Southern California, Aerospace Engineering, December 1992.
Emphasis: Astronautics.

B.S., University of Southern California, Aerospace Engineering, May 1990. (Cum Laude)

Continuing Education, Defense Acquisition University, 2006-2010.
Level III Certified: Systems Planning, RD&E – Science and Technology Manager
Courses included Leadership, Systems Engineering 201A, Acquisitions 101, 201A, 201B.

Professional Experience

1. Academic Administrative Positions

2021-present — Interim Vice President, Oregon State University, Cascades, Bend, OR
The Vice President of the Cascades campus is the leader of the academic mission and campus operations. Responsible for budget decisions, organizational management, external and donor relations, and vision. The VP oversees 7 members of the senior leadership team.

2020-2021 — Dean of Academic Affairs, Oregon State University, Cascades, Bend, OR
Responsible for all academic degree programs, faculty, associated faculty, and academic staff. Oversight and responsibility for research enterprise, donor relations, student success and student engagement.

2018-2020: — Associate Dean of Academic Affairs, Oregon State University, Cascades, Bend, OR

Responsible for approximately half of the campus' 21 programs in the Colleges of Engineering, Science, Forestry, and Public Health. Associate Dean for Research encompassing entire campus' research portfolio.

2012-2018: Director, Center for Laser, Energy and Exploration Research (CLEER), University of Colorado Colorado Springs, CO, College of Engineering and Applied Sciences

Center involves the collaborative research programs of 4 laboratories and 7 faculty. Approximately $2M in research and other expenditures since inception. Exploration and Space Technology Laboratory, Sustainable Energy Collection and Transport Laboratory, High Energy Laser Laboratory, and the Chamber for Atmospheric and Orbital Space Simulation Laboratory.

2017-2018: Director, Online Graduate Programs, University of Colorado Colorado Springs, CO, College of Engineering and Applied Sciences

Online Graduate Programs include System Engineering, Space Operations, Energy Engineering and Engineering Management. Director oversaw daily operations of the degree program, admissions, program assessment, curriculum, and student achievement. Program included 135 graduate students and 25 part-time faculty.

11/2011-12/2015: Chair, Department of Mechanical and Aerospace Engineering, University of Colorado Colorado Springs, CO

Department consists of 15 full-time faculty, 20 part-time faculty, and over 25 teaching assistants. Student population in Fall 2015 was 515 undergraduate and 40 graduate students including 10 Ph.D. candidates. Oversaw extraordinary growth in student enrollment.

2. Academic Positions

07/2018-present: Professor, Oregon State University-Cascades, OR, School of Mechanical, Industrial and Manufacturing Engineering

08/2014-06/2018: Professor, University of Colorado Colorado Springs, CO, Department of Mechanical and Aerospace Engineering

08/2011-07/2014: Associate Professor, University of Colorado Colorado Springs, CO, Department of Mechanical and Aerospace Engineering

2013-2015: Daniel's Ethics Faculty Fellow, University of Colorado Colorado Springs

2013-2014: Excellence in Leadership Program Fellow, University of Colorado.

2011:	Instructor, AIAA Short Course on Liquid Propulsion
01/2008-07/2011:	Assistant Professor, University of Colorado Colorado Springs, CO, Department of Mechanical and Aerospace Engineering
08/2004-06/2007:	Distinguished Visiting Professor, United States Air Force Academy, Colorado Springs, CO, Department of Astronautics
01/2006-06/2007:	Lecturer, University of Colorado Colorado Springs, CO, Department of Mechanical and Aerospace Engineering
06/2006-09/2007:	Research Associate Professor, University of Southern California, Los Angeles, CA, Astronautics and Space Technologies Division
08/2004-05/2006:	Research Assistant Professor, University of Southern California, Los Angeles, CA, Astronautics and Space Technologies Division
08/2000-07/2004:	Research Assistant Professor, University of Southern California, Los Angeles, CA, Department of Aerospace and Mechanical Engineering
01/1996-07/2000:	Lecturer, University of Southern California, Los Angeles, CA, Department of Aerospace Engineering

3. Work Experience

2007-2013: Program Manager, Air Force Research Laboratory, Edwards AFB, CA

Signature authority for multi-million-dollar research and development (6.1 and 6.2) budget for advanced propulsion and power concepts. Responsible for increasing R&D revenues by soliciting support from other government and private agencies. Provided government oversight and management of paid private-sector subcontractors including universities. Directed in-house research team of engineers and scientists in advanced propulsion and power concepts relating to satellite propulsion, high altitude and near-space vehicles, hypersonics, and launch systems. Investigated breakthrough physics and emerging technology that would play a role in Department of Defense systems for the next 50 years. Led in-house group consisting of 5 PhD, 2 Masters, and 1 military researcher. Led and oversaw collaborative research consortium of 35 contractors from academia and industry.

2006-2007: Chief Engineer, US Air Force Academy, Colorado Springs, CO

Conceptual and preliminary design of the FalconSat IV satellite. Satellite was designed to acquire data on the low-Earth-orbit plasma environment. Developed mission and science requirements and objectives including advanced sensors and subsystems. Designed, built and tested satellite subsystems and components. Led team of 15 cadets through the design and acquisition process.

Led test campaign including thermal vacuum testing, vibration testing, and electronics testing at Kirtland Air Force Base, NM.

2001-2007: Group Leader, Air Force Research Laboratory, Edwards AFB, CA

Technical program management for multi-year AFOSR funded basic research task in rarefied gas dynamics. Task amount (~$1M/year, 6.1) was largest AFOSR in-house laboratory research project at the time. Rated AFOSR Star Team for excellence in basic research each contract year. Successfully lobbied for and was awarded US Air Force's only program in advanced propulsion concepts in 2004. Research in astronautical application of microelectromechanical systems and micro-fluid dynamics. Led in-house group consisting of 7 PhD researchers. External oversight of multi-million dollar Small Business Innovative Research grants.

1992-2001: Senior Research Engineer, Air Force Research Laboratory, Edwards AFB, CA

Research in the areas of atomic oxygen gas and surface interactions in low-Earth orbit, electric propulsion, microspacecraft propulsion, rocket exhaust plume signatures, plasma processing, electron beam fluorescence, and Microelectromechanical Systems for spacecraft applications. Led AFRL effort in micropropulsion development. Charted AFRL program in micropropulsion that became muli-million dollar effort. Developed significant capability in spacecraft-thruster interactions with unique facility at the University of Southern California. Pioneered effort to expand AFRL collaboration with University partners that had led to several joint educational partnerships.

1997-1999: Consultant, University of Southern California, Aerospace Engineering, Los Angeles, CA

Design and development of a space simulation chamber and cryogenic pumping system for electric and micropropulsion thruster contamination and plume studies. Chamber is still operational and a mainstay of research at the University. It is currently featured on the USC commercial shown during televised sporting events (2014-2015).

1995-1996: Consultant, Rapid Analysis and Development, Inc., Irvine, CA

Calculations on charged droplet displacement in electric fields for prototype liquid metal soldering device.

Publications

1. Archival Journal Publications (Peer Reviewed)

[J48] C. Maldonado, A. Ketsdever, R. Balthazor, P. Neal, G. Wilson, M. McHarg, R. Osiander, and R. Adams, "Automated Plume Sentry Observations During International Space Station Thermal Control System Venting," **J. Spacecraft and Rockets**, Vol. 60, No. 1, pp. 339-350, 2023.

[J47] C. Maldonado, A. Ketsdever, and J. Williams, "A Magnetically Filtered Atomic Oxygen Plasma Source for Low-Earth-Orbit Simulation," **J. Spacecraft and Rockets**, Vol. 58, No. 5, pp. 1406–1415, 2021.

[J46] C. Maldonado, M. McHarg, A. Dunsmore, O. Asmolova, G. Anderson, S. Rodrigues, and A. Ketsdever, "Material Erosion Measurements and Expected Operational Lifetime of a Deployable Photon Sieve Payload," **Adv. In Space Res**., Vol. 65, 2902-2911, 2020.

[J45] C. Spells, A. Craig, and A. Ketsdever, "Development of a Transient Thrust Stand with Sub-Millisecond Resolution," **Rev. Sci. Instrum**. Vol. 90, 095105, 2019.

[J44] R. Bosworth, A. Ventura, A. Ketsdever, and S. Gimelshein, "Measurement of Negative Thermophoretic Force," **J. Fluid Mech.**, Vol. 805, pp. 207-221, 2016.

[J43] J. Graul, B. Cornella, A. Ketsdever, T. Lilly, and M. Shneider, "Experimentally Observed Field-Gas Interaction in Intense Optical Lattices," **Appl. Phys. Lett.**, Vol. 103, No. 24, 244106, 2013.

[J42] B. Cornella, S. Gimelshein, T. Lilly, and A. Ketsdever, "Neutral Gas Heating Via Non-Resonant Optical Lattices," **Appl. Phys. Lett.**, Vol. 103, No. 19, 194103, 2013.

[J41] A. Ventura, N. Gimelshein, S. Gimelshein, and A. Ketsdever, "Effect of Vane Thickness on the Radiometric Force," **J. Fluid Mech.**, Vol. 735, pp. 684-704, 2013.

[J40] J. Graul, A. Ketsdever, G. Andersen, T. Lilly, "External Multipass Optical Trap for Counterpropagating Pulsed Laser Applications," **Rev. Sci. Instrum.,** Vol. 84, 076102, 2013.

[J39] B. Cornella, S. Gimelshein, T. Lilly, and A. Ketsdever, "Narrowband Coherent Rayleigh-Brillouin Scattering from Gases Confined by a High Intensity Optical Lattice," **Physical Review A**, Vol. 87, 033825, 2013.

[J38] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Analysis of Multi-Vane Radiometer Arrays in High-Altitude Propulsion," **J. Propulsion and Power**, Vol. 28, No. 4, pp. 831-839, 2012.

[J37] B. Cornella, S. Gimelshein, M. Shneider, T. Lilly, and A. Ketsdever, "Experimental and Numerical Analysis of Narrowband Coherent Rayleigh-Brillouin Scattering in Atomic and Molecular Species," **Optics Express**, Vol. 20, No. 12, pp. 12975-12986, 2012.

[J36] **(INVITED)** A. Ketsdever, N. Gimelshein, S. Gimelshein, and N. Selden, "Radiometric Phenomena: from the 19th to the 21st century," **Vacuum**, Special Issue on Vacuum Gas Dynamics: Theory, Experiments and Practical Applications, Vol. 86, No. 11, pp. 1644-1662, 2012.

[J35] J. Schonig and A. Ketsdever, "Constant Momentum Exchange to Maintain Spacecraft Formations," **J. Spacecraft and Rockets**, Vol. 49, No. 1, pp. 69-75, 2012.

[J34] T. Lilly, A. Ketsdever, B. Cornella, T. Quiller, and S. Gimelshein, "Gas Density Perturbations Induced by a Pulsed Optical Lattice," **Appl. Phys. Lett.**, Vol. 99, 124101, 2011.

[J33] N. Gimelshein, S. Gimelshein, A. Ketsdever, and N. Selden, "Impact of Vane Size and Separation on Radiometric Forces for Microactuation," **J. Appl. Phys.**, Vol. 109, 074506, 2011.

[J32] C. Ngalande and A. Ketsdever, "A Unique Cryogenic Pumping Array for Low Sticking Coefficient Gas Flows," **J. Vac. Sci. Technol. A**, Vol. 28, No. 6, pp. 1356-1362, 2010.

[J31] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Thrust Augmentation of Solid Rocket Motors Using Beamed Microwave Energy," **J. Propulsion and Power**, Vol. 26, No. 5, pp. 1016-1024, 2010.

[J30] N. Gimelshein, S. Gimelshein, N. Selden, and A. Ketsdever, "Modeling of Low-Speed Rarefied Gas Flows Using a Combined ES-BGK/DSMC Approach," **Vacuum**, Vol. 85, No. 2, pp. 115-119, 2010.

[J29] A. Ketsdever, M. Young, J. Mossman, and A. Pancotti, "Overview of Advanced Concepts for Space Access," **J. Spacecraft and Rockets**, Vol. 47, No. 2, pp. 238-250, 2010.

[J28] N. Selden, C. Ngalande, N. Gimelshein, S. Gimelshein, and A. Ketsdever, "Origins of Radiometric Forces on a Circular Vane with a Temperature Gradient," **J. Fluid Mechanics**, Vol. 634, pp. 419-431, 2009.

[J27] N. Selden, N. Gimelshein, S. Gimelshein, and A. Ketsdever, "Analysis of Accommodation Coefficients of Noble Gases on Aluminum Surface with an Experimental/Computational Method," **Phys. Fluids**, Vol. 21, No. 7, 073101, 2009.

[J26] N. Selden, C. Ngalande, S. Gimelshein, E.P. Muntz, A. Alexeenko, and A. Ketsdever, "Area and Edge Effects in Radiometric Forces," **Phys. Rev. E**, Vol. 79, No. 4, 041201, April 2009.

[J25] T. Lilly, A. Ketsdever, A. Pancotti, and M. Young, "Development of a Specific Impulse Balance for a Pulsed Capillary Discharge," **J. Propulsion and Power**, Vol. 25, No. 3, pp. 823-826, 2009.

[J24] **(INVITED)** J. Olliges, T. Lilly, T. Joslyn, and A. Ketsdever, "Time Accurate Mass Flow Measurements of Solid-Fueled Systems," **Rev. Sci. Instrum.**, Vol. 79, No. 10, 101301, October 2008.

[J23] A. Ketsdever, B. D'Souza, and R. Lee, "Thrust Stand Micromass Balance for the Direct Measurement of Specific Impulse," **J. Prop. and Power**, Vol. 26, No. 6, pp. 1376-1381, 2008.

[J22] R. Lee, A. Bauer, M. Killingsworth, T. Lilly, J. Duncan, and A. Ketsdever, "Free Molecule Micro-Resistojet Performance Utilizing Water Propellant for Nanosatellite Applications," **J. Spacecraft and Rockets**, Vol. 45, No. 2, pp. 264-269, 2008.

[J21] T. Lilly, J. Duncan, S. Nothnagel, S. Gimelshein, N. Gimelshein, A. Ketsdever, and I. Wysong, "Numerical and Experimental Investigation of Microchannel Flows with Rough Surfaces," **Phys. Fluids**, Vol. 19, 106101, 2007.

[J20] C. Ngalande, T. Lilly, M. Killingsworth, S. Gimelshein, and A. Ketsdever, "Nozzle Plume Impingement on Spacecraft Surfaces: Effects on Surface Roughness," **J. Spacecraft and Rockets**, Vol. 43, No. 5, pp. 1013-1018, 2006.

[J19] T. Lilly, S. Gimelshein, A. Ketsdever, and G. Markelov, "Measurements and computations of mass flow and momentum flux through short tubes in rarefied gases," **Phys. Fluids**, Vol. 18, No. 9, 093601-1-11, September 2006.

[J18] A. Alexeenko, S. Gimelshein, E.P. Muntz, and A. Ketsdever, "Kinetic Modeling of Temperature Driven Flows in Short Microchannels," **Int. J. Thermal Sci.**, Vol. 45, No. 11, pp. 1045-1051, 2006.

[J17] Z. Ahmed, S. Gimelshein, and A. Ketsdever, "Numerical analysis of Free Molecule Micro-Resistojet Performance," **J. Propulsion and Power**, Vol. 22, No. 4, pp. 749-756, 2006.

[J16] A. Ketsdever, R. Lee, and T. Lilly, "Performance testing of a microfabricated propulsion system for nanosatellite applications," **J. of Micromechanics and Microengineering**, Vol. 15, pp. 2254-2263, 2005.

[J15] A. Ketsdever, M. Clabough, S. Gimelshein, and A. Alexeenko, "Experimental and Numerical Determination of Micropropulsion Device Efficiencies at Low-Reynolds Numbers," **AIAA Journal**, Vol. 43, No. 3, pp. 633-641, March 2005.

[J14] B. D'Souza and A. Ketsdever, "Investigation of time-dependent forces on a nano-Newton-second impulse balance," **Review of Scientific Instruments**, Vol. 76, No. 1, pp. 015105-1-10 , January 2005.

[J13] N. Selden and A. Ketsdever, “Comparison of force balance calibration techniques for the nano-Newton range,” **Review of Scientific Instruments**, Vol. 74, No. 12, pp. 5249-5254, December 2003.

[J12] A. Alexeenko, S. Gimelshein, D. Levin, A. Ketsdever, and M. Ivanov, "Measurements and Simulation of Orifice Flow for Micropropulsion Testing," **J. of Propulsion and Power**, Vol. 19, No. 4, pp. 588-594, July-August, 2003.

[J11] A. Jamison, A. Ketsdever, and E.P. Muntz, “Gas Dynamic Calibration of a Nano-Newton Thrust Stand,” **Review of Scientific Instruments**, Vol. 73, No. 10, pp. 3629-3637, October 2002.

[J10] A. Ketsdever, "Facility Effects on Performance Measurements of Micropropulsion Systems Which Utilize Gas Expansion," **J. Propulsion and Power**, Vol. 18, No. 4, pp. 797-804, July-August 2002.

[J9] A. Ketsdever, B. Eccles, "Fiber Optic Sensors for the Study of Spacecraft-Thruster Interactions: Ion Sputtering," **J. Spacecraft and Rockets,** Vol. 39, No. 1, pp. 158-160, January-February 2002.

[J8] A. Ketsdever, "Design Considerations for Cryogenic Pumping Arrays in Spacecraft-Thruster Interaction Facilities," **J. Spacecraft and Rockets,** Vol. 38, No. 3, pp. 400-410, May-June 2001.

[J7] A. Ketsdever, D. Wadsworth, E.P. Muntz, "Gas-Surface Interaction Model Influence on Predicted Performance of a MEMS Resistojet," **J. Thermophys. and Heat Transfer,** Vol. 15, No. 3, pp. 302-307, July-September 2001.

[J6] A. Ketsdever, D. Wadsworth, E.P. Muntz, "Predicted Performance and Systems Analysis of the Free Molecule Micro-Resistojet," Micropropulsion for Small Spacecraft, ed. M.M. Micci and A.D. Ketsdever, AIAA Progress Series in Aeronautics and Astronautics, Vol 187, pp. 167-184, 2000. (Peer reviewed as a Journal of Propulsion and Power submission)

[J5] J. Wong, H. Reed, A. Ketsdever, "The University Micro/Nanosatellite as a Micropropulsion Testbed," Micropropulsion for Small Spacecraft, ed. M.M. Micci and A.D. Ketsdever, AIAA Progress Series in Aeronautics and Astronautics, Vol 187, pp. 25-44, 2000. (Peer reviewed as a Journal of Propulsion and Power submission)

[J4] A. Ketsdever, " System Considerations and Design Options for Micropropulsion Systems," Micropropulsion for Small Spacecraft, ed. M.M. Micci and A.D. Ketsdever, AIAA Progress Series in Aeronautics and Astronautics, Vol 187, pp. 139-166, 2000. (Peer reviewed as a Journal of Propulsion and Power submission)

[J3] A. Ketsdever, E.P. Muntz, "Collision Cell Containment of Dense Gas Targets for High Vacuum Applications," **J. Vac. Sci. Technol. A**, Vol. 16, No. 4, pp. 2698-2702, July-August 1998.

[J2] A. Ketsdever, W. Omens, E.P. Muntz, "Further Investigations Into Continuously Variable, Remote Color Temperature Adjustments for Metal-Halide Lamps," **SMPTE Journal**, 103, pp. 428-433, July 1994.

[J1] A. Ketsdever, W. Omens, E.P. Muntz, "Continuously Variable, Remote Color Temperature Adjustments for Metal-Halide Lamps in Cinematographic Applications," **SMPTE Journal**, 101, pp. 481-487, July 1992.

2. Submitted Peer-Review Publications

T. Hill, C. Spells, A. Ketsdever, and J. Pigage, "Analysis of Macro-Behavior in Goose Flocks," In progress.

C. Maldonado and A. Ketsdever, "Drag in a Simulated Low-Earth Orbit Environment," In progress.

3. Peer-Reviewed Conference Publications

[PC41] P. Lorrain, C. Capon, R. Boyce, C. Maldonado, and A. Ketsdever, "Experimental Investigation of Ionospheric Aerodynamics Effects," Proceedings of the 31st International Symposium on Rarefied Gas Dyanmics, Eds. Zhang, Emerson, Lockerby and Wu (AIP, New York, 2019), 2132, 110003.

[PC40] C. Maldonado, G. McHarg, O. Asmolova, G. Andersen, S. Rodrigues, and A. Ketsdever, "Material Exposure Effects in a Simulated Low-Earth Orbit Environment," Proceedings of the 30th International Symposium on Rarefied Gas Dynamics, Eds. A. Ketsdever and H. Struchtrup, (AIP, New York, 2016), 1786, 100008.

[PC39] R. Bosworth and A. Ketsdever, "Determination of the Effect of Particle Thermal Conductivity on Thermophoretic Force," Proceedings of the 30th International Symposium on Rarefied Gas Dynamics, Eds. A. Ketsdever and H. Struchtrup, (AIP, New York, 2016), 1786, 060003.

[PC 38] R. Bosworth and A. Ketsdever, "Measurement of Thermophoretic Force on Spheroids," Proceedings of the 30th International Symposium on Rarefied Gas Dynamics, Eds. A. Ketsdever and H. Struchtrup, (AIP, New York, 2016), 1786, 060002.

[PC37] C. Spells, S. Doucette, and A. Ketsdever, "Bio-Inspired Engineering for the Exploration of Remote Worlds," IEEE Aerospace Conference, March 2015.

[PC36] C. Maldonado, S. Rodrigues, and A. Ketsdever, "A Ground-Based Facility for Nanosatellite Systems Testing in Relevant Environments," IEEE Aerospace Conference, March 2015.

[PC35] **(INVITED)** A. Ketsdever and S. Gimelshein, "A Spacecraft's Own Ambient Environment: The Role of Simulation-Based Research," Proceedings of the 29th International Symposium on Rarefied Gas Dynamics, Eds. J. Fan and Q. Sun, (AIP, New York, 2014), pp. 1394-1401.

[PC34] C. Maldonado, A. Ketsdever, and S. Gimelshein, "Drag Measurements of Elongated Bodies in a Simulated Low-Earth Orbit Environment," Proceedings of the 29th International Symposium on Rarefied Gas Dynamics, Eds. J. Fan and Q. Sun, (AIP, New York, 2014), pp. 1292-1299.

[PC33] R. Bosworth, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Determination of Thermophoretic Force on a Particle in Transitional Flow," Proceedings of the 29th International Symposium on Rarefied Gas Dynamics, Eds. J. Fan and Q. Sun, (AIP, New York, 2014), pp. 332-338.

[PC32] A. Ventura, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Experimental Characterization of the Edge Force on the Crookes Radiometer," Proceedings of the 29th International Symposium on Rarefied Gas Dynamics, Eds. J. Fan and Q. Sun, (AIP, New York, 2014), pp. 346-350.

[PC31] J. Brackbill, N. Gimelshein, S. Gimelshein, J-L Cambier, and A. Ketsdever, "Modeling of Neutral Entrainment in an FRC Thruster," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 1416-1422.

[PC30] T. Lilly, B. Cornella, S. Gimelshein, and A. Ketsdever, "On the Velocity Distribution of Molecular Species in Pulsed Optical Lattices," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 645-652.

[PC29] N. Selden, N. Gimelshein, S. Gimelshein, and A. Ketsdever, "Application of Radiometric Force to Microactuation and Energy Transformation," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 750-756.

[PC28] N. Gimelshein, S. Gimelshein, A. Ketsdever, and M. Young, "Wind Compensation by Radiometer Arrays in High Altitude Propulsion," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 1522-1528.

[PC27] C. Maldonado, T. Lilly, and A. Ketsdever, "The Development of a Combined Effects Space Simulation Facility," Proceedings of the 28th International Symposium on

Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 1549-1556.

[PC26] B. Cornella, S. Gimelshein, T. Lilly, and A. Ketsdever, "Coherent Rayleigh-Brillouin Scattering in High Intensity Laser Fields," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 1195-1201.

[PC25] A. Ventura, A. Ketsdever, R. Webb, A. Alexeenko, N. Gimelshein, and S. Gimelshein, "Repulsion and Attraction Caused by Radiometric Forces," Proceedings of the 28th International Symposium on Rarefied Gas Dynamics, eds. M. Mareschal and A. Santos, (AIP, New York, 2012), pp. 727-734.

[PC24] **(INVITED)** S. Gimelshein, N. Gimelshein, A. Ketsdever, and N. Selden, "Analysis and Applications of Radiometric Forces in Rarefied Gas Flows," Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, ed. D. Levin, I. Wysong, and A. Garcia, (AIP, New York, 2011), pp. 693-700.

[PC23] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Impact of Separation Distance on Multi-Vane Radiometer Configurations," Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, ed. D. Levin, I. Wysong, and A. Garcia, (AIP, New York, 2011), pp. 712-717.

[PC22] T. Lilly, A. Ketsdever, and S. Gimelshein, "Resonant Laser Manipulation of an Atomic Beam," Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, ed. D. Levin, I. Wysong, and A. Garcia, (AIP, New York, 2011), pp. 825-830.

[PC21] T. Joslyn and A. Ketsdever, "Droplet Charging Effects in the Space Environment," Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, ed. D. Levin, I. Wysong, and A. Garcia, (AIP, New York, 2011), pp. 1079-1084.

[PC20] S. Gimelshein, N. Gimelshein, A. Ketsdever, and N. Selden, "Shear Force in Radiometric Flows," Proceedings of the 27th International Symposium on Rarefied Gas Dynamics, ed. D. Levin, I. Wysong, and A. Garcia, (AIP, New York, 2011), pp. 661-666.

[PC19] J. Schonig, A. Ketsdever, and D. Kirtley, "Macron Propulsion for Formation Flying Requiring Constant Thrust," IEEE Aerospace Conference, Big Sky, MT, March 2011.

[PC18] **(INVITED)** J. Olliges, A. Ketsdever, W.B. Stein, A. Alexeenko, and I. Hrbud, "Experimental and Computational Investigation of a RF Plasma Micro-Thruster," Proceedings of the 26th International Symposium on Rarefied Gas Dynamics, ed. T. Abe, (AIP, New York, 2009), pp. 863-870.

[PC17] N. Selden, S. Gimelshein, N. Gimelshein, A. Ketsdever, "Effect of Chamber Wall Proximity on Radiometer Force Production," Proceedings of the 26th International Symposium on Rarefied Gas Dynamics, ed. T. Abe, (AIP, New York, 2009), pp. 1009-1014.

[PC16] N. Selden, S. Gimelshein, E.P. Muntz, A. Alexeenko, and A. Ketsdever, "Experimental and Computational Study of Area and Perimeter Contributions to Radiometer Forces," Proceedings of the 26th International Symposium on Rarefied Gas Dynamics, ed. T. Abe, (AIP, New York, 2009), pp. 959-964.

[PC15] T. Lilly, S. Gimelshein, A. Ketsdever, and M. Shneider, "Energy Deposition Into a Collisional Gas from Optical Lattices Formed in an Optical Cavity," Proceedings of the 26th International Symposium on Rarefied Gas Dynamics, ed. T. Abe, (AIP, New York, 2009), pp. 533-538.

[PC14] **(INVITED)** E.P. Muntz, A. Alexeenko, S. Gimelshein, A. Ketsdever, M. Young, Y. Han, N. Selden, R. Lee, "Recent Experimental and Numerical Studies of Thermal Creep and Pressure Driven Low Speed Rarefied Gas Flows," Proceedings of the 25th International Symposium on Rarefied Gas Dynamics, eds. M. Ivanov and A. Rebrov, (Siberian Branch of RAS, Novosibirsk, Russia, 2007), pp. 1085-1092.

[PC13] N. Gimelshein, T. Lilly, S. Gimelshein, A. Ketsdever, and I. Wysong, "Surface Roughness Effects in Low Reynolds Number Nozzle Flows," Proceedings of the 25th International Symposium on Rarefied Gas Dynamics, eds. M. Ivanov and A. Rebrov, (Siberian Branch of RAS, Novosibirsk, Russia, 2007), pp. 695-702.

[PC12] B. D'Souza, A. Ketsdever, and E.P. Muntz, "Investigation of Transient Forces Produced by Gases Expelled from Rapidly Heated Surfaces," Proceedings of the 24th International Symposium on Rarefied Gas Dynamics, ed. M. Capitelli, (AIP, New York, 2005), pp. 959-970.

[PC11] A. Ketsdever, T. Lilly, S. Gimelshein, and A. Alexeenko, "Experimental and Numerical Study of Nozzle Plume Impingement on Spacecraft Surfaces," Proceedings of the 24th International Symposium on Rarefied Gas Dynamics, ed. M. Capitelli, (AIP, New York, 2005), pp. 367-372.

[PC10] S. Gimelshein, G. Markelov, T. Lilly, N. Selden, and A. Ketsdever, "Experimental and Numerical Modeling of Rarefied Gas Flows Through Orifices and Short Tubes," Proceedings of the 24th International Symposium on Rarefied Gas Dynamics, ed. M. Capitelli, (AIP, New York, 2005), pp. 437-443.

[PC9] A. Ketsdever, "Thrust Measurements of an Underexpanded Orifice in the Transitional Regime," Proceedings of the 23rd International Symposium on Rarefied Gas Dynamics, eds. A. Ketsdever, E.P. Muntz, (AIP, New York, 2003), pp. 1057-1064.

[PC8] A. Jamison and A. Ketsdever, "Low Reynolds Number Performance Comparison of an Underexpanded Orifice and a DeLaval Nozzle," Proceedings of the 23rd International Symposium on Rarefied Gas Dynamics, eds. A. Ketsdever, E.P. Muntz, (AIP, New York, 2003), pp. 557-564.

[PC7] A. Alexeenko, S. Gimelshein, D. Levin, A. Ketsdever, and M. Ivanov, "Study of Orifice Flow in the Transitional Regime," Proceedings of the 23rd International Symposium on Rarefied Gas Dynamics, eds. A. Ketsdever, E.P. Muntz, (AIP, New York, 2003), pp. 565-571.

[PC6] M. Young, Y. Han, E.P. Muntz, G. Shiflett, A. Ketsdever, and A. Green, "Thermal Transpiration in Microsphere Membranes," Proceedings of the 23rd International Symposium on Rarefied Gas Dynamics, eds. A. Ketsdever, E.P. Muntz, (AIP, New York, 2003), pp. 743-751.

[PC5] A. Ketsdever, M. Young, A. Jamison, B. Eccles, E.P. Muntz, "Investigation of the Unique Cryo-genic Pumping System of the CHAFF-IV Spacecraft-Thruster Interaction Facility," Proceedings of the 22nd International Symposium on Rarefied Gas Dynamics, eds. T. Bartel, M. Gallis, (AIP, New York, 2001) pp. 916-923.

[PC4] A. Ketsdever, D. Wadsworth, S. Vargo, E.P. Muntz, "Flow Properties of a Free Molecule Micro-Resistojet for Small Spacecraft Applications," Rarefied Gas Dynamics - Vol. 2, Proceedings of the 21st International Rarefied Gas Dynamics , October, 1999, pp. 601-606.

[PC3] A. Ketsdever, D. Wadsworth, D. Weaver, E.P. Muntz, "A Geometrically Augmented Intertially Tethered Collision Cell for High Vacuum Applications," Proceedings of the 20th International Rarefied Gas Dynamics, Peking Univ. Press, Beijing, August, 1997, pp 599-604.

[PC2] A. Ketsdever, D. Weaver, E.P. Muntz, "Cold Gas Flow in a Simulated Plasma Reactor," Proceed¬ings of the 20th International Rarefied Gas Dynamics Journal, Peking University Press, Beijing, August, 1997, pp 787-792.

[PC1] A. Ketsdever, D. Weaver, E.P. Muntz, "A Geometrically Augmented Inertially Tethered Charge Exchanger for the Production of Energetic Oxygen Atoms," Proceedings of the 19th International Rarefied Gas Dynamics Journal, Oxford University Press, London, July, 1995, pp 729 - 735.

4. Conference Publications (Non-Refereed)

[C76] C. Farnell, S. Thompson, J. McTerran, C. Maldonado, S. Bilen, A. Ketsdever, J. Xie, P. Hoang, P. Lorain, C. Capon, and J. Williams, "Magnetic-Filter-Equipped Plasma Sources for Creating Low-Earth-Orbit Plasma Environments," Applied Space Environments Conference, Los Angeles, CA, May 2019.

[C75] C. Maldonado and A. Ketsdever, "Drag Measurements in a Simulated Low-Earth Orbit Environment," 53rd Aerospace Sciences Meeting, AIAA paper 2015-1932, Jan. 2015.

[C74] C. Maldonado, L. Rand, K. Xie, A. Ketsdever, C. Farnell, and J. Williams, "Development of a Magnetically Filtered Atomic Oxygen Plasma Source: LEO Drag Applications," 13th Spacecraft Charging Technology Conference, Pasadena, CA, June 2014.

[C73] C. Maldonado, A. Ketsdever, L. Rand, K. Xie, C. Farnell, and J. Williams, "Characterization of an Atomic Oxygen Plasma Source for Ground-Based Simulation of the LEO Neutral Environment," AIAA paper 2013-2681, 5th AIAA Atmospheric and Space Environments Conference, June 2013.

[C72] (Restricted) M. Young, A. Ketsdever, M. Gilpin, A. Ventura, "The Potential for Radiometric Forces to Enable Long Duration Flight at Near-Space Altitudes," 60th JANNAF Propulsion Meeting, Colorado Springs, CO, May 2013.

[C71] C. Maldonado, A.Ketsdever, T. Lilly, L. Rand, K. Xie, C. Farnell, and J. Williams, "Source Characterization for a Combined Effects Space Simulation Facility," AIAA paper 2013-0808, AIAA Aerospace Sciences Meeting, Grapevine, TX, Jan. 2013.

[C70] C. Maldonado, A. Ketsdever, L. Rand, K. Xie, C. Farnell, and J. Williams, "Development of a Ground-Based Facility to Study Combined Effects," 27th Space Simulation Conference, Annapolis, MD, Nov. 2012.

[C69] C. Maldonado and A. Ketsdever, "A Facility for Ground-Based Testing of Nanosatellites in Relevant Environments," Space 2012 Conference, AIAA paper 2012-5191, Pasadena, CA, Sep. 2012.

[C68] J. Brackbill, N. Gimelshein, S. Gimelshein, J-L Cambier, A. Ketsdever, "Ionization and Charge Exchange Reactions in Neutral Entrainment of a Field Reversed Configuration Thruster," AIAA paper 2012-4102, 48th Joint Propulsion Conference, Atlanta, GA, Aug. 2012.

[C67] C. Maldonado, T. Lilly, and A. Ketsdever, "Development of a Space Simulation Facility to Study Combined Effects," AIAA paper 2012-2941, 4th Atmospheric and Space Environments Conference, New Orleans, LA, Jun 2012.

[C66] R. Bosworth, A. Ventura, R. Webb, M. Young, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Thermal Modeling and Performance Measurements of Radiometric Arrays for Near Space Propulsion," AIAA paper 2012-2750, 43rd Thermophysics Conference, New Orleans, LA, Jun 2012.

[C65] T. Quiller, B. Cornella, S. Gimelshein, T. Lilly, and A. Ketsdever, "Investigation of Density Perturbations in Molecular Nitrogen Formed by Pulsed Optical Lattices,"

AIAA paper 2011-4032, 42nd AIAA Thermophysics Conference, Honolulu, HI, June 2011.

[C64] J. Schonig, A. Ketsdever, and D. Kirtley, "Ballistic Analysis of Macron Propulsion," AIAA paper 2010-6517, 46th Joint Propulsion Conference, Nashville, TN, July 2010.

[C63] T. Joslyn and A. Ketsdever, "Constant Momentum Exchange Between Microspacecraft Using Liquid Droplet Thrusters," AIAA paper 2010-6966, 46th Joint Propulsion Conference, Nashville, TN, July 2010.

[C62] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Analysis of Multi-Vane Radiometers in High-Altitude Propulsion," AIAA paper 2010-4516, 10th Thermophysics and Heat Transfer Conference, Chicago, IL, June 2010.

[C61] A. O'Shea, A. Ketsdever, T. Mulcahy, and H. Song, "TeraHertz Rayleigh Scattering of Particles in Rocket Exhaust Plumes," AIAA paper 2010-4330, 10th Thermophysics and Heat Transfer Conference, Chicago, IL, June 2010.

[C60] T. Mulcahy, H. Song, A. O'Shea, and A. Ketsdever, "Large Orbit Electron Gun for a High-Order Harmonic Terahertz Radiation Source," 37th European Physical Society Conference on Plasma Physics, Dublin, Ireland, June 2010

[C59] (Restricted) T. Joslyn and A. Ketsdever, "Liquid Droplet Thrusters to Provide Constant Momentum Exchange Between Formation Flying Spacecraft," 57th JANNAF Meeting, Colorado Springs, CO, May 2010.

[C58] (Restricted) D. Kirtley, J. Slough, J. Schonig, and A. Ketsdever, "Pulsed Inductive Macron Propulsion," 57th JANNAF Propulsion Meeting, Colorado Springs, CO, May 2010.

[C57] D. Scharfe and A. Ketsdever, "A Review of High Thrust, High Delta-V Options for Microsatellite Missions," AIAA paper 2009-4824, 45th Joint Propulsion Conference, Denver, CO, August 2009.

[C56] B. Cornella, S. Hammerland, A. Ketsdever, and H. Song, "Power Generation for a Beamed Microwave Propulsion Concept," AIAA paper 2009-4872, 45th Joint Propulsion Conference, Denver, CO, August 2009.

[C55] N. Gimelshein, S. Gimelshein, and A. Ketsdever, "Thrust Augmentation in Solid Rocket Motors Using Beamed Microwave Energy," AIAA paper 2009-4962, 45th Joint Propulsion Conference, Denver, CO, August 2009.

[C54] A. Ketsdever, M. Young, J. Mossman, and A. Pancotti, "An Overview of Advanced Concepts for Space Access," AIAA paper 2008-5121, 44th Joint Propulsion Conference, Hartford, CT, July 2008.

[C53] T. Lilly, A. Pancotti, A. Ketsdever, M. Young, and J. Duncan, "Development of a Specific Impulse Balance for a Pulsed Capillary Discharge," AIAA paper 2008-4740, 44th Joint Propulsion Conference, Hartford, CT, July 2008.

[C52] R. Lee, B. D'Souza, T.Lilly, and A. Ketsdever, "Thrust Stand Micro-Mass Balance Diagnostic Techniques for the Direct Measurement of Specific Impulse," AIAA paper 2007-5300, 43rd Joint Propulsion Conference, Cincinnati, OH, July 2007.

[C51] J. Olliges, M. Killingsworth, T. Lilly, and A. Ketsdever, "Thrust Stand Mass Balance Measurements of Hybrid Motor Mass Flow," AIAA paper 2007-5364, 43rd Joint Propulsion Conference, Cincinnati, OH, July 2007.

[C50] R. Lee, A. Bauer, M. Killingsworth, T. Lilly, J. Duncan, and A. Ketsdever, "Performance Characterization of the Free Molecule Micro-Resistojet Utilizing Water Propellant," AIAA paper 2007-5185, 43rd Joint Propulsion Conference, Cincinnati, OH, July 2007.

[C49] R. Lee, B. D'Souza, T. Lilly, and A. Ketsdever, "Laser-Induced Ablation Processes Investigated Using Enhanced Impulse Measurement Techniques," AIAA paper 2007-4609, 38th Plasma Dynamics and Lasers Conference, Miami, FL, June 2007.

[C48] N. Selden, C. Ngalande, S. Gimelshein, and A. Ketsdever, "Experimental and Computational Observation of Radiometric Forces on a Plate," AIAA paper 2007-4403, 40th Thermophysics Conference, Miami, FL, June 2007.

[C47] S. Danczyk, B. Chehroudi, A. Ketsdever, and G. Vaghjiani, "A Low-Power, Novel Ignition of Fuels Using Single-Wall Carbon Nanotubes and a Camera Flash," 53rd JANNAF Propulsion Meeting, Monterey, CA, December 2005.

[C46] A. Pancotti, T. Lilly, A. Ketsdever, V. Aguero, and P. Schwoebel, "Development of a Thrust Stand Micro-Balance to Assess Micropropulsion Performance," AIAA paper 2005-4415, 41st Joint Propulsion Conference, Tucson, AZ, July 2005.

[C45] Z. Ahmed, S. Gimelshein, and A. Ketsdever, "Numerical Analysis of Free Molecule Micro-Resistojet Performance," AIAA paper 2005-4262, 41st Joint Propulsion Conference, Tucson, AZ, July 2005.

[C44] B. D'Souza and A. Ketsdever, "Development of a Nano-Impulse Balance for Micropropulsion Systems," AIAA paper 2005-4080, 41st Joint Propulsion Conference, Tucson, AZ, July 2005.

[C43] R. Lee, T. Lilly, E.P. Muntz, and A. Ketsdever, "Free Molecule Micro-Resistojet: Nanosatellite Propulsion," AIAA paper 2005-4073, 41st Joint Propulsion Conference, Tucson, AZ, July 2005.

[C42] A. Alexeenko, S. Gimelshein, E.P. Muntz, and A. Ketsdever, "Kinetic Modeling of Temperature Driven Flows in Short Microchannels," Proceedings of the ICMM 2005, 3rd International Conference on Microchannels and Minichannels, Toronto, Canada, June 2005.

[C41] B. D'Souza and A. Ketsdever, "Direct Impulse Measurements of Ablation Processes from Laser-Surface Interactions," AIAA paper 2005-5172, 36th Plasmadynamics and Lasers Conference, Toronto, Canada, June 2005.

[C40] C. Ngalande, M. Killingsworth, T. Lilly, S. Gimelshein, and A. Ketsdever, "Nozzle Plume Impingement on Spacecraft Surfaces: Effects of Surface Roughness," AIAA paper 2005-5065, 38th Thermodynamics Conference, Toronto, Canada, June 2005.

[C39] A. Alexeenko, S. Gimelshein, E.P. Muntz, A. Ketsdever, "Modeling of Thermal Transpiration Flows for Knudsen Compressor Optimization," AIAA paper 0205-0963, 43rd Aerospace Sciences Meeting, January 2005.

[C38] A. Alexeenko, D. Wadsworth, S. Gimelshein, A. Ketsdever, "Numercial Modeling of ISS Thruster Plume Induced Contamination Environment," Optical System Contamination (AM405), SPIE 49th Annual Meeting, Denver, CO, August 2004.

[C37] B. D'Souza, A. Ketsdever, "Investigation of Laser-Surface Interactions Using a Nano-Impulse Balance," AIAA paper 04-2664, 35th Plasmadynamics and Lasers Conference, Portland, OR, June 2004.

[C36] T. Lilly, N. Selden, S. Gimelshein, A. Ketsdever, G. Markelov, "Numerical and Experimental Study of Low Reynolds Number Flow Through Thin-Walled Orifice and Short Circular Tube," AIAA paper 04-2385, 37th Thermophysics Conference, Portland, OR, June 2004.

[C35] A. Ketsdever, N. Selden, S. Gimelshein, A. Alexeenko, P. Vashchenkov, M. Ivanov, "Plume Interactions of Multiple Jets Expanding Into Vacuum: Experimental and Numerical Investigation," AIAA paper 2004-1348, 42nd Aerospace Sciences Meeting, January 2004.

[C34] E. Besnard, J. Garvey, A. Ketsdever, B. D'Souza, "Using Small Launch Vehicles and Microsatellites to Provide Students a True Systems Integration Experience," Space 2003 Conference, AIAA paper 2003-6307, 2003.

[C33] C. Fitzpatrick, M. Abid, G. Netherwood, A. Ketsdever, B. Hass, "Nonintrusive Fiber Optic Diagnostic for Monitoring Spacecraft Contamination," AIAA paper 2003-0505, 41st Aerospace Sciences Meeting, 6-9 January 2003, Reno, NV.

[C32] A. Ketsdever, B. D'Souza, A. Jamison, M. Young, A. Chinnery, "Sub-Orbital Flight Demonstration of MEMS Technologies for Space Applications," AIAA paper 2002-5704, NanoTech 2002 Symposium, October 2002.

[C31] B. D'Souza, A. Jamison, M. Young, A. Ketsdever, A. Chinnery, "MEMS Technology Demonstration on Traveler-I," Paper SSC02-IX-2, 16th AIAA/USU Conference on Small Satellites, August 2002.

[C30] A. Jamison, A. Ketsdever, "Performance Comparisons of Underexpanded Orifices and DeLaval Nozzles at Low Reynolds Numbers," AIAA paper 2002- 2041, 2002.

[C29] A. Jamison, A. Ketsdever, E.P. Muntz, "Accurate Measurement of Nano-Newton Thrust for Micropropulsion System Characterization," International Electric Propulsion Conference, IEPC-01-236, 2001.

[C28] J. Wong, H. Reed, A. Ketsdever, "Temperature and Power Predictions for Flight-Testing the Free Molecule Micro-Resistojet on the Three Corner Satellites," International Electric Propulsion Conference, IEPC-01-232, 2001.

[C27] A. Alexeenko, D. Levin, S. Gimelshein, M. Ivanov, A. Ketsdever, "Numerical and Experimental Study of Orifice Flow in the Transitional Regime," AIAA paper 2001-3072, 2001.

[C26] A. Ketsdever, A. Green, E.P. Muntz, "Momentum Flux Measurements from Under Expanded Orifices: Applications for Microspacecaft System," AIAA paper 2001-0502, 2001.

[C25] A. Ketsdever, A. Green, E.P. Muntz, S. Vargo, "Fabrication and Testing of the Free Molecule Micro-Resistojet: Initial Results," AIAA paper 2000-3672, 2000.

[C24] A. Ketsdever, J. Wong, H. Reed, "A University Microsatellite As A MEMS-based Propulsion Testbed," AIAA paper 2000-3670, 2000.

[C23] J. Wong, J. Tew, J. VanDenDriessche, F. Lutfy, E.P. Muntz, "A Thrust Stand Designed for Performance Measurements of the Free Molecule Micro-Resistojet," AIAA paper 2000-3673, 2000.

[C22] A. Ketsdever, A. Green, E.P. Muntz, D. Wadsworth, S. Vargo, "Heat Transfer Measurements and Calculations for a MEMS Fabricated Resistojet: Initial Results," AIAA paper 2000-2505, 2000.

[C21] A. Ketsdever, D. Wadsworth, E.P. Muntz, "Influence of Gas-Surface Interaction Models On Predicted Performance Of A Micro-resistojet," AIAA paper 2000-2430, 2000.

[C20] A. Ketsdever, A. Jamison, B. Eccles, E.P. Muntz, "An Advanced Cryogenic Pumping Concept for Spacecraft-Thruster Interaction and Contamination Facilities," AIAA paper 2000-2362, 2000.

[C19] F. Lutfy, E.P. Muntz, A. Ketsdever, "Spectroscopic Survey of Xenon Using Pulsed Electron-Beam Fluorescence for Electric Thruster Diagnostics," AIAA paper 2000-0605, 2000.

[C18] A. Ketsdever, "An Overview of Ground Based Spacecraft-Thruster Interaction Studies: Facility Design Issues," AIAA paper 2000-0463, 2000.

[C17] A. Ketsdever, D. Wadsworth, P. Wapner, M. Ivanov, G. Markelov, "Fabrication and Predicted Performance of Conical DeLaval Micronozzles," AIAA paper 99-2724, 1999.

[C16] A. Ketsdever, J. Mueller, "Systems Considerations and Design Options for Microspacecraft Propulsion Systems," AIAA paper 99-2723, 1999.

[C15] F. Lutfy, S. Vargo, E.P. Muntz, A. Ketsdever, "A Cryogenically Pumped Space Simulation Facility for Plume and Contamination Studies," Proceedings of the 18th Aerospace Testing Seminar, Manhattan Beach, CA, March 16-18, 1999.

[C14] F. Lutfy, A. Green, E.P. Muntz, A. Ketsdever, "Investigation of the Operational Envelope of the CHAFF-IV Plume and Contamination Thermospheric Flow Simulator," AIAA paper 99-2719, 1999.

[C13] M. Young, E.P. Muntz, A. Ketsdever, D. Wadsworth, "Unique Hollow Cathode as a Code Validation Experiment and Candidate Non-Magnetic Ion Micro-Thruster," AIAA paper 99-2854, 1999.

[C12] M. Ivanov, G. Markelov, A. Ketsdever, D. Wadsworth, "Numerical Study of Cold Gas Micronozzle Flows," AIAA paper 99-0166, 1999.

[C11] A. Ketsdever, F. Lutfy, S. Vargo, E.P. Muntz, "A High Altitude Space Simulation Facility to Study Exhaust Plume Interactions and Contamination," NASA Conference Publication, CR-1998-208598, 1998, pp. 239-256.

[C10] A.Ketsdever, D. Wadsworth, E.P. Muntz, "Performance, Systems and Design Considerations of a Free Molecule Micro-Resistojet for Nano/Microspacecraft Thrust Generation," Nanospace 98 Conference Proceedings, Houston, TX, November 1-6, 1998.

[C9] R. Butler, A. Ketsdever, J. Leland, R. Roveda, G. Tsuyuki, B. Wood, "Aerospace Sciences: Thermophysics Year in Review," Aerospace America, December, 1998, pp. 26.

[C8] A. Ketsdever, D. Wadsworth, S. Vargo, E.P. Muntz, "The Free Molecule Micro-Resistojet: An Interesting Alternative to Nozzle Expansion," AIAA paper 98-3918, 1998.

[C7] M. Young, E.P. Muntz, A. Ketsdever, "Investigations of a Candidate Non-Magnetic Ion Micro-Thruster for Small Spacecraft Applications," AIAA paper 98-3917, 1998.

[C6] F. Lutfy, S. Vargo, E.P. Muntz, A. Ketsdever, "The David P. Weaver Collaborative High Altitude Flow Facility's CHAFF-4 for Studies of Spacecraft Propulsion Plumes and Contamination," AIAA paper 98-3654, 1998.

[C5] A. Ketsdever, D. Weaver, E.P. Muntz, "The Production of Energetic Atomic Beams via Charge Exchange for the Simulation of the Low-Earth Orbit Environment," AIAA paper 96-0225, 1996.

[C4] A. Ketsdever, D. Weaver, E.P. Muntz, **"**A Facility to Produce an Energetic, Ground State Atomic Oxygen Beam for the Simulation of the Low-Earth Orbit Environment**,"** NASA Conference Publication 3280, pp. 121, 1994.

[C3] E.P. Muntz, I. Boyd, A. Ketsdever, "Rarefied Flow Testing in the 1990s: Measuring Those Phenomena That Are Difficult to Calculate," AIAA paper 94-2631, 1994.

[C2] A. Ketsdever, D. Weaver, E.P. Muntz, "A Molecular Hydrogen Ring Jet Charge Exchanger for the Production of Energetic Oxygen Atoms," AIAA paper 94-0371, 1994.

[C1] A. Ketsdever, D. Weaver, E.P. Muntz, "An Inertially Tethered Hydrogen Atom Exchanger for the Production of 5-30 eV O Atoms," AIAA paper 92-2931, 1992.

Technical Reports

[TR4] A. Ketsdever, "Thrust Augmentation of an In-Space Propulsion System," in Beamed Energy Propulsion (BEP) Study, eds. P. George and R. Beach, NASA/TM-2012-217014, pp. 569-574, 2012.

[TR3] A. Ketsdever, S. Gimelshein, N. Gimelshein, T. Lilly, "Contamination and Micropropulsion Technology," AFRL-RZ-ED-TR-2012-0016, 2012.

[TR2] M. Young, D. Scharfe, J-L Cambier, A. Ketsdever, "Advanced Concepts: Enabling Future AF Mission Through the Discovery and Demonstration of Emerging Revolutionary Technologies," AFRL-RQ-ED-TR-2012-0045, 2012.

[TR1] A. Ketsdever, I. Wysong, S. Gimelshein, A. Alexeenko, M. Young, N. Gimelshein, T. Lilly, C. Ngalande, "Plume Simulation, Contamination, and Microfluidics," AFRL-PR-ED-TP-2006-283, 2006.

Invited Presentations

[P50] **(Plenary)** A. Ketsdever, R. Bosworth, and S. Gimelshein, "Continuing to Challenge DSMC Through Experiments: Negative Thermophoresis," Direct Simulation Monte Carlo Workshop (DSMC 2015), Sandia National Laboratory, Kauai, HI, Sept 2015.

[P50] **(Plenary)** A. Ketsdever, R. Bosworth, and S. Gimelshein, "Negative Thermophoresis: DSMC and Experiments," Mikhail Ivanov Memorial Workshop, Russian Academy of Sciences, Novosibirsk, Russia, July 2015.

[P49] A. Ketsdever, "The Center for Laser, Energy and Exploration Research," University Club, University of Colorado Colorado Springs, November 2014.

[P48] A. Ketsdever and C. Maldonado, "The Chamber for Atmospheric and Orbital Space Simulation," Air Force Research Laboratory Seminar, Space Vehicles Directorate, August 2013.

[P47] A. Ketsdever and A. Ventura, "Biomimetics: Exploring Flocks, Schools and Herds for Robotic Swarms," MAE Research Seminar Series, April 2013.

[P46] A. Ketsdever, R. Webb, and T. Lilly, "Collaborative Laboratories for Energy and Exploration Research (CLEER)," EAS Forum, UCCS, November 2011.

[P45] A. Ketsdever, "In-Space Propulsion Systems Roadmap: Advanced Concepts Areas," NASA/NRC In-Space Propulsion Technology Roadmap Review, California Institute of Technology, March 22, 2011.

[P44] D. Kirtley, J. Slough, J. Schonig, and A. Ketsdever, "Macron Propulsion: Defeating the Rocket Equation," AFRL/JPL/NASA Advanced Space Propulsion Workshop, Nov 2010, Colorado Springs, CO.

[P43] J. Schonig, A. Ketsdever, and D. Kirtley, "Macron Propulsion for Formation Flying Requiring Constant Thrust," AFRL/JPL/NASA Advanced Space Propulsion Workshop, Nov 2010, Colorado Springs, CO.

[P42] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Thrust Augmentation of Solid Rocket Motors Using Beamed Microwave Energy," AFRL/JPL/NASA Advanced Space Propulsion Workshop, Nov 2010, Colorado Springs, CO.

[P41] B. Cornella, A. Ketsdever, N. Gimelshein, and S. Gimelshein, "Multi-Vane Radiometers for High Altitude Propulsion," AFRL/JPL/NASA Advanced Space Propulsion Workshop, Nov 2010, Colorado Springs, CO.

[P40] M. Young, A. Ketsdever, and J. Hass, "Advanced Propulsion Concept Efforts at AFRL," AFRL/JPL/NASA Advanced Space Propulsion Workshop, Nov 2010, Colorado Springs, CO.

[P39] A. Ketsdever, "Review of Advanced Propulsion Technologies Developed at UCCS," Air Force Research Laboratory, August 2010, Edwards AFB, CA.

[P38] A. Ketsdever, "The Exploration and Space Technology (EaST) Laboratory," The Aerospace Corporation, Special Seminar, January 2010, Los Angeles, CA.

[P37] A. Ketsdever, T. Lilly, S. Gimelshein, and M. Shneider, "Micro-scale Energy Deposition and Molecular Manipulation using Optical Lattices," 41st Thermophysics Conference, San Antonio, TX, June 2009.

[P36] A. Ketsdever, "Liquid Droplet Space Experiments on FalconSat VI," United States Air Force Academy, May 2009, Colorado Springs, CO.

[P35] **(FEATURED SPEAKER)** A. Ketsdever, "The Exploration and Space Technology Laboratory," UCCS Mountain Lion Research Day, April 2009, Colorado Springs, CO.

[P34] A. Ketsdever, M. Young, J. Mossman, and A. Pancotti, "An Overview of Advanced Concepts for Space Access," JPL/NASA/AFRL Advanced Space Propulsion Workshop, October 2008, Pasadena, CA.

[P33] A. Ketsdever, M. Young, L. Pekker, A. Pancotti, D. Scharfe, and S. Keith, "Overview of the Advanced Concepts Group at the Air Force Research Laboratory," JPL/NASA/AFRL Advanced Space Propulsion Workshop, October 2008, Pasadena, CA.

[P32] C. Ngalande, A. Ketsdever, and S. Gimelshein, "Performance of a Unique Cryogenic Pumping System for Spacecraft-Thruster Interaction Studies," American Vacuum Society Symposium, October 2007, Seattle, WA.

[P31] C. Ngalande, N. Selden, S. Gimelshein, and A. Ketsdever, "Radiometric Forces on Heated Plates: Contributing Mechanisms and Applications," Workshop on Direct Simulation Monte Carlo, October 2007, Santa Fe, NM.

[P30] A. Ketsdever, "Micropropulsion Development at the Air Force Research Laboratory," University of Vermont, School of Engineering Seminar, September 2007.

[P29] A. Ketsdever, "Breakthroughs in Micropropulsion System Development and Performance Measurements," University of Colorado, Boulder, Aerospace Sciences Department Seminar, April 2007.

[P28] A. Alexeenko, S. Gimelshein, E.P. Muntz, and A. Ketsdever, "Modeling of Thermal Transpiration Flows Using DSMC and Model Kinetic Equation Solvers," Workshop on Direct Simulation Monte Carlo: Theory, Methods and Applications, September 2005, Santa Fe, NM.

[P27] A. Ketsdever, "Microfluidics Research in MEMS Propulsion Systems," AIAA paper 2003-0783, 41st Aerospace Sciences Meeting, January 2003, Reno, NV.

[P26] J. Wong, A. Ketsdever, H. Reed, "Numerical Modeling of the Free Molecule Micro-Resistojet Prototype and Next Generation Design Evaluation," AIAA paper 2003-3581, 33rd Fluid Dynamics Conference, June 2003, Orlando, FL.

[P25] A. Ketsdever and D. Wadsworth, "Gas-Surface Interactions: From Plume Impingement to Microfluidics," AFOSR Molecular Dynamics Contractor's Meeting, May 2004.

[P24] A. Ketsdever, "Ground-Based Facility Design for Spacecraft-Thruster Interaction Studies," NASA SEE Program Spacecraft Contamination and Coatings Workshop, October 2003.

[P23] J.M. Fife, A. Ketsdever, "Overview of Micropropulsion Research Activities at the Air Force Research Laboratory Space and Missile Propulsion Division," DARPA Micropropulsion Workshop, May 2003.

[P22] A. Ketsdever, "Propulsion and Sub-Systems for Nanosatellites," Nano-Materials for Aerospace Symposium, Corpus Christi, TX, January 2003.

[P21] A. Ketsdever, "Research in Spacecraft-Thruster Interactions and Micropropulsion Systems," University of Arizona, Aerospace and Mechanical Engineering Seminar, November 2002.

[P20] A. Ketsdever, "MEMS Resistojets, Micro-Ion Thrusters, and nano-Newton Thrust Stands: Current Status," European Space Agency Electric Micropropulsion Workshop, La Spezia, Italy, May 2002.

[P19] A. Ketsdever, B. D'Souza, "Traveler-I: Sub-Orbital Flight Demonstration of MEMS Technologies," NASA National University Satellite Programs Workshop, Jet Propulsion Laboratory, April 2002.

[P18] A. Ketsdever, "University Microsatellites and Micro-Scale Research at USC," University of California, San Diego, Aerospace Engineering / California Space Grant Seminar, February 2002.

[P17] A. Ketsdever, "Microfluidics," AIAA Microfluids Working Group, Reno, NV, January 2002.

[P16] A. Ketsdever, "Microfluid Dynamics and Micropropulsion Research," Arizona State University, Department of Mechanical and Aerospace Engineering Seminar, May 2001.

[P15] A. Ketsdever, "Spacecraft-Thruster Interaction Research and the CHAFF-IV Facility," Air Force Office of Scientific Research, Propulsion and Power Program Review, October 2000.

[P14] A. Ketsdever, "FMMR Microfabrication and Current Status," Jet Propulsion Laboratory, MicroDevices Lab Seminar, September 2000.

[P13] A. Ketsdever, "Scaling Issues and Design Considerations for Chemical Micropropulsion Systems," High Energy Density Matter Program Review, Special Session on Micropropulsion, Cocoa Beach, FL, June, 1999.

[P12] A. Ketsdever, "Micro-Ion Thruster Research," Argonne National Laboratory Seminar, Argonne, IL, May, 1999.

[P11] A. Ketsdever, "Advanced Micropropulsion Technology Development at AFRL," NASA Glenn Research Center Seminar, Cleveland, OH, May, 1999.

[P10] A. Ketsdever, D. Wadsworth, "MEMS Fabrication Needs for the Free Molecule Micro-Resistojet and Micro-Valve Flow Simulations," Jet Propulsion Laboratory Seminar (MicroDynamics Laboratory), April, 1999.

[P9] A. Ketsdever, H. Reed, "Micropropulsion Alternatives for ASUSat 2," Air Force Research Laboratory Seminar, Wright Patterson AFB, OH, March, 1999.

[P8] A. Ketsdever, "Basic Research in Nonequilibrium Flow Phenomena," Air Force Science Advisory Board, Air Force Research Laboratory, Edwards AFB, CA, December, 1998.

[P7] A. Ketsdever, "Micropropulsion Development and Testing at the Air Force Research Laboratory," Worcester Polytechnic Institute, Department of Mechanical Engineering Seminar, Worcester, MA, October, 1998.

[P6] A. Ketsdever, D. Wadsworth, E.P. Muntz, "A General Systems Analysis for Micropropulsion Devices and the Free Molecule Micro-Resistojet," Formation Flying and Micropropulsion Conference, Lancaster, CA, October, 1998.

[P5] A. Ketsdever, D. Wadsworth, "The Free Molecule Micro-Resistojet: An Example of Unique Micropropulsion Development at AFRL," 9th JPL Advanced Propulsion Research Workshop and Conference, Pasadena, CA, March, 1998.

[P4] E.P. Muntz, A. Ketsdever, "Microspacecraft Exhaust Plumes, Thrust Generation and Envelope Expansion to Lower Altitudes," AFOSR Microthruster Special Session and Workshop, San Diego, CA, July, 1997.

[P3] A. Ketsdever, D. Weaver, E.P. Muntz, "The Production of Energetic Atomic Beams via Charge Exchange for the Simulation of the Low-Earth Orbit Environment," Methodologies for Ground Simulation of the Space Environment Workshop, Southampton, U.K., July 1996.

[P2] A. Ketsdever, F. Lutfy, E.P. Muntz, "A Unique Cryogenic Pumping System for Space Simulation Chambers," 46th American Vacuum Society International Symposium, Seattle, WA, October 1999.

[P1] D. Wadsworth, A. Ketsdever, D. Weaver, "Neutral Gas Dynamic Transport in a Model GEC Cell," 49th Gaseous Electronics Conference, Argonne, IL, October 1996.

Books and Book Chapters

- Co-Editor, *Rarefied Gas Dynamics*, 30th International Symposium, American Institute of Physics Conference Proceedings, Vol. 1786, Melville, NY, 2016.

- A. Ketsdever, "Micropropulsion," *Encyclopedia of Aerospace Engineering*, Wiley Publishing (DOI: 10.1002/9780470686652), Jan 2011.

- Co-Editor, *Rarefied Gas Dynamics*, 23rd International Symposium, American Institute of Physics Conference Proceedings, Vol. 663, Melville, NY, 2003.

- Co-Editor, *Micropropulsion for Small Spacecraft*, Progress in Astronautics and Aeronautics, Vol. 187, American Institute of Aeronautics and Astronautics, Reston, VA, 2000.
    - Author/Co-author of the following chapters:

      A. Ketsdever, D. Wadsworth, E.P. Muntz, "Predicted Performance and Systems Analysis of the Free Molecule Micro-Resistojet," pp. 167-184.

      J. Wong, H. Reed, A. Ketsdever, "The University Micro/Nanosatellite as a Micropropulsion Testbed," pp. 25-44.

      A. Ketsdever, "Scaling Issues and Design Options for Micropropulsion Systems," pp. 139-166.

Significant Research Grants

- Exploration Technology: Research in basic and advanced concepts, Air Force Research Laboratory, Propulsion Directorate, $1.425M (2011-2017)
- Research in Support of the USAFA HPCRC and ARC, US Air Force Academy, Department of Aeronautics, $793,125 (2015-2020)
- D3I Domain 3 Solicitation, Quantum Research International and US Army, support of tasks up to $1,000,000 (2016-2019)
- Systems and System of Systems Model Development, Millennium Engineering (flow down from AMRDEC, US Army), $94,409 (2014)
- Advanced Kinetic Based Modeling Applied to Plasma and Neutral Flows, Air Force Research Laboratory, Propulsion Directorate, $288,463 (2012-2014)
- Mimicking Biology to Explore Extreme Environments, Biofrontiers, $25,000 (2013)

- National Space Simulation Facility: Follow-on, National Institutes of Science, Space, and Security Institutes, $106,726 (2011)
- National Space Simulation Facility, National Institutes of Science, Space, and Security Institutes, $407,653 (2011)
- Experimental Study of Non-Resonant Energy Deposition into Molecular Gases from Pulsed Optical Lattices, Air Force Office of Scientific Research, Physics Directorate, $223,331 (2008-2011)
- Beamed Energy Propulsion and Power Concepts, Air Force Research Laboratory, Directed Energy Directorate, $167,239 (2008-2011)

Patents

- The Free Molecule Micro-Resistojet for Microspacecraft Thrust Generation, AFRL, US Patent No. 6,263,665, July 24, 2001.
- Method for Distributed Ignition of Fuels by Light Sources, AFRL/ERC, Inc., US Patent No. 7,517,215, April 14, 2009.
- Apparatus for Distributed Ignition of Fuels by Light Sources, AFRL/ERC, Inc., US Patent No. 7,665,985, February 23, 2010.

Patent Disclosures

- Liquid Droplet Thruster System for Formation Flying Satellites, UCCS (2012).
- A Process to Increase the Performance of Solid Rocket Motors via Beamed Energy, UCCS (2010).

Student Advising and Mentoring

PhD Graduates

- Corbin Spells, Dissertation Advisor, "Development of a Transient Thrust Stand with Sub-Millisecond Resolution," Completed Dec 2017.
- Ryan Bosworth, Dissertation Advisor, "An experimental study of positive and negative thermophoresis," Completed May 2016.
- Carlos Maldonado, Dissertation Advisor, "Drag measurements in a simulated low-Earth orbit environment," Completed May 2014.
- Barry Cornella, Dissertation Advisor, "Optical lattice heating of arbitrary gases," Completed December 2012.
- Lt. Col. Thomas Joslyn, Dissertation Advisor, "Charging effects on fluid stream droplets for momentum exchange between spacecraft," Completed December 2009 (Distinction as first MAE PhD graduate).

- Taylor Lilly, Major Research Advisor, "Laser manipulation of atomic and molecular flows," University of Southern California, Completed August 2010.

Masters Students (with Thesis)

- Jason Nanez, "ARMET: An Engineering Education Program to Expedite Aircraft Geometry Creation and Meshing with Element Quality Feedback," Dec 2018.
- Monica Azema, "The nano-Newton Thrust Stand as a plasma diagnostic for ion sources simulating the low Earth orbit environment," Dec 2017.
- Jacob Allen, "Computational fluid dynamics analysis of high speed aerodynamics concepts," Aug 2017.
- Corbin Spells, "Development of the dynamic stereoscopic long range system to analyze collective animal behavior for applications in the control of robotic swarms," May 2015.
- Austin Ventura, "Experimental investigation of radiometric and thermophoretic forces," May 2014.
- Joshua Engle, "A spectrometer for transient luminous event spectroscopy," Aug. 2014.
- Stephen Sloan, "An experimental study of millimeter wave metal lenses and their application to beamed energy concepts," Dec. 2014.
- Ryan Bosworth, "Comparison of numerical methods for determining the effects of non-equilibrium from laminar to turbulent flows," Aug. 2013.
- Carlos Maldonado (Co-Chair), "Characterization of charged particle sources suitable for the simulation of the low earth orbit plasma environment," Aug. 2012.
- Lucas Derby, "Microwave enhanced nanopropulsion concept," Dec. 2012.
- Wayne Black, "Performance measurements of low Reynolds number nozzle geometries," Dec. 2011.
- Maximillian Poppler, "Inferred microwave plasma temperature using tunable diode laser absorption spectroscopy," Dec. 2011.
- Anthony O'Shea, "TeraHertz radiation for rocket plume diagnostics," Dec. 2010.
- Jacob Schonig, "Implementation strategies for in-space Macron propulsion," Dec. 2010.

Selected Undergraduate Research Students Advised

- First Place, 2014, Region V AIAA Graduate Student Competition (R. Bosworth: Modeling of hypersonic flow phenomena).
- First Place, 2014, Region V AIAA Undergraduate Student Competition (S. Sloan: Microwave lens design for beamed energy applications).
- Second Place, 2014, Region V AIAA Undergraduate Student Competition (C. Spells: Digital stereoscopic imaging for bio-inspired engineering).
- ***International Champion***, 2014, AIAA Undergraduate Student Competition (A. Ventura: Thermophoretic force measurements.)
- First Place, 2013, Region V AIAA Graduate Student Competition (C.Maldonado: Plasma source characterization).

- First Place, 2013, Region V AIAA Undergraduate Student Competition (A. Ventura: Thermophoretic force measurements).
- Second Place, 2013, Region V AIAA Undergraduate Student Competition (S. Sloan: Microwave lens).
- First Place, 2012, Region V AIAA Undergraduate Student Competition (C. Maldonado and R. Bosworth: Chamber for Atmospheric and Orbital Space Simulation).
- ***National Champion***, 2001, AIAA Undergraduate Student Competition (A. Green: Fabrication and testing of a MEMS fabricated resistojet). [Univ. Southern Cal.]
- First Place (Group), 2002, Region VI AIAA Undergraduate Student Competition (B. Eccles and B. Bjelde: Laser desorption of gases from surfaces for MEMS actuation) [Univ. Southern Cal.]

Courses Taught

Oregon State University, Cascades

- ALS 199: Academic Personal Success
- ESE 498: MIME Capstone Design* (Undergraduate)
- ESE 471: Energy Storage Systems** (Undergraduate)

*Ethics Modules, **Co-Taught

University of Colorado Colorado Springs

- MAE 2200: Materials Engineering (Undergraduate)
- MAE 2301: Thermodynamics I (Undergraduate)
- MAE 3342: Engineering Economy (Undergraduate)
- MAE 4000: Research Seminar (Undergraduate)
- MAE 4316: Propulsion† (Undergraduate)
- MAE 4410: Fundamentals of Astronautics (Undergraduate)
- MAE 4425/5091: Space Environments† (Undergraduate and Graduate)
- MAE 4510: Engineering Design I (Undergraduate)
- MAE 4511: Engineering Design II (Undergraduate)
- MAE 5140: Compressible Flow† (Graduate)
- MAE 5391: Rocket Propulsion† (Graduate)
- MAE 5495: Launch Vehicle Analysis† (Graduate)
- MAE 5595: Space Mission Analysis† (Graduate)
- MAE 5596: Space Mission Design† (Graduate)
- MAE 9110/9510 Hypersonics and Gas Dynamics† (Undergraduate/Graduate)

† Developed

United States Air Force Academy

- ASTRO 310: Introduction to Astronautics‡ (Undergraduate)

- ASTRO 331: Spacecraft Analysis and Design‡ (Undergraduate)
- ASTRO 351: Rocket Propulsion (Undergraduate)
- ASTRO 452: Falcon Satellite Capstone Design (Undergraduate)
- AERO 446: Introduction to Hypersonics† (Undergraduate)
- ENGR 100: Introduction to Engineering Systems (Undergraduate)

† Developed; ‡Significantly modified

University of Southern California

- ASTRO 101: Introduction to Astronautics (Undergraduate)
- AE 477: Solar System Exploration‡ (Undergraduate/Graduate)
- AE 485: Rarefied Gas Dynamics‡ (Undergraduate/Graduate)
- AME 491: Microsatellite Design† (Undergraduate)
- AE 585: Space Environments and Spacecraft Interactions† (Graduate)

† Developed; ‡Significantly modified

Honors and Awards

- Researcher of the Year Award, College of Engineering and Applied Science, University of Colorado, Colorado Springs, May 2018.
- Selected Excellence in Leadership Program Fellow, University of Colorado, 2013.
- Member of the Million Dollar Club (over $1M in external research expenditures), University of Colorado Colorado Springs, 2013.
- Selected Daniels Ethics Initiative Fellow, University of Colorado, 2013, 2014.
- Elected Associate Fellow, American Institute of Aeronautics and Astronautics, 2008
- Elected to International Advisory Committee, Rarefied Gas Dynamics Symposium, 2008
- Nominated as Educator of the Year, US Air Force Research Laboratory, AFRL/RZ candidate (competed at AFMC level), 2008
- Honored Lifetime Member, Madison's Who's Who, 2008
- Engineer of the Year, American Institute of Aeronautics and Astronautics, Rocky Mountain Section, 2006
- Roger R. Bate Award for Outstanding First-Year Instructor in Astronautics, US Air Force Academy, Department of Astronautics, 2005
- Scientist of the Year, Air Force Research Laboratory, Propulsion Directorate, 2002
- Exemplary Civilian Service Award, Air Force Research Laboratory, 2003
- Civilian Acheivement Award, Air Force Research Laboratory, 2004
- Notable Acheivement Award, Air Force Research Laboratory, Sept. 2003
- Letter of Commendation, Air Force Research Laboratory, May 2003
- Special Service Award, Air Force Research Laboratory, 2008, 2007, 2005, 2003, 2002, 2001, 2000, 1999, 1998
- United States Air Force Palace Knight Fellowship Recipient, 1992-1995

- Society of Motion Picture and Television Engineers (SMPTE) Grant for Outstanding Research, Society of Motion Picture and Television Engineers, 1990-1992
- Laufer Award for Aerospace Related Experimentation, University of Southern California, 1990

Professional Organizations

- Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA)
  - Member of Nuclear and Future Flight Technical Committee (2008-2018)
  - Member of Thermophysics Technical Committee (1998-2003)
  - Chair of Education Subcommittee, Thermophysics Technical Committee (2000-2003)
- Member, International Advisory Committee, Rarefied Gas Dynamics Symposium
- Member and Campus Representative, American Society for Engineering Education
- Member, American Vacuum Society
- Member, Institute of Environmental Sciences
- Associate Member, California Space Authority, 2001-2003

Service

<u>Oregon State University, Cascades</u>

- External Board Service: EDCO, Better Together, US Bank (Bend, OR)
- Innovation District Working Group, Co-Chair (2022-present)
- Enrollment Strategy Task Force (2022-present)
- OSU Engagement Council (2022-present)
- Student Success Center Steering Committee (2021-present)
- Innovation District and Capital Projects Selection Committees (various, 2021-present)
- Provost's Council of Deans (2021-present)
- Infrastructure Working Group (2021-present)
- OSU Curriculum Council, Cascades Representative (2018-2020)
- College of Science Leadership Team, Cascades Representative (2018-2020)
- College of Engineering Leadership Team, Cascades Representative (2019-2020)
- President and Provost's Leadership Council on Diversity, Equity and Social Justice (2018-2020)
- Diversity Committee, Cascades Campus (2018-2020)
- Search Advocate (2018-present)
- Research Excellence Committee, Dean's Liaison, (2018-2020)
- Safe Zone Training (2019)

University of Colorado at Colorado Springs

- Department Chair, MAE (2011-2015)
- MAE Ad-Hoc Committee for Online Education (2016-2018)
- MAE Graduate Committee (2016-2018)
- CU System Ethnic and Minority Affairs Committee (2013-2017)
- UCCS Academic Program Review Committee (2014-2018)
- Faculty Research Council (Vice Chancellor of Research and Innovation) (2008-2018)
- Coordinator, Undergraduate Research Scholars Program, EAS (2010-2018)
- Untenured Faculty Support Committee, MAE (2011-2018)
- Chancellor's Advisory Group on External Research (2009-2016)
- Provost's Advisory Group on Undergraduate Research (2014-2015)
- Executive Committee, EAS (2011-2015)
- Office of Sponsored Programs Pre-Proposal Specialist Search Committee, UCCS (2015)
- Director of Corporate Development Search Committee, EAS (2013)
- UCCS Educational Policy and University Standards Committee (2008-2014)
- Graduate Studies Committee, MAE (2010-2014)
- Founder and Organizer, Research Seminar Series, MAE (2008-2015)
- Astronomy Event Supervisor, Colorado Science Olympiad (2005-2015)
- Tenure-Track Faculty Search Committee, MAE (2009, 2010, 2011, 2013, 2014, 2016, 2017)
- Instructor Search Committee, MAE (2009, 2011, 2013, 2014, 2016, 2017)
- UCCS Provost Search Committee (2012)
- MAE Strategic Planning Committee (2012)
- Ad Hoc Committee for Research Development, EAS (2011-2012)
- Ad Hoc Committee for Untenured Faculty Support, MAE (2010-2011)
- CU System Educational Policy and University Standards Committee (2010-2011)
- UCCS Faculty Assembly (elected 2008-2009 and re-elected 2009-2010)
- EAS Dean's Research Forum, Steering Committee (2010-2012)
- EAS PhD Program Assessment Committee, Chair (2010-2012)
- Provost's Task Force on High Impact Practices (2009-2010)
- Executive Committee, MAE (2008-2012)
- Educational Partnership Agreement with Air Force Research Laboratory (Edwards AFB) (2009)
- Judge, Pikes Peak Science Fair (2009, 2010)
- Session Chair, Colorado Springs Undergraduate Research Forum
- MAE Faculty Search Committee (Tenure Track and Instructor positions)
- K-12 Outreach: Colorado Springs School, Aerospace Engineering Day Presentations, EAS Open House

Professional

- Associate Editor, Journal of Spacecraft and Rockets (2003-present)

- Campus Representative at UCCS, American Society of Engineering Education (2013-2018)
- Member, Nuclear and Future Flight Technical Committee (AIAA) (2008-2018)
- International Advisory Board Member, Rarefied Gas Dynamics Symposium (2008-2018)
- Co-organizer, 30th Symposium on Rarefied Gas Dynamics, Victoria, British Columbia, Canada (July 2016)
- Reviewer, Advanced Industry Accelerator Grants, State of Colorado (2013-2014)
- Member, Air Force/NASA Expert Panel on Hypersonics (2007-2012)
- Panelist, Advanced Concepts Review Panel, NRC Review Committee for the NASA In-Space Propulsion Technology Roadmap (2011)
- Author, Chapter on Micropropulsion for Encyclopedia of Aerospace Engineering (2011)
- Technical Program Co-Chair, JPL/AFRL Advanced Propulsion Workshop (2008, 2010)
- Host of the JPL/AFRL Advanced Propulsion Workshop held at UCCS (2010)
- Organizer and Technical Chair, Air Force Research Laboratory Microfluidics Workshop (2003)
- Organizer and Technical Chair, 23rd Inernational Symposium on Rarefied Gas Dynamics (2002)
- Aerospace Track Technical Advisor, AIAA Nanotech 2002 Conference (2002)
- Technical Chair, 35th AIAA Thermophysics Conference (2001)
- International Organizing Committee Member, 22nd International Symposium on Rarefied Gas Dynamics (2000)
- Session Organizer for 38th AIAA Aerospace Sciences Meeting Special Session on Thruster-Spacecraft Interactions (2000)
- Session Organizer, 36th AIAA Joint Propulsion Conference Special Session on microspacecraft propulsion (2000)
- Executive Co-Director, California Space Grant Consortium at the University of Southern California (2001-2007)
- Member, AIAA Thermophysics Technical Committee (1998-2003)
- Chairman of Education Sub-committee, AIAA Thermophysics TC (2000-2001)
- Member, AIAA Microfluidics Working Group (2001-2008)
- Associate Editor, Journal of Spacecraft and Rockets, Special Issue on Spacecraft Drag (2006)
- Guest Associate Editor, Journal of Propulsion and Power, Special Issue on Spacecraft-Thruster Interactions (2001)
- Supervisory Committee Member of Board of Directors, Anaheim Area Credit Union (2000)
- Session Chair for numerous AIAA conferences, RGD Symposia, and workshops
- Technical reviewer for the new edition of Space Mission Analysis and Design, Microcosm Press (2010)
- Reviewer for journals including the Journal of Micromechanics and Microengineering, Optics Communications, Journal of Physical Chemistry,

Journal of British Interplanetary Society, Journal of the ASME, Journal of Vacuum Science and Technology A and B, Journal of Propulsion and Power, Journal of Spacecraft and Rockets, AIAA Journal, and Journal of Thermophysics and Heat Transfer, Review of Scientific Instruments, Optics Express, Journal of Applied Physics, Vacuum, Sensors, Journal of Fluid Mechanics, and various others.