DEBORAH ANN LEVIN

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EDUCATION

State University of New York at Stony Brook, B. S., Chemistry, 1974
California Institute of Technology, Ph. D., Chemistry, 1979

Ph. D. Thesis: "Ab Initio Calculations of Processes in Low Energy Electron-Molecule Scattering," California Institute of Technology, June 1979, Thesis advisor, Prof. B. V. McKoy

EMPLOYMENT

July, 2007 – Present	Professor,
August, 2000–June 2007	Associate Professor Department of Aerospace Engineering
May, 1998–Aug. 2000	Research Professor and lecturer, Department of Chemistry, George Washington University Washington, DC 20052
1979–May, 1998	Institute for Defense Analyses (IDA), Science & Technology and Systems Evaluation Divisions, Research Staff Member, Task Leader.

SEMINARS, LECTURES, AND INVITED TALKS

1. "Modeling and Simulation of Chemically Reacting, Nonequilibrium Flows using Particle Approaches," Department of Aerospace Engineering, University of Illinois, Jan. 28, 2014.
2. "Modeling of Chemically Reacting, Nonequilibrium Flows using Particle Approaches," GALCIT Colloquium, California Institute of Technology, Nov. 15, 2013.
3. "Kinetic Particle Methods – Beyond Number of time Steps, Cell Size, and Particles per Cell," Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, June 3, 2013.
4. "Modeling of Spectral Radiation from Nonequilibrium Flows," Air Force Research Lab, Wright Patterson, AFB, OH, November 19, 2012.

5. "Modeling of Nonequilibrium Flows Using Particle Approaches," Department of Aerospace Engineering, University of Illinois Urbana-Champagne, November 12, 2012.
6. "Physics of Coupled, Multi-Scale Nonequilibrium Flows," NATO RTO-AVT-205 Working Group, 15-19 October 2012, Biarritz, France.
7. "In-flight Spectral Measurements," Invited talk at the Thermal & Fluids Analysis Workshop (TFAWS), Aerothermal Flight Instrumentation Session, NASA/Newport News, VA, August 2011.
8. "Application of Particle Methods to Modeling and Simulation of High-Nonequilibrium Flows," Department of Aerospace Engineering, Texas A&M, March, 2011.
9. "Multi-scale Approaches to Modeling the Hypersonic Reentry Environment," University at Buffalo, The State University of New York, Department of Mechanical and Aerospace Engineering, March, 2011.
10. "Kinetic Methods for Predicting the Flow Physics of Small Thruster Expansions, Models And Computational Methods For Rarefied Flows," Guest Lecturer, RTO-AVT-VKI Lecture Series von Karman Institute for Fluid Dynamics, Brussels, Belgium, January, 2011.
11. "Modeling of Reentry Flows Coupled with Material Response by Kinetic and Continuum Methods," Invited talk at the Thermal & Fluids Analysis Workshop (TFAWS) NASA/Johnson Space Flight Center, August 2010.
12. "Multi-scale Modeling of Chemically Reacting Flows by Direct Simulation," NNSA PRISM Center and AAE, Purdue University, March, 2010.
13. "Multi-scale Modeling of Chemically Reacting Flows by Direct Simulation," MAE Seminar Series, George Washington University, January, 2010.
14. "Challenges of Modeling Multi-scale Condensation Flows Using Kinetic Simulation Approaches," Invited talk at the DSMC2009 Workshop, Santa Fe, New Mexico, September, 2009.
15. "Multiscale Modeling and Simulation of Cluster Formation Processes in Free Gas Expansions," Dept. of Aersp. Engr. & Engr Mech., University of Texas at Austin, January, 2008.
16. "Kinetic Multiscale Modeling and Simulation of Cluster Formation Processes in Free Gas Expansions," Department of Chemistry, Penn State University, February, 2007.
17. "Kinetic Multiscale Modeling and Simulation of Cluster Formation Processes in Free Gas Expansions Using DSMC," Invited talk at the 25th International Symposium on Rarefied Gas Dynamics, Russia, July, 2006.
18. "Direct Simulation of Chemically Reacting Flows," Applied Research Laboratory, Penn State University, June, 2006.
19. "Direct Simulation of Spacecraft Reacting Flows," AFRL-PSRA, Edwards Air Force Base, January, 2006.
20. "Direct simulation of Chemically Reacting Spacecraft Flows," Department of Mechanical and Aerospace Engineering, Princeton University, November, 2005.
21. "Bow Shock Flight Instrumentation – Lessons Learned and Future Opportunities," seminar at NASA/Langley Research Center, Feb.2004, Hampton ,VA.

22. "Modeling of Transitional Flows in MEMS Devices," University of Florida, Department of Mechanical and Aerospace Engineering, Gainesville, FL, September 2003.
23. "Modeling of Chemically Reacting Rarefied Gas Flows - Challenges and Opportunities," Department of Mechanical Engineering, Ohio State University, February, 2001.

HONORS AND AWARDS

1. 2013 Penn State Engineering Society (PSES) Premier Research Award.
2. AIAA Thermophysics TC David Weaver Best Student Paper, Co-recipient, " Thermo-Structural Studies of Spores Subjected to High Temperature Gas Environments" 2010.
3. AIAA Thermophysics TC David Weaver Best Student Paper, Co-recipient, "Kinetic Nucleation Model for Free-Expanding Water Condensation Plume Simulations," 2009.
4. NASA Engineering and Safety Center Group Achievement Award for support of Stardust reentry Observations, 2006.
5. 2006 Penn State Engineering Society (PSES) PSES Outstanding Research Award.
6. AIAA Certificate of Merit for Best paper in 35th Thermophysics Conference, Anaheim California, "Modeling of OH Vibrational Distributions Using Molecular Dynamics with Direct Simulation Monte Carlo Method," 2001.
7. Naval Research Laboratory, UVPI-STRYPI LACE Mission Key science team member responsible for analysis of UVPI-LACE satellite ultraviolet imagery with onboard rocket flight ultraviolet photometric data and Air Force Maui Observatory Telescope data, 1995.

STUDENT THESIS ADVISING

1. Ozgur Tumuklu, PhD—In Progress, 5/2016, "Modeling of Shock-Shock Interactions Using Particle Approaches in an Automatic Mesh Refinement Scheme"-tentative.
2. Saurabh Sawant, MS – In Progress, 5/2015, "Study of Particle BGK Methods for Modeling Hypersonic Shocks with Thermal Nonequilibrium," 5/2015–tentative.
3. K N Ramachandran, MS "Development of a Poisson Solver for use on an AMR Grid," 8/2015, tentative.
4. Revathi Jambunathan, PhD--In Progress, 8/2016, "Modeling of Porous Materials using Gridless Particle Methods" –tentative.
5. Neal Parsons, PhD--In Progress, 5/2014, "Development of Direct Simulation Monte Carlo Models using Fundamental Molecular Dynamics Methods"
6. Burak Korkut, PhD--In Progress, 12/2015, "Modeling of Neutral and Charged Particle Interactions in Space Plumes Using Massively Parallel Automatic Mesh Refinement Techniques"
7. Varun Patil, MS 8/2013, "Modeling of Shock-Shock Interactions Using Particle Hybrid Approaches"
8. Arnaud Borner, PhD--In Progress, 2/2014, "Use of advanced particle methods in modeling space propulsion and its supersonic expansions," – tentative title.

9. Tong Zhu, MS, November 2011, "DSMC Analysis of Fractal-like Aggregates of Spores in the Semi-rarefied Flow Regime"
10. Tong Zhu, PhD -- In Progress, Modeling of Hypersonic Unsteady Flows
11. Neil Mehta, MS 7/2013, "Fiber-Optic recession embedded in a TPS material,"
12. Neil Mehta, PhD--In Progress, "Use of Reaction Force Field/MD Methods to Study Spore Deactivation Processes," –tentative.
13. Shiang-Ting Yeh, BS—Schreyer Honors College Thesis, 5/2013, "Plume Impingement Analysis on the Lunar Lion"
14. Hao Deng, MS 8/2011, "Analysis of Chemistry Models For DSMC Simulations of the Atmosphere of Io"
15. Ilyoup Sohn, PhD 5/2011, "Hypersonic Non-equilibrium Flow and Radiation"
16. Rakesh Kumar, PhD, 5/2011, "Development of a Kinetic Particle-Based Method to Model the Multi-Scale Physics of Expanding"
17. Sergey Gratiy, PhD 8/2009, "Modeling radiation from the atmosphere of Io with Monte Carlo Methods"
18. Zheng Li, PhD, 5/2009, "Direct Simulation Monte Carlo Modeling of Condensation in Supersonic Plume Expansions of Small Polyatomic Systems"
19. Samarth Saurav MS 12/2008, "Heat Transfer To Spores In An Abruptly Expanding Axisymmetric Flow Field Computed Using CFD"
20. Nilesh Moghe, MS, 8/2007, "Molecular Dynamics Simulations of Collisionally Induced Dissociation of Sulfur Dioxide an Atmospheric Species of Io"
21. Allison Gallagher-Rogers, MS, 8/2007, "High Fidelity Simulation of Plume Backflows for Modeling Spacecraft Contamination"
22. Evgeny Titov, PhD, 8/2007, "Examination of a New DSMC Method for Modeling of Multi-Scale Flows in MEMS Devices"
23. Takashi Ozawa, PhD, 8/2007, "Improved Chemistry Models for DSMC Simulations of Ionized Rarefied Hypersonic Flows"
24. Matthew Garrison, MS, 8/2005, "The Development of an Efficient Radiation Model for Chemically Reactant Flow at the Exhaust of Rocket Nozzles "
25. Jianqiang Zhong, PhD, 5/2005, "Modeling of Homogeneous Condensation in free-expanding Plumes with the direct simulation Monte Carlo Method"
26. Dmitry Fedosov, MS, 8/2004, "Investigation of Numerical Errors in Direct Simulation Monte Carlo"
27. Kamal Viswanath, MS, 12/2003, "Modeling of Soot Oxidation and Prediction of Optical Radiation in Underexpanded Plumes"
28. Takashi Ozawa, MS, 12/2003, "Use of Quasiclassical Trajectory Methods in the modeling of OH Production Mechanisms in DSMC"
29. Alina Alexeenko, PhD, 12/2003, "Modeling and Simulation of MEMS and Millimeter Thruster Devices"
30. Natasha Gimelshein, MS, 5/2002, "Modeling and Simulation of Water Dissociation in Rarefied Space Flows"
31. Craig Benson (GWU), PhD, 5/2002, "Modeling and Simulation of Droplet Evaporation and Coalescence in Inductively Coupled Plasma Diagnostic Devices," co-advised with Prof. Akbar Montaser.

PUBLICATIONS

1. Refeered Conference Proceedings Editorship: 28th International Symposium on Rarefied Gas Dynamics, 2010, Pacific Grove, CA., 10-15 July 2010, American Institute of Physics, Conference Proceedings, Vol. 1333. Edited by D. Levin, I. Wysong, and A. Garcia, ISBN 978-0-7354-0889-0.

2. Refereed Journal Publications:

1. A. Borner, Z. Li, and D. Levin, "Prediction of Fundamental Properties of Ionic Liquid Electrospray Thrusters using Molecular Dynamics," *The Journal of Physical Chemistry, Part B.,* dx.doi.org/10.1021/jp402092e 2013, 117, 6768−6781.
2. A. Borner, Z. Li, and D. Levin, "Development of a Molecular-Dynamics-Based Cluster-Heat-Capacity Model for Study of Homogeneous Condensation in Supersonic Water-Vapor Expansions," *The Journal of Chemical Physics*, Jan. 23, 2013, Vol. 138, Issue 6, Feb. 2013, 064302 (2013).
3. N. Parsons, D. Levin, and A. van Duin, "Molecular Dynamics Based Chemistry Models of Hypervelocity Collisions of $O(^3P)$ + $SO_2(X,^1A_1)$ in DSMC," *Journal of Chemical Physics*, 2013 Jan 28;1 38(4):044316. doi: 10.1063/1.4775481.
4. Z. Li, I. Sohn, and D. Levin, "Effects of Non-Maxwellian Distributions on Shocklayer Radiation from Hypersonic Reentry Flows," *Journal of Thermophysics and Heat Transfer*, Vol. 27, No.1, January – March 2013, pp. 183-187.
5. R. Kumar, E. Titov, and D. Levin, "Development of a Particle-Particle Hybrid Scheme to Simulate Multi-scale Transitional Flows," *AIAA Journal*, Vol. 51, No. 1, January 2013, pp. 200-217.
6. A. Borner, Z. Li, and D. Levin, "Modeling of an Ionic Liquid Electrospray using Molecular Dynamics with Constraints," *The Journal of Chemical Physics*, Vol. 123, 124507 (2012); doi: 10.1063/1.3696006.
7. T. Zhu, R. Kumar, E. Titov, and D. Levin, "DSMC Analysis of Fractal-like Aggregates of Spores in the Semi-rarefied Flow Regime," *Journal of Thermophysics and Heat Transfer,* Vol. 26, No. 3, July-September 2012, pp. 417-429.
8. I. Sohn, Z. Li, and D. Levin, "Effect of Non-Local VUV Radiation on a Hypersonic Nonequilibrium Flow," *Journal of Thermophysics and Heat Transfer*, Vol. 26, No. 3, July–September 2012, pp. 393-406.
9. H. Deng, T. Ozawa, and D. A. Levin, "Analysis of Chemistry Models for DSMC Simulations of the Atmosphere of Io," *Journal of Thermophysics and Heat Transfer*, Vol. 26, No. 1, January-March 2012, pp. 36-46.
10. I. Sohn, Z. Li, D. Levin, and M. Modest, "Coupled DSMC-Photon Monte Carlo Radiation Simulations of a Hypersonic Reentry," *Journal of Thermophysics and Heat Transfer,* Vol. 26, No. 1, January – March 2012, pp. 22-35.

11. L. Duan, P. Martin, I. Sohn, D. Levin, and M. Modest, "Study of Emission Turbulence-Radiation in Hypersonic Boundary Layers," *AIAA Journal*, Vol. 49, No. 2, pp. 340-348, February 2011.
12. R. Kumar, Z. Li, and D. Levin, "Modeling of Carbon Dioxide Condensation in High Pressure Flows Using the Statistical BGK Approach," *Physics of Fluids*, 25 May 2011, Vol.23, Issue 5, DOI: 10.1063/1.3589802.
13. R. Kumar and D. Levin, "Simulation of Homogeneous Condensation of Small Polyatomic Systems in High Pressure Supersonic Nozzle Flows using the BGK Model," *The Journal of Chemical Physics,* Vol. 134, 124519 (2011); doi:10.1063/1.3569762.
14. R. Kumar, Z. Li, A. van Duin, and D. Levin, "Molecular Dynamics Studies to Understand the Mechanism of Heat Accommodation in Homogeneous Condensing Flow of Carbon Dioxide," *Journal of Chemical Physics*, Vol. 135, 064503 (2011); doi:10.1063/1.3624335.
15. R. Kumar, S. Saurav, E. Titov, D. Levin, R. Long, W.C. Neely, and P. Setlow, "Thermo-structural Studies of Spores Subjected to High Temperature Gas Environments," *International Journal of Heat and Mass Transfer,* 54 (2011) 755-765.
16. Z. Li and D. Levin, "Development of a Molecular Dynamics-based Coalescence Model for DSMC Simulations of Ammonia Condensate Flows," *The Journal of Chemical Physics*, 134, 124306 (2011); 10.1063/1.3561399.
17. A. Feldick, M. Modest, and D. Levin, "Closely Coupled Flowfield-Radiation Interactions During Hypersonic Reentry*," Journal of Thermophysics and Heat Transfer*, Vol. 25, No. 4, October-December 2011, pp. 481-492.
18. Z. Li, T. Ozawa, I. Sohn, and D. Levin, "Modeling of Electronic Excitation and in Non-continuum Hypersonic Reentry Flows," *Physics of Fluids*, Vol. 23, 006102 published online 23 June, 2011, doi: 10.1063/1.3601481.
19. Titov, E., Levin, D., Anderson, B., Rodriguez, A., and Picetti, D., "Simulation of the Stagnation Region Micro-Crack Growth During Space Shuttle Re-entry," *Journal of Thermophysics and Heat Transfer*, Vol. 25, No. 1, January-March 2011, pp. 48-54.
20. C. Binz, D. Spencer, D. Levin, and T. Simpson, "Designing for the Space Environment via Trade Space Exploration," *Journal of Spacecraft and Rockets*, Vol. 47, No. 46, pp. 1070-1073, Nov.-Dec., 2010.
21. A. Bansal, M. Modest, and D. Levin, "Multigroup Correlated-k Distribution Method for Nonequilibrium Atomic Radiation," *Journal of Thermophysics and Heat Transfer*, Vol. 24, No.3, July-Sept., 2010, pp. 638-646.
22. Titov, E., Levin, D., Picetti, D., and Anderson, B., "Simulation of TPS Crack Growth Due to Carbon Oxidation Using Advanced Grid Morphing Techniques," *Journal of Thermophysics and Heat Transfer*, October-December 2010, Vol. 24, No. 4, pp. 708-720.
23. J. Zhong and D. Levin, "Modeling of Sodium Radiation from Reentry Flows at High Altitudes," *Journal of and Rockets*, Vol. 47, No. 5, Sept.-October 2010, pp. 757-764.
24. I. Sohn, A. Bansal, D. Levin, and M. Modest, "Advanced Radiation Calculations of Hypersonic Reentry Flows using Efficient Databasing Schemes," *Journal of*

Thermophysics and Heat Transfer, 2010 0887-8722 vol.24 no.3, July-Sept, 2010, pp. 623-637.

25. R. Kumar, E. Titov, and D. Levin, "Study of Compressible Laminar Boundary Layer Flows with Statistical BGK Approaches," *Journal of Thermophysics and Heat Transfer*, July-Sept., Vol. 24, No. 3, pp. 556-565, 2010.
26. T. Ozawa, A. Wang, D. A. Levin, and M. Modest, "Development of Coupled Particle Hypersonic Flowfield - Photon Monte Carlo Radiation Methods," *Journal of Thermophysics and Heat Transfer*, 2010 0887-8722 vol.24 no.3 (612-622) doi: 10.2514/1.44645 and Vol. 24, No. 3, July-Sept., 2010, pp. 612-622.
27. Walker, A., Gratiy, S., Goldstein, D., Moore, C., Varghese, P., Trafton, L., Levin, D., and Stewart, B., "A comprehensive numerical simulation of Io's sublimation-driven atmosphere," *Icarus*, Vol. 207, No. 1, pp. 409-432, May 2010, doi:10.1016/j.icarus.2010.01.012.
28. Gratiy, S., Walker, A., Levin, D., Goldstein, D., Varghese, P., Trafton, L., Moore, C., "Multi-wavelength simulations of atmospheric radiation from Io with a 3-D spherical-shell backward Monte Carlo radiative transfer model," *Icarus*, Vol. 207, No. 1, pp. 394-408, May 2010, doi:10.1016/j.icarus.2009.11.004.
29. S. Gratiy, D. Levin, and A. Walker, "Rassvet: Backward Monte Carlo radiative transfer in spherical-shell planetary atmospheres," *Icarus*, Vol. 206, No. 1, pp. 366-379, March, 2010, doi:10.1016/j.icarus.2009.08.027.
30. R. Kumar, E. Titov, and D. Levin, "Reconsideration of Planar Couette Flows Using the Statistical Bhatnagar-Gross-Krook Approach," *Journal of Thermophysics and Heat Transfer*, April-June 2010, Vol. 24, No. 2, pp. 254-262.
31. T. Ozawa, I. Nompelis, D. Levin, M. Barnhardt, and G. Candler "Particle and Continuum Method Comparison of a High-Altitude Extreme-Mach-Number Reentry Flow," *Journal of Thermophysics and Heat Transfer*, April-June 2010, Vol. 24, No. 2, pp. 225-240.
32. Z. Li, J. Zhong, D. Levin, and B. Garrison, "Kinetic Nucleation Model for Free Expanding Water Condensation Plume Simulations," *The Journal of Chemical Physics,* Vol. 130, No. 17. (2009), 174309.
33. J. Zhong, N. Moghe, Z. Li, and D. Levin, "A Unimolecular Evaporation Model for Simulating Argon Condensation Flows in DSMC," *Physics of Fluids*, Vol. 21, Issue 3, pp. 036101-036101-12 (2009).
34. T. Ozawa, M. Modest, and D. Levin, "Spectral Module for Photon Monte Carlo Calculations in Hypersonic Nonequilibrium Radiation," *Journal of Heat Transfer*, Dec. 2009, Vol. 131, No. 2.
35. Li, Z., Zhong, J., and Levin, D. "Modeling of CO_2 Homogeneous and Heterogeneous Condensation Plumes," *The Journal of Physical Chemistry*, special edition, Publication Date (Web): October 16, 2009, DOI: 10.1021/jp9040698.
36. E. Titov, J. Zhong, D. Levin, and D. Picetti, "Simulation of RCC Crack Growth Due to Carbon Oxidation in High-Temperature Gas Environments," *Journal of Thermophysics and Heat Transfer,* Vol. 23, No.3, July-Sept., pp. 498-501 (2009).
37. Z. Li, J. Zhong, D. Levin, and B. Garrison, "Kinetic Nucleation Model for Free-Expanding Water Condensation Plume Simulations," *Journal of Chemical Physics*, 7 May 7, 2009, Vol. 130, Issue, 17, URL:http://link.aip.org/link/?JCP/130/174309 DOI: 10.1063/1.3129804.

38. Z. Li, J. Zhong, D. Levin and B. Garrison, "Development of Homogeneous Water Condensation Models Using Molecular Dynamics," *AIAA Journal*, Vol. 47, issue 5, pp. 1241-1251, May, 2009.
39. A. Gallagher-Rogers, J. Zhong, and D. Levin, "Simulation of Homogeneous Ethanol Condensation in Supersonic Nozzle Flows using DSMC," *Journal of Thermophysics and Heat Transfer*, Vol. 22, No. 4, Oct.-Dec. 2008, pp. 695-708.
40. J. Zhong, T. Ozawa, and D. Levin, "Modeling of Stardust Ablation Flows in the Near-Continuum Flight Regime," *AIAA Journal*, Vol. 46, No. 10, October 2008, pp. 2568-2581.
41. T. Ozawa, J. Zhong, and D. Levin, "Development of Kinetic-based Energy Exchange Models for Non-continuum, Ionized Hypersonic Flows," *Physics of Fluids,* March 1, 2008.
42. E. Titov, A. Gallagher-Rogers, D. Levin, and B. Reed, "Examination of a New DSMC Method for Predicting Performance of Micropropulsion MEMS Thrusters," *Journal of Power and Propulsion*, March-April 2008, Vol. 24, No. 2, pp. 311-321.
43. J. Zhong, T. Ozawa, and D. Levin, "Comparison of High-Altitude Hypersonic Wake Flows of Slender and Blunt Bodies," *AIAA Journal*, Vol. 46, No. 1, January, 2008, pp. 251-262.
44. E. Titov and D. Levin, "Extension of the DSMC method to Higher Pressure Flows," *International Journal of Computational Fluid Dynamics*, Vol. 21, Nos. 9-10, October-Dec, 2007, pp. 351-368.
45. Z. Li, J. Zhong, and D. Levin, "Modeling of Radiation from a Side Jet Atmospheric Interaction at High Altitudes," *Journal of Thermophysics and Heat Transfer*, Vol. 21, No. 2, April-June, 2007, pp. 311-322.
46. J. Zhong, and D. Levin, "Development of a Kinetic Nucleation Model for a Free-expanding Argon Condensation Flow," *AIAA Journal*, Vol. 45, No.4, April 2007, pp. 902-911.
47. T. Ozawa, D. Levin, and I. Wysong, "Chemical Reaction Modeling for Hypervelocity Collisions between O and HCl," *Physics of Fluids*, Vol. 19, 056102, 2007.
48. J. Zhong and D. Levin, "Development of a Kinetic Nucleation Model for a Free-expanding Argon Condensation Flow," *AIAA Journal*, Vol. 45, No.4, April 2007, pp. 902-911.
49. T. Ozawa, D. Levin, and I. Wysong, "Chemical Reaction Modeling for Hypervelocity Collisions between O and HCl," *Physics of Fluids*, Vol. 19, online no. 056102-1, 10 2007.
50. T. Ozawa, M. Garrison, and D. Levin, "An Improved CO_2, H_2O and Soot Infrared Radiation Models for High Temperature Flows," *Journal of Thermophysics and Heat Transfer*, Vol. 21, No. 1, Jan.-March 2007.
51. J. Zhong, M. Zeifman, and D. Levin, "Sensitivity of Water Condensation in a Supersonic Plume to the Nucleation Rate," *Journal of Thermophysics and Heat Transfer*, July-September 2006, Vol. 20. No. 3, pp. 517-523.
52. A. Alexeenko, D. Fedosov, S. F. Gimelshein, D. A. Levin, and R. Collins, "Transient Heat Transfer and Gas Flow in a MEMS-based Thruster," *Journal of Microelectromechanical Systems*, February, 2006, Vol. 15, No. 1, pp. 181-194.

53. J. Zhong, M. Zeifman, and D. Levin, "A Kinetic Model of Condensation in a Free Argon Expanding Jet," *Journal of Thermophysics and Heat Transfer*, 2006, Vol. 20, No. 1, Jan.-March, pp. 41-51.
54. M. Zeifman, J. Zhong, and D. Levin, "Direct Simulation of Condensation in Supersonic Jets," *Physics of Fluids*, December, 2005, Vol. 17, No. 12, p. 128102.
55. J. Zhong, M. Zeifman, D. Levin and S. Gimelshein, "Modeling of Homogeneous Condensation in Supersonic Plumes with the DSMC Method," *AIAA Journal*, August 2005, Vol. 43, No. 8, pp. 1781-1796.
56. A. Alexeenko, D. Levin, and S. Gimelshein, "Reconsideration of Low Reynolds Number Flows through Constriction Microchannels Using the DSMC Method," *IEEE Journal of Microelectromechanical Systems*, August 2005, Vol. 14, pp. 847-856.
57. K. Viswanath, K. S. Brentner, S. F. Gimelshein D. A. Levin , "Investigation of Soot Combustion in Underexpanded Jet Plume Flows," *Journal of Thermophysics and Heat Transfer,* July-September 2005, Vol. 19, No. 3, pp. 282-293.
58. T. Ozawa, D. Fedosov, D. Levin, and S. Gimelshein, "Use of Quasiclassical Trajectory Methods in the Modeling of OH Production Mechanisms in DSMC," *Journal of Thermophysics and Heat Transfer*, April-June 2005, Vol. 19, No. 2, pp. 235-244.
59. A. Alexeenko, D. Fedosov, D. A. Levin, S. Gimelshein, R. Collins, "Performance Analysis of Microthrusters Based on Coupled Thermal-Fluid Modeling and Simulation," *Journal of Power and Propulsion*, January/February 2005, Vol. 21, No.1, pp. 95-101.
60. S. Gimelshein, D. A. Levin, and A. A. Alexeenko, "Modeling of Chemically Reacting Flows from a Side-jet at High Altitudes," *Journal of Spacecraft and Rockets*, July-August 2004, Vol. 41, No. 4, pp. 582-591.
61. C. Benson, D. A. Levin, S. F. Gimelshein, and A. Montaser, "A Kinetic Model for Simulation of Aerosol Droplets in High-Temperature Environments," *Journal of Thermophysics and Heat Transfer*, July-August 2004, Vol. 41, No. 4, pp. 582-591.
62. N. Gimelshein, D. A. Levin and S.F. Gimelshein, "Hydroxyl Formation Mechanisms and Models in Hypersonic Flows," *AIAA Journal*, Vol. 41, No. 7, pp. 1323-1331, July 2003.
63. A. Alexeenko, S. Gimelshein, D. Levin, A. Ketsdever, and M. Ivanov, "Measurements and Simulation of Orifice Flows for Micropropulsion Testing," *Journal of Propulsion and Power*, Vol. 19, No. 4, pp. 588-594, July 2003.
64. J. Zhang, D. Goldstein, P. Varghese, N. Gimelshein, S. Gimelshein and D. Levin, "Simulation of Gas Dynamics and Radiation in Volcanic Plumes on Io," *Icarus*, Vol. 163, pp. 182-197, 2003.
65. C. Benson, J. Zhong, S. F. Gimelshein, D. A. Levin, and A. Montaser, "Simulation of Droplet Heating and Desolvation in Inductively Coupled Plasma-part II: Coalescence in the Plasma," *Spectrochimica Acta Part B*, Vol. 58, pp. 1453-1471, 2003.
66. W. Lempert, M. Boehm, N. Jiang, S. F. Gimelshein, and D. A. Levin, "Comparison of Molecular Tagging Velocimetry Data and DSMC Simulation in Supersonic Micro Jet Flows," *Experiments in Fluids*, Vol. 34, pp. 403-411, 2003.

67. N. E. Gimelshein, S. Gimelshein, and D. Levin, "Vibrational Relaxation Rates in the Direct Simulate Monte Carlo Method," *Physics of Fluids*, Vol. 14, No. 12, pp. 4452-4455, December 2002.
68. A.Alexeenko, D. Levin, S. Gimelshein, R. Collins, and B. Reed, "Numerical Modeling of Axisymmetric and Three-Dimensional Flows in MEMS Nozzles," *AIAA Journal,* Vol. 40, Number 5, pp. 897-904, May 2002.
69. D. A. Levin, N. Gimelshein, and S.F. Gimelshein, "Examination of Water Dissociation Models in Shock Heated Air," *Journal of Thermophysics and Heat Transfer*, Vol. 16, No. 2, pp. 251-260, April-June 2002.
70. S. F. Gimelshein, D. A. Levin, and R. J. Collins, "Modeling of Infrared Radiation in a Space Transportation System Environment," *AIAA Journal*, Vol. 40, No. 4, pp.781-790, April 2002.
71. S. Gimelshein, A. A. Alexeenko, and D. Levin, "Modeling of the Interaction of a Side Jet with a Rarefied Atmosphere," *Journal of Spacecraft and Rockets*, Vol. 39, No. 2, pp. 168-176, March-April 2002.
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2. Z. Li, A. Borner, and D. Levin, "Multi-Scale Study Of Condensation In Water Jets Using ES-BGK And Molecular Dynamics Modeling," Submitted to the Journal Of Chemical Physics, Feb. 2014.
3. N. Parsons and D. Levin, "A Post-collision Internal Energy Model for $O(^3p)$ + SO_2(X,1A1) in DSMC based on Molecular Dynamics Computations," Submitted to Chemical Physics, Feb. 2014.
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123. A. Alexeenko, D. Levin, D. Fedosov, S. Gimelshein, and R. J. Collins, "Coupled Thermal-Fluid Modeling of Micronozzles for Performance Analysis," AIAA Paper No. 2003-4717, 39th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Huntsville, Alabama, July 20-23, 2003.
124. A. Alexeenko, S. Gimelshein, and D. Levin, "Reconsideration of Flows through Constriction Microchannels Using the DSMC Method," AIAA Paper No. 2003-4009, 36th AIAA Thermophysics Conference, Orlando, Florida, June 23-26, 2003.
125. J. Zhong, S. Gimelshein, D. A. Levin, C. Benson, and A. Montaser, "Simulation of Particle-Based Knudsen Number Effects in Aerosols," AIAA Paper No. 2003-3495, 36th AIAA Thermophysics Conference, Orlando, Florida, June 23-26, 2003.
126. A. Alexeenko, D. A. Levin, D. A. Fedosov, S., F. Gimelshein, R. J. Collins, "Coupled Thermal-fluid Analyses of Microthruster Flows," AIAA Paper No. 2003-0673, 41st Aerospace Sciences Meeting and Exhibit, January 9-12, 2003.
127. S. F. Gimelshein, and D. A. Levin, G. F. Karabadzhak, "Modeling of Jet Interactions in a Space Environment Using the Direct Simulation Monte Carlo

Method," AIAA Paper No. 2003-1032, 41st Aerospace Sciences Meeting and Exhibit, January 6-9, 2003.

128. K. Brentner, S. Gimelshein, D. A. Levin, and K. Viswanath, "Investigation of Soot Combustion in Underexpanded Jet Plume Flows," AIAA Paper No. 2003-0506, 41st Aerospace Sciences Meeting and Exhibit, January 6-9, 2003.
129. C. Benson, S. F. Gimelshein, D. A. Levin, and A. Montaser, "A Direct Simulation Monte Carlo Model for the Determination of Aerosol Behavior in a High-Temperature Environment," 23rd International Symposium on Rarefied Gas Dynamics, Whistler, British Columbia, Canada, July 21-25, 2002.
130. N. Gimelshein, S. F. Gimelshein, M. Ivanov, D. Levin, J. Wysong, "Reconsideration of DSMC Models for Internal Energy Transfer and Chemical Reaction," 23rd International Symposium on Rarefied Gas Dynamics, Whistler, British Columbia, Canada, July 21-25, 2002.
131. A. Alexeenko, S. F. Gimelshein, D. A. Levin, A. Ketsdever, and M. Ivanov, "Application of the DSMC method for Nano-Newton Thrust Stand Calibration," 23rd International Symposium on Rarefied Gas Dynamics, Whistler, British Columbia, Canada, July 21-25, 2002.
132. A. Alexeenko, S. F. Gimelshein, R. Collins, D. A. Levin, and B. Reed, "Comparison of Modeling and Experiment for 3D Micro-Thruster Flows," 23rd International Symposium on Rarefied Gas Dynamics, Whistler, British Columbia, Canada, July 21-25, 2002.
133. C. Benson, J. Zhong, S. F. Gimelshein D. A. Levin, "A General Model for the Simulation of Aerosol Droplets in a High-Temperature Environment," AIAA Paper No. 2002-3181, 32nd AIAA Fluid Dynamics Conference, St. Louis, Missouri, June 2002.
134. A. Alexeenko, D. A. Levin, S. F. Gimelshein, R. Collins, and B. Reed, "Numerical Study of Flow Structure and Thrust Performance for 3-D MEMS-based Nozzles," AIAA Paper No. 2002-3194, 32nd AIAA Fluid Dynamics Conference, St. Louis, Missouri, June 2002.
135. S. F. Gimelshein, N. Gimelshein, D. A. Levin, M. Ivanov, and G. Markelov, "Modeling of Rarefied Hypersonic Flows over Spacecraft in Martian Atmosphere using the DSMC Method," AIAA Paper No. 2002-2759, 8th AIAA/ASME Thermophysics Conference, St. Louis, Missouri, June 2002.
136. W. Lempert, M. Boehm, N. Jiang, S. F. Gimelshein, and D. A. Levin, "Comparison of Molecular Tagging Velocimetry Data and DSMC Simulation in Supersonic Micro Jet Flows," AIAA Paper No. 2002-3195, 32nd AIAA Fluid Dynamics Conference, St. Louis, Missouri, June 2002.
137. D. Levin, C. Benson, S. F. Gimelshein, and A. Montaser, "Simulation of Droplet Heating in an Inductively Coupled Plasma," Paper No. 2C03, 2002 IEEE International Conference on Plasma Science, Banff, Alberta, Canada, May 2002.
138. S. F. Gimelshein, D. A. Levin, G. Markelov, Kudryavtsev, and M. Ivanov, "Statistical Simulation of Laminar Separation in Hypersonic Flows: Numerical Challenges," AIAA Paper No. 2002-0736, 40th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2002.
139. S. F. Gimelshein, A. A. Alexeenko, and D. A. Levin, "Modeling of Chemically Reacting Flows from a Side-jet at High Altitudes," AIAA Paper No. 2002-0212, 40th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2002.

140. N. Gimelshein, D. A. Levin, S. F. Gimelshein, "Numerical Modeling of OH Production in High-Temperature Rarefied Flows With the DSMC Method," AIAA Paper No. 2001-2892, 35th AIAA Thermophysics Conference, Anaheim, California, June 2001.
141. C. Benson, S. Gimelshein, D. A. Levin, and A. Montaser, "Modeling of Droplet Evaporation and Coalescence for Direct Injection into an Inductively Coupled Plasma," AIAA Paper No. 2001-3037, 35th AIAA Thermophysics Conference, Anaheim, California, June 2001.
142. J. Zhang, P. Varghese, D. Goldstein, N. Gimelshein, D. A. Levin, "Modeling Low Density Sulfur Dioxide Jets: Application to Volcanoes on Jupiter's Moon Io," AIAA Paper No. 2001-2767, 35th AIAA Thermophysics Conference, Anaheim, California, June 2001.
143. A. Alexeenko, D. Levin, S. F. Gimelshein, M. Ivanov, and A. Ketsdever, "Numerical and Experimental Study of Orifice Flow in the Transitional Regime," AIAA Paper No. 2001-3072, 35th AIAA Thermophysics Conference, Anaheim, California, June 2001.
144. C. Phillips, P. Erdman, C. Howlett, D. A. Levin, M. Lovern, and D. Mann, "Innovations in Multispectral Self-Induced Shocklayer Radiance Measurement Instrumentation and Data Acquisition Suite," AIAA Paper No. 2001-0353, 39th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 8-11, 2001.
145. A. Alexeenko, D. A. Levin, S. F. Gimelshein, R. J. Collins, and Markelov, G. N., "Numerical Simulation of High-Temperature Gas Flows in a Millimeter-Scale Thruster," AIAA Paper No. 2001-1011, 39th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 8-11, 2001.
146. A. Alexeenko, N.E. Gimelshein, D. A. Levin, S. F. Gimelshein, J. S. Hong, T. Schilling, R. J. Collins, R. Rao, and G. Candler, "Modeling of Radiation in the Atlas Plume-Flow," AIAA Paper No. 2001-0355, 39th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 8-11, 2001.
147. S. F. Gimelshein, A. A. Alexeenko, and D. A. Levin, "Modeling of the Interaction of a Side Jet with a Rarefied Atmosphere," AIAA Paper No. 2001-0503, 39th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 8-11, 2001.
148. A. Alexeenko, S. F. Gimelshein, R. Collins, and D. A. Levin, "Numerical Modeling of Axisymmetric and Three-Dimensional Flows in MEMS Nozzles," AIAA Paper No. 2000-3668, AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Huntsville, Alabama, July 16-19, 2000.
149. C. Benson, S. F. Gimelshein, D. A. Levin, Montaser, A., "Simulation of Droplet-Gas Interactions in an Inductively Coupled Plasma Using the Direct Simulation Monte Carlo Method," Rarefied Gas Dynamics International Symposium, Sydney, Australia, July 2000.
150. D. Levin, and S. F. Gimelshein, "A New OH Vibrational Distribution Model Developed Using Molecular Dynamics," Rarefied Gas Dynamics International Symposium, Sydney, Australia, July 2000.
151. A. Alexeenko, R. Collins, S. F. Gimelshein, and D. A. Levin, "Challenges of Three-Dimensional Modeling of Microscale Propulsion Devices with the DSMC Method," Rarefied Gas Dynamics International Symposium, Sydney, Australia, July 2000.

152. C. Benson, S. F. Gimelshein, D. A. Levin, Montaser, A., "Simulation of Droplet-Gas Interactions in an Inductively Coupled Plasma Using the Direct Simulation Monte Carlo Method," AIAA Paper No.-2000-2431, 34th Thermophysics Conference, Denver, Colorado, June 19-22, 2000.
153. D. Levin, and S. F. Gimelshein, "Modeling of OH Vibrational Distributions Using Molecular Dynamics with Direct Simulation Monte Carlo Methods," AIAA Paper No. 2000-2432, 34th Thermophysics Conference, Denver, Colorado, June 19-22, 2000.
154. S. F. Gimelshein, D. A. Levin, J. A. Drakes, R. S. Hiers, G. F. Karabadzhak, and Y. Plastinin, "DSMC Modeling of Chemically Reacting Two- and Three-Dimensional Flows from Soyuz-TM Rocket Exhaust Plumes," AIAA Paper No. 2000-2433, 34th Thermophysics Conference, Denver, Colorado, June 19-22, 2000.
155. S. F. Gimelshein, D. A. Levin, and R. J. Collins, "Modeling of Infrared Radiation in a Space Transportation System Environment," AIAA Paper No. 2000-0731, 38th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2000.
156. F. Karabadzhak, Y. Plastinin, Drakes, J., McGregor, W., Bradley, D., Teslenko, V., Shvets, N., Volkov, O., Kukushkin, V., S. F. Gimelshein, and D. A. Levin, "Mir-Based Measurements of the Ultraviolet Emissions from Rocket Exhaust Plume Interactions with the Atmosphere at 380 km Altitude," AIAA Paper No. 2000-0105, 38th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 2000.
157. D. Levin, S. F. Gimelshein, J. A. Drakes, R. S. Hiers, G. F. Karabadzhak, and Y. Plastinin, "Modeling of Emissions from the Soyuz, Progress, and Mir Rocket Exhaust Plumes at High Altitudes," AIAA Paper No. 2000-0601, 38th Aerospace Sciences Meeting & Exhibit, Reno, Nevada, January 10-13, 2000.
158. S. F. Gimelshein, D. A. Levin, J. A. Drakes, G. F. Karabadzhak, Y. Plastinin, and M. S. Ivanov, "Modeling UV Radiation from High Altitude Plumes and Comparison with Data from the Mir Space Station," AIAA Paper No 99-3452, 38th, 23rd Thermophysics Conference, Norfolk, Virginia, June 28-July 1, 1999.
159. D. Levin, G. Candler, and C. Limbaugh, "Multi-Spectral Shocklayer Radiance from a Hypersonic Slender Body," Chemical and Physical Processes in Combustion, 1999 Technical Meeting Joint Meeting of the United States Sections: The Combustion Institute, George Washington University, March 15-17, 1999.
160. I. Boyd, K. Kannenberg, K. Kossi, D. Levin, and D. Weaver, "Modeling the Plume Contamination and Emissions of an Ammonia Arcjet," AIAA Paper No. 98-3505, 34th Joint Propulsion Conference and Exhibit, Cleveland, Ohio, July 12-15, 1998.
161. M. Wright, R. Rao, G. Candler, J. Hong, T. Schilling, and D. A. Levin, "Modeling Issues in the Computation of Plume Radiation Signatures," AIAA Paper No. 98-3622, 34th Joint Propulsion Conference and Exhibit, Cleveland, Ohio, July 12-15, 1998.
162. D. Levin and G. Candler, "Multi-spectral Shocklayer Radiation from a Hypersonic Slender Body," AIAA Paper No. 98-2465, 7th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, Albuquerque, New Mexico, June 15, 1998.

163. R. Collins, V. Dogra, and D. A. Levin, "Simulations of Spacecraft Rarefied Environments Using a Proposed Surface Model," AIAA Paper No. 98-0834, 36th AIAA Aerospace Sciences Meeting and Exhibit, January, 1998.
164. D. Levin, J Hong, R. Collins, J. Emery, and A. Tietjen, "Comparison of Atlas Ground Based Plume Imagery with Chemically Reacting Flow Solutions," AIAA Paper No. 97-253, Atlanta, Georgia, June 23, 1997.
165. D. Levin, L. Caveny, and G. Beaghler, "Dual-Mode Spectral Detection of Hypersonic Flows," invited paper, presented at the 10th Meeting of Optical Engineering in Israel, March 1997.
166. V. Dogra, R. Collins, and D. A. Levin, "Modeling of High Altitude Spacecraft Environments," AIAA Paper No. 97-0987, January 1997.
167. D. A. Levin, "Modeling of VUV Radiation at High Altitudes," AIAA Paper No. 96-1899, 31st AIAA Thermophysics Conference, June 1996.
168. D. A. Levin, G. Candler, and R. Collins, "An Overlay Method for Calculating Excited State Species Properties in Hypersonic Flows," AIAA Paper No. 95-2073, 30th AIAA Thermophysics Conference, June 1995.
169. D. A. Levin, R. Collins, G. Candler, and P. Erdman, "Examination of OH Ultraviolet Radiation from Shock-Heated Air," AIAA Paper No. 95-0708, 33rd Aerospace Sciences Meeting, January 1995.
170. D. A. Levin, R. Collins, G. Candler, and P. Erdman, "In-situ Flight Observations of CO Cameron Band Emissions from the Plume of Aluminized Solid Fuel Propellants," JANNAF 21st Exhaust Plume Technology Subcommittee Meeting, October 21, 1994.
171. D. A. Levin, L. Caveny, D. Mann, and D. Burt, "Skipper-An Innovative U.S. and Russian University Space Science Mission," SPIE OE/Aerospace Sensing Meeting, April 4-6, 1994, Orlando, Florida. Published with the SPIE Proceedings of Aerial Surveillance Sensing Including Obscured and Underground Object Detection, Vol. 2217, pp. 292-306.
172. D. A. Levin, R. Finke, G. Candler, D. Boyd, L. Howlett, and P. Erdman, "In-Situ Measurements of Transitional and Continuum Flow UV Radiation from Small Satellite Platforms," AIAA Paper No. 94-0248, 32nd Aerospace Sciences Meeting, January, 1994.
173. D. A. Levin, G. Candler, R. Collins, C. Howlett, P. Espy, E. Whiting, and C. Park, "Comparison of Theory with Atomic Oxygen 1304 Radiation Data from the Bow Shock Ultraviolet 2 Rocket Flight," AIAA Paper No. 93-2811, AIAA 28st Thermophysics Conference, Orlando, Florida, July 6-9, 1993.
174. D. A. Levin, C. Howlett, L. Caveny, and D. Mann, "High Altitude Shock-layer Ultraviolet Emissions Measured Using Highly Elliptical Orbits," SPIE OE/Aerospace Sensing Meeting, April 13-14, 1993, Orlando, Florida. Published with the SPIE Proceedings of Surveillance Technologies and Imaging Components, Vol. 1952, pp. 64-74.
175. D. Levin, R. Collins, L. Caveny, D. Tietz, and D. Mann, "The Measurement and Application of Aerodynamically Induced Optical Signature Ultraviolet," invited paper, presented at the 8th Meeting of Optical Engineering in Israel, December 1992.

176. D. A. Levin, G. Candler, R. Collins, P. Erdman, E. Zipf, C. Howlett, "Examination of Ultraviolet Radiation Theory for Bow Shock Rocket Experiments," AIAA Paper No. 92-2871, 1992.
177. P. Erdman, E. Zipf, C. Howlett, D. A. Levin, R. Collins, and G. Candler, "Measurements of Ultraviolet Radiation from a 5 Km/sec Bow Shock," AIAA Paper No. 92-2870, 1992.
178. D. A. Levin, L. Caveny, and D. Mann, "Ultraviolet Emissions Quantified by Rocket Payloads," SPIE OE/Aerospace Sensing Meeting, April 20-24, 1992, Orlando, Florida. Published with the SPIE Proceedings of Ultraviolet Technology IV, Vol. 1764, pp. 384-399, January 1993.
179. Candler, D. Levin, J. Brandenburg, R. Collins, P. Erdman, E. Zipf, and C. Howlett, "Comparison of Theory with Plume Radiance Measurements from the Bow Shock Ultraviolet 2 Rocket Flight," AIAA Paper No. 92-0125, 1992.
180. P. W. Erdman, E. C. Zipf, P. Espy, C. Howlett, R. J. Collins, C. T. Christou, D. A. Levin, and G. V. Candler, "In-Situ Measurements of UV and VUV Radiation from a Rocket Plume and Re-entry Bow Shock," AIAA Paper No. 92-0124, 1992.
181. D. A. Levin, L. Caveny, D. Mann, R. Collins, C. Howlett, P. Espy, P. Erdman, and E. Zipf, "Ultraviolet Emissions from In-Flight Plume and Hardbody Flowfields," The Proceedings of the 19th JANNAF Exhaust Plume Technology Conference, CPIA Publication 568, May 1991.
182. Howlett, P. Espy, P. Erdman, E. Zipf, D. Levin, R. Collins, D. Mann, L. Caveny, "Ultraviolet Emissions Stimulated by Atmospheric Shocks," Proceedings Vehicle-Environment Interactions Conference, JHU/APL, pp. 53-75, March 11-13, 1991.
183. D. Levin, G.V. Candler, R. J. Collins, P. W. Erdman, E. Zipf, P. Espy and C. Howlett, "Comparison of Theory with Experiment for the Bow Shock Ultraviolet Rocket Flight," AIAA Paper No. 91-1411, 26th Thermophysics Conference, June 1991.
184. P. W. Erdman, E. C. Zipf, P. Espy, C. Howlett, D. A. Levin, R. T. Loda, and G. V. Candler, "Flight Measurements of Low Velocity Bow Shock Ultraviolet Radiation," AIAA Paper No. 91-1410, 26th Thermophysics Conference, June 1991.
185. L. H. Caveny and D. A. Levin, "Bow Shock Ultraviolet Signature Rocket Experiment-Initial Results," Short Wavelength Phenomenology and Application Conference, Applied Physics Laboratory, June 26-28, 1990.
186. T. Christou, R. T. Loda, and D. A. Levin, "Simulation of Range-Resolved DIAL Measurements on In-flight Rocket Plumes," AIAA Paper No. 91-0461, 29th Aerospace Sciences Meeting, January 7-10, 1991.
187. Christou, R. T. Loda, and D. A. Levin, "LIDAR Feasibility Studies on In-Flight Rocket Plumes," AIAA-90-0138, 28th Aerospace Sciences Meeting, January 1990.
188. D. Levin, R. T. Loda, G. V. Candler, and C. Park, "Theory of Radiation from Low Velocity Heated Air," AIAA-90-0133, 28th Aerospace Sciences Meeting, January 1990.
189. D. Levin, R. J. Collins, and G. V. Candler, "Computations for Support Design Measurements of Radiation from Low Velocity Shock Heated Air," AIAA-90-0132, 28th Aerospace Sciences Meeting, January 1990.

190. R. T. Loda, D. A. Levin, and R. J. Collins, "Analysis of Laser Diagnostics in Plumes," SPIE Paper at the Los Angeles SPIE Meeting, Vol. 1062, January 1989.
191. D. Levin, R. T. Loda, and R. J. Collins, "Instrumentation Considerations for a Bow Shock Radiation Experiment," SPIE Paper Los Angeles Meeting, Vol. 1059, January 1989.

SERVICE TO THE PROFESSION AND GOVERNMENT

Service to Government:

1. Participant in Reentry Emissions Signatures II – Modeling of High Altitude Emissions, NASA Ames Research Center, July 2006.
2. Participant, Phase 1 MKV (Miniatuirzed Kinetic Vehicle) Review, Missile Defense Agency, March 2006.
3. Participant in Stardust Observation Campaign Readiness Review, NASA/Ames Research Center, December 2005
4. Bow Shock Ultraviolet Flight/Strypi/Skipper/DEBI Science Team co-leader, Ballistic Missile Defense Organization (BMDO), January 1992-June 2005.
5. Participant Project Hercules Reentry EO/IR workshop, Missile Defense Agency, September 2005
6. Key Study Scientist Team member in the Jet Propulsion Laboratory's New Millennium Program's Space Technology 7 (ST7) system validation flight experiment program's pre-phase A study team for Aerocapture, January 18, 2001.
7. Participant of the UV/IR Dual-Mode Sensor Concept Feasibility Working Group, BMDO U.S. – Israel Data Exchange Agreement on Phenomenology, January 1996- May 1998.

Outreach

1. Associate Editor, Journal of Thermophysics and Heat Transfer, January 2007 - present
   Chair of External review committee for Graduate Programs in Aerospace Engineering, Texas A&M University, October 2011
2. Chair and Editor of the 27th International Symposium on Rarefied Gas Dynamics, July 11-16, 2010, Asilomar conference Grounds, CA
   Consulting for Expert Project, July 2004, Alta S.P.A., Pisa, Italy, January 2004 - December 2004
3. Local Organizing Committee and session chair for the 2002 International Symposium of Rarefied Gas Dynamics Meeting, Whistler, Canada

Reviewer of Journal Papers: AIAA Journal, Journal of Fluid Mechanics, Physics of Fluids, Journal of Geophysical Research-Planets, Journal of Spacecraft and Rockets, Journal of Power and Propulsion, Journal of Thermophysics and Heat Transfer, Computers and Fluids, Applied Physical Letters

Proposal Review
National Science Foundation, Division of Chemical and Transport Systems, Directorate

for Engineering, Particulates and Multiphase Processes, May 2006; The Israeli Science Foundation, March 2006; Cooperative Grants Program 2005 of the U.S. Civilian Research and Development Foundation (CRDF), June 2005.

Service to Professional Societies:

1. Session Chair 66th Annual Meeting of the APS Division of Fluid Dynamics, Nov. 2013.
2. Session Chair, AIAA 44th Thermophysics Conference and 44th Plasmadynamics and Lasers Conference, June 2013, San Diego, CA.
3. Session Chair, 43rd AIAA Plasmadynamics and Lasers Conference, June, 2012
4. Session Chair, 50th AIAA Aerospace Sciences Meeting, January, 2012
5. Session Chair, 42nd AIAA Plasmadynamics and Lasers Conference, June, 2011
6. Session Chair, 49th AIAA Aerospace Sciences Meeting, January, 2011
7. Chair and organizer, International Symposium on Rarefied Gas Dynamics, Asilomar, CA, co-sponsored with AIAA, July 10-15, 2010
8. Session Chair, 48th AIAA Aerospace Sciences Meeting, January 2010
9. Chair of Plasmadynamics and Lasers Technical Committee, April 2007- March 2009
10. Session Chair, 45th AIAA Aerospace Sciences Meeting, January 2007
11. Session Chair, 34th AIAA Plasmadynamics and Lasers Conference, June 2003
12. Session Chair, 35th AIAA Thermophysics Conference, June 2001
13. Session Organizer, AIAA 39th Aerospace Sciences Meeting, January 2001
14. Session Chair 31st AIAA Plasmadynamics and Lasers Conference, June 2000
15. Session Chair AIAA 38th Aerospace Sciences Mtg., January 2000
16. Session Chair 23rd AIAA Thermophysics Conference, June 1999
17. Organizer and Chair of the Plasmadynamics and Lasers Technical Committee Sessions for the AIAA 36th Aerospace Sciences Meeting, January 1998.
18. Member of Plasmadynamics and Lasers Technical Committee, Jan. 1997 – present

Professional Society Memberships: AIAA Fellow as of January 2014, AIAA Associate Fellow, January 2004 – present, AIAA Senior Member AIAA Senior Member June 1990 - December 2003, APS member, September 2013 – present.

SERVICE TO PENN STATE UNIVERSITY

1. Department
   1. Member Aerospace Engineering Faculty Search Committee
      January 2013 - July 2013
   2. Advisor Co-op advisor for Aerospace Engineering Co-op advisor for Aerospace Engineering, August 2012 - August 2013
   3. Member Graduate Studies Committee
      July 2010 – Present

4. Editor Departmental Yearly Newsletter
   July 2009 - June 2010
5. Committee Chair Facilities Committee
   August 2008 - August 2009
6. Member Promotion & Tenure Committee
   August 2008 - August 2009
7. Newsletter Editor Department Newsletter Committee
   August 2007 - June 2008
8. Member Promotion & Tenure Committee
   August 2004 - August 2005
9. Newsletter Editor Department's yearly newsletter
   August 2004 - June 2006
10. Member Graduate Studies Committee Fall 2002 – 2005
11. Member Undergraduate Studies Committee 2000 - 2001

2. College
   1. Member Promotion and Tenure Committee (2 yr term), July 2009 - June 2011
   2. Advisor FTCAP August 2009 - August 2009
   3. Participant WEP 2007 Career Development Dinner and Orientation sponsored by the COE, Cooperative Education & Professional Internship Program
      August 2008 - August 2008
   4. Member LionSat Proposal and Nano-Sat student project January 2003 to present
      January 2003 - April 2006

3. University
   1. Participant and committee member RA10 investigation committee, committee chair Prof. L. Pauley, ME, November 2007.
   2. Committee member graduate council, academic standards, September 2006 - June 2007
   3. Judge twentieth annual graduate exhibition March 20, 2005
   4. Member ad hoc committee on masters degrees, January - December 2005
   5. Member, committee on Program & Courses Graduate Council, September 2003 - December 2006
   6. Judge eighteenth annual graduate exhibition March 30, 2003
   7. Faculty Affairs committee member, University Faculty Senate, January 2003 - December 2006