

David Leon Carroll

2120 S. Vine St.
Urbana, Illinois 61801
Home Phone: 217-954-0308
Office Phone: 217-239-1703
e-mail: carroll@cuaerospace.com

PERSONAL DATA U. S. Citizen, born 10/12/63, single.

EDUCATION

The University of Illinois at Urbana-Champaign
Ph.D. Aeronautical and Astronautical Engineering - May 1992, 5.0/5.0.
Dissertation: "Experimental and Theoretical Study of cw HF Chemical Laser Overtone Performance."
Advisor: Professor L. H. Sentman

The University of Illinois at Urbana-Champaign
M.S. Aeronautical and Astronautical Engineering - August 1986, 5.0/5.0.
Thesis: "Scale Effects in a cw HF Chemical Laser."
Advisor: Professor L. H. Sentman

The University of Illinois at Urbana-Champaign
B.S. Aeronautical and Astronautical Engineering - May 1985, 4.59/5.0.

APPOINTMENTS

2011 – Present President, CU Aerospace
2011 – Present Visiting Professor, Univ. of Illinois at Urbana-Champaign
2011 – Present COO, ATSP Materials LLC
2011 Visiting Lecturer, Univ. of Illinois at Urbana-Champaign
2009 – 2011 Vice President and COO, CU Aerospace
2003 – 2010 Visiting Research Associate, Univ. of Illinois at Urbana-Champaign
1998 – 2009 Engineering Director, Treasurer, and Co-Founder, CU Aerospace
2007 – 2009 Board of Directors and Interim COO, Autonomic Materials Inc.
2005 – 2007 Treasurer and Secretary and Co-Founder, Autonomic Materials Inc.
2001 Adjunct Lecturer, Univ. of Illinois at Urbana-Champaign
1996 – 2000 Research Scientist, Univ. of Illinois at Urbana-Champaign
1992 – 1996 Postdoctoral Research Associate, Univ. of Illinois at Urbana-Champaign
1988 – 1992 Research Assistant, Univ. of Illinois at Urbana-Champaign
1987 – 1988 Member of Technical Staff, TRW
1985 – 1986 Research Assistant, Univ. of Illinois at Urbana-Champaign

PUBLICATIONS

Journal Papers

1. J.D. Hewitt, T.J. Houlahan, J.E. Gallagher, D.L. Carroll, A.D. Palla, J.T. Verdeyen, G.P. Perram, and J.G. Eden, "Role of excited state photoionization in the 852.1 nm Cs laser pumped by Cs-Ar photoassociation," *Appl. Phys. Lett.*, Vol. 102, 111104 (2013).
2. D.L. Carroll and J.T. Verdeyen, "A simple equilibrium theoretical model and predictions for a continuous wave exciplex pumped alkali laser," *J. Phys. B: Atomic, Mol. And Opt. Phys.*, Vol. 46, 025402 (2013).

3. G.F. Benavides, B.S. Woodard, J.W. Zimmerman, A.D. Palla, M.T. Day, D.M. King, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Superlinear Enhancement of Discharge Driven Electric Oxygen-Iodine Laser by Increasing g_0L ," *IEEE J. Quant. Electronics*, Vol. 48 (6) 741-753 (2012).
4. G.F. Benavides, J.W. Zimmerman, B.S. Woodard, M.T. Day, D.M. King, D.L. Carroll, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Discharge-driven electric oxygen-iodine laser superlinear enhancement via increasing g_0L ," *Optics Letters*, Vol. 37 (9) 1409-1411 (2012).
5. B. Woo, K.M. Ertmer, V.L. Coverstone, R.L. Burton, G.F. Benavides, and D.L. Carroll, "Deployment Experiment for Ultralarge Solar Sail System (UltraSail)," *J. Spacecraft and Rockets*, Vol. 48 (5) 874-880 (2011).
6. A. Pukniel, V. Coverstone, R. Burton, and D. Carroll, "The dynamics and control of the CubeSail mission: A solar sailing demonstration," *J. Adv. Space Res.*, Vol. 48, 1902-1910 (2011).
7. D.M. King, D.L. Carroll, T.H. Field, J.K. Laystrom-Woodard, R.J. Driscoll, L.H. Sentman, A.M. Ragheb, G.S. Elliott, and W.C. Solomon, "Performance of a Multi-Stream Injection COIL with Starlet Ejectors," *AIAA Journal*, Vol. 49 (4), 1808-1815 (2011).
8. A.D. Palla, D.L. Carroll, J.T. Verdeyen, and M.C. Heaven, "High-fidelity modelling of an exciplex pumped alkali laser with radiative transport," *J. Phys. B: Atomic, Mol. And Opt. Phys.*, Vol. 44, 135402 (2011).
9. P. Vorobieff, C.R. Truman, A.M. Ragheb, G.S. Elliott, J.K. Laystrom-Woodard, D.M. King, D.L. Carroll, and W.C. Solomon, "Mixing enhancement in a multi-stream injection nozzle," *Exp. Fluids*, **51**, 711-722, doi:10.1007/s00348-011-1090-6 (2011).
10. B.S. Woodard, M.T. Day, J.W. Zimmerman, G.F. Benavides, A.D. Palla, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "The influence of radio-frequency discharge geometry on $O_2(a^1\Delta)$ production," *J. Phys. D: Appl. Phys.*, Vol. 44, 115102 (2011).
11. J.D. Readle, J.G. Eden, J.T. Verdeyen, and D.L. Carroll, "Four Level, Atomic Cs Laser at 852.1 nm with a Quantum Efficiency Above 98%: Observation of Three Body Photoassociation," *Applied Physics Letters*, Vol. 97, 021104 (2010).
12. B.S. Woodard, G.F. Benavides, J.W. Zimmerman, D.L. Carroll, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "Enhancement of electric oxygen-iodine laser performance using larger mode volume resonators," *Optics Letters*, Vol. 35, No. 10, 1611-1613 (2010).
13. B.S. Woodard, J.W. Zimmerman, G.F. Benavides, D.L. Carroll, J.T. Verdeyen, A.D. Palla, T.H. Field, W.C. Solomon, S. Lee, W.T. Rawlins, and S.J. Davis, "Demonstration of an iodine laser pumped by an air-helium electric discharge," *J. Phys. D: Appl. Phys.*, Vol. 43, 025208 (2010).
14. J.W. Zimmerman, G.F. Benavides, B.S. Woodard, D.L. Carroll, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Measurements of Improved Electric OIL Performance, Gain, and Laser Power," *J. of Directed Energy*, Vol. 3 (3), 257-275 (2009).
15. G.F. Benavides, J.W. Zimmerman, B.S. Woodard, D.L. Carroll, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "Enhancement of electric oxygen-iodine laser performance using a rectangular discharge and longer gain length," *Applied Physics Letters*, Vol. 95, 221112 (2009).
16. D.L. Carroll and J.T. Verdeyen, "Effects of including a diffraction term into Rigrod theory for a continuous-wave laser," *Applied Optics*, Vol. 48, No. 31, 6035-6043 (2009).
17. J.D. Readle, C.J. Wagner, J.T. Verdeyen, T.M. Spinka, D.L. Carroll, and J.G. Eden, "Pumping of atomic alkali lasers by photoexcitation of a resonance line blue satellite and alkali-rare gas excimer dissociation," *Applied Physics Letters*, Vol. 94, 251112 (2009).
18. J.W. Zimmerman, G.F. Benavides, A.D. Palla, B.S. Woodard, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Gain recovery in an electric oxygen-iodine laser," *Applied Physics Letters*, Vol. 94, 021109 (2009).
19. J.D. Readle, C.J. Wagner, J.T. Verdeyen, D.L. Carroll, and J.G. Eden, "Lasing in Cs at 894.3 nm pumped by the dissociation of CsAr excimers," *Electronics Letters*, Vol. 44, No. 25, pp. 1466-1467 (2008).
20. G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, D.L. Carroll, J.T. Verdeyen, D.M. King, J.K. Laystrom, T.H. Field, and W.C. Solomon, "Hybrid Electric Oxygen-Iodine Laser Performance Enhancements and Measurements," *J. of Directed Energy*, Vol. 3 (1), pp. 80-96 (2008).

21. J.W. Zimmerman, B.S. Woodard, J.T. Verdeyen, D.L. Carroll, T.H. Field, G.F. Benavides, and W.C. Solomon, "Influence of frequency of $O_2(a^1\Delta)$ and oxygen atom production in transverse radio-frequency discharges," *J. Phys. D: Appl. Phys.*, Vol. 41, 195209 (2008).
22. B.S. Woodard, J.W. Zimmerman, G.F. Benavides, D.L. Carroll, J.T. Verdeyen, T.H. Field, W.C. Solomon, S.J. Davis, W.T. Rawlins, and S. Lee, "Gain and continuous-wave laser oscillation on the 1315 nm atomic iodine transition pumped by an Air-Helium electric discharge," *Applied Physics Letters*, Vol. 93, 021104 (2008).
23. J.W. Zimmerman, B.S. Woodard, G.F. Benavides, D.L. Carroll, J.T. Verdeyen, A.D. Palla, T.H. Field, and W.C. Solomon, "Gain and continuous-wave laser power enhancement with a multiple discharge electric oxygen-iodine discharge," *Applied Physics Letters*, Vol. 92, 241115 (2008).
24. G.F. Benavides, J.W. Zimmerman, B.S. Woodard, D.L. Carroll, J.T. Verdeyen, T.H. Field, A.D. Palla, and W.C. Solomon, "Gain and continuous-wave laser power enhancement with a secondary discharge to pre-dissociate molecular iodine in an electric oxygen-iodine laser," *Applied Physics Letters*, Vol. 92, 041116 (2008).
25. A.D. Palla, J.W. Zimmerman, B.S. Woodard, D.L. Carroll, J.T. Verdeyen, T.C. Lim, and W.C. Solomon, "Oxygen discharge and post-discharge kinetics experiments and modeling for the electric oxygen-iodine laser system," *J. Phys. Chem. A*, Vol. 111, pp. 6713-6721 (2007).
26. G.H. Miley, N. Luo, J. Mather, R. Burton, G. Hawkins, L. Gu, E. Byrd, R. Gimlin, Pr.J. Shrestha, G. Benavides, J. Laystrom, and D. Carroll, "Direct $NaBH_4/H_2O_2$ fuel cells," *Journal of Power Sources*, Vol. 165, pp. 509-516 (2007).
27. A.D. Palla, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Effects of mixing on postdischarge modeling of electric oxygen-iodine laser experiments," *Journal of Applied Physics*, Vol. 100, 023117 (2006).
28. J.T. Verdeyen, D.L. Carroll, D.M. King, J. Laystrom, G. Benavides, J. Zimmerman, B. Woodard, and W.C. Solomon, "Continuous-wave laser oscillation in subsonic flow on the 1315 nm atomic iodine transition pumped by electric discharge produced $O_2(^1\Delta)$," *Applied Physics Letters*, Vol. 89, 101115 (2006).
29. D.L. Carroll, J.T. Verdeyen, D.M. King, J. Zimmerman, J. Laystrom, B. Woodard, G. Benavides, N. Richardson, K. Kittell, and W.C. Solomon, "Studies of CW laser oscillation on the 1315 nm transition of atomic iodine pumped by $O_2(^1\Delta)$ produced in an electric discharge," *IEEE Journal of Quantum Electronics*, Vol. 41, No. 10, Oct. 2005, pp. 1309-1318.
30. A.S. Kovalev, D.V. Lopaev, Yu.A. Mankelevich, N.A. Popov, T.V. Rakhimova, A.Yu. Poroykov, and D.L. Carroll, "Kinetics of $O_2(b^1\Sigma_g^+)$ in oxygen RF discharges," *J. Phys. D: Appl. Phys.*, Vol. 38, pp. 2360-2370 (2005).
31. D.L. Carroll, J.T. Verdeyen, D.M. King, J. Zimmerman, J. Laystrom, B. Woodard, G. Benavides, K. Kittell, D.S. Stafford, M.J. Kushner, and W.C. Solomon, "Continuous-wave laser oscillation on the 1315 nm transition of atomic iodine pumped by $O_2(^1\Delta)$ produced in an electric discharge," *Applied Physics Letters*, Vol. 86, 111104 (2005).
32. D.L. Carroll, J.T. Verdeyen, D.M. King, J. Zimmerman, J. Laystrom, B. Woodard, G. Benavides, K. Kittell, and W.C. Solomon, "Path to the measurement of positive gain on the 1315 nm transition of atomic iodine pumped by $O_2(^1\Delta)$ produced in an electric discharge," *IEEE Journal of Quantum Electronics*, Vol. 41, No. 2, Feb. 2005, pp. 213-223.
33. D.L. Carroll, J.T. Verdeyen, D.M. King, J. Zimmerman, J. Laystrom, B. Woodard, N. Richardson, K. Kittell, M.J. Kushner, and W.C. Solomon, "Measurement of positive gain on the 1315 nm transition of atomic iodine pumped by $O_2(^1\Delta)$ produced in an electric discharge," *Applied Physics Letters*, Vol. 85, No. 8, pp. 1320-1322 (2004).
34. D.L. Carroll, J.T. Verdeyen, D.M. King, B. Woodard, L. Skorski, J. Zimmerman, and W.C. Solomon, "Modeling of the ElectriCOIL System," *IEEE Journal of Quantum Electronics*, Vol. 39, No. 9, Sep. 2003, pp. 1150-1159.

35. D.L. Carroll, D.M. King, L. Fockler, D. Stromberg, W.C. Solomon, L.H. Sentman, and C.H. Fisher, "High-Performance Chemical Oxygen-Iodine Laser using Nitrogen Diluent for Commercial Applications," *IEEE Journal of Quantum Electronics*, Vol. 36, No. 1, Jan. 2000, pp. 40-51.
36. A. Kar, D.L. Carroll, W.P. Latham, and J.A. Rothenflue, "Cutting performance of a chemical oxygen-iodine laser on aerospace and industrial materials," *Journal of Laser Applications*, Vol. 11, No. 3, June 1999, pp. 119-127.
37. G. Yang, L.E. Reinstein, S. Pai, Z. Xu, D.L. Carroll, "A New Genetic Algorithm Technique in Optimization of Prostate Implants", *Medical Physics*, Vol. 25, No. 12, December 1998, pp. 2308-2315.
38. D.L. Carroll and J.A. Rothenflue, "Experimental study of cutting thick aluminum and steel with a chemical oxygen-iodine laser using an N₂ or O₂ gas assist," *Journal of Laser Applications*, Vol. 9, No. 3, June 1997, pp. 119-128.
39. P.T. Theodoropoulos, L.H.Sentman, D.L.Carroll, R.E. Waldo, S.J. Gordon, and J.W. Otto, "Continuous Wave Hydrogen Fluoride Overtone Lasing Saturation Effects on Fundamental Gain Suppression," *AIAA Journal*, Vol. 34, No. 6, June 1996, pp. 1216-1223.
40. D.L. Carroll, "Chemical Laser Modeling with Genetic Algorithms," *AIAA Journal*, Vol. 34, No. 2, February 1996, pp. 338-346.
41. D.L. Carroll, "Modeling High-Pressure Chemical Oxygen-Iodine Lasers," *AIAA Journal*, Vol. 33, No. 8, August 1995, pp. 1454-1462.
42. D. L. Carroll, "The effects of a non-homogeneous gain saturation law on predicted performance of a high-gain and a low-gain laser system," *Applied Optics*, Vol. 33, No. 9, March 1994, pp. 1673-1681.
43. R.E. Waldo, L.H. Sentman, P.T. Theodoropoulos, and D.L. Carroll, "HF Chemical Laser Multiple Pass Amplifier Performance," *AIAA Journal*, Vol. 32, No. 1, January 1994, pp. 130-136.
44. D.L. Carroll and L.H. Sentman, "Maximizing output power of a low-gain laser system," *Applied Optics*, Vol. 32, No. 21, July 1993, pp. 3930-3941.
45. D.L. Carroll, L.H. Sentman, P.T. Theodoropoulos, R.E. Waldo and S. J. Gordon, "Experimental Study of Continuous Wave Hydrogen-Fluoride Chemical Laser Overtone Performance," *AIAA Journal*, Vol. 31, No. 4, April 1993, pp. 693-700.
46. D.L. Carroll, R. Johnson, S.J. Pfeifer and R.H. Moyer, "Experimental investigations of stimulated Brillouin scattering beam combination," *Journal of the Optical Society of America-B*, Vol. 9, No. 12, Dec. 1992, pp. 2214-2224.
47. L.H. Sentman, R.E. Waldo, P.T. Theodoropoulos, T.X. Nguyen and D.L. Carroll, "HF Chemical Laser Amplifier Performance: Experiment," *AIAA Journal*, Vol. 30, No. 1, Jan. 1992, pp. 138-144.

Articles

1. G. Emanuel, E. Jumper, W.J. Burke and D.L. Carroll, "The Year in Review: Plasmadynamics and Lasers," *Aerospace America*, Dec. 1996, p.19. Correction to article, *Aerospace America*, Feb. 1997, p. 8.

Conference Papers

1. D.L. Carroll, A.D. Palla, and J.T. Verdeyen, "Exciplex Pumped Alkali Laser (XPAL) Theory and Modeling," *XIX International Symposium on high Power Laser Systems and Applications*, Istanbul, Turkey, 10-13 Sept. 2012, SPIE Vol. 8677, 86770J (2013).
2. D.L. Carroll, B.S. Woodard, G.F. Benavides, J.W. Zimmerman, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Super-linear Enhancement of the Electric Oxygen-Iodine Laser," *XIX International Symposium on high Power Laser Systems and Applications*, Istanbul, Turkey, 10-13 Sept. 2012, SPIE Vol. 8677, 867702 (2013). (Invited Paper)
3. D.L. Carroll, J.W. Zimmerman, B.S. Woodard, G.F. Benavides, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Advanced Gas Laser Experiments and Modeling," *AIAA Paper 2012-3087* (2012).
4. D.L. Carroll and J.T. Verdeyen, "XPAL theory and predictions," *SPIE Vol. 8238, 823804* (2012).
5. D.L. Carroll, G.F. Benavides, B.S. Woodard, J.W. Zimmerman, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "ElectricOIL Performance Enhancement via Increases in goL," *SPIE Vol. 8238, 823803* (2012). This was an invited paper.

6. D.L. Carroll, "Overview of High Energy Lasers: Past, Present, and Future?" AIAA Paper 2011-3102 (2011). This was an invited paper.
7. A.D. Palla, D.L. Carroll, and W.C. Solomon, "Modeling of a Multi-Stream Injection COIL with Starlet Ejectors," AIAA Paper 2011-4006 (2011).
8. D.L. Carroll, G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "Recent electric oxygen-iodine laser experiments and modeling," *LASE 2011 Conference*, San Francisco, California, 23 January 2011, SPIE Vol. 7915, 7915-01 (2011). This was an invited paper.
9. A.D. Palla, D.L. Carroll, J.T. Verdeyen, and M.C. Heaven, "XPAL modeling and theory," *LASE 2011 Conference*, San Francisco, California, 23 January 2011, SPIE Vol. 7915, 7915-10 (2011).
10. D.L. Carroll, "Scientific Contributions of Lee H. Sentman III," AIAA Paper 2011-1137 (2011). This was an invited paper.
11. D.L. Carroll, G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "Evolution of the electric discharge oxygen-iodine laser," Proceedings of the XVIII International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Sofia, Bulgaria, 29 Aug. – 3 Sept. 2010, SPIE Vol. 7751, 775108 (2010).
12. A.D. Palla, J.T. Verdeyen, and D.L. Carroll, "Exciplex pumped alkali laser (XPAL) modeling and theory," Proceedings of the XVIII International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Sofia, Bulgaria, 29 Aug. – 3 Sept. 2010, SPIE Vol. 7751, 77510F (2010).
13. M. de Chadenedes, J.K. Yoon, H. Sitaraman, S. Garrett, L.L. Raja, J.G. Eden, S-J Park, J. Laystrom-Woodard, D.L. Carroll, and R.L. Burton, "Advances in Microcavity Discharge Thruster Technology," AIAA Paper 2010-6616, 46th AIAA/ASME/SAE/ASEE Joint Propulsion Conf., Nashville, TN, 2010.
14. J.W. Zimmerman, G.F. Benavides, B.S. Woodard, M.T. Day, A.D. Palla, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Performance Enhancement of the Electric Oxygen-Iodine Laser using a Rectangular Discharge and Longer Gain Length," AIAA Paper 2010-5038, 2010.
15. B.S. Woodard, J.W. Zimmerman, G.F. Benavides, M.T. Day, A.D. Palla, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Investigation of the Production of $O_2(a^1\Delta)$ in Rectangular and Multi-Tube Radio-Frequency Discharges," AIAA Paper 2010-5040, 2010.
16. A.D. Palla, J.W. Zimmerman, B.S. Woodard, D.L. Carroll, G.F. Benavides, J.T. Verdeyen, and W.C. Solomon, "Modeling of Recent Electric Oxygen-Iodine Laser Discharges and Configurations," AIAA Paper 2010-5041, 2010.
17. D.M. King, T.H. Field, D.L. Carroll, J.K. Laystrom-Woodard, R.J. Driscoll, L.H. Sentman, A.M. Ragheb, G.S. Elliott, and W.C. Solomon, "Performance of a Multi-Stream Injection COIL with Starlet Ejectors," AIAA Paper 2010-4754, 2010.
18. A.M. Ragheb, G.S. Elliott, J.K. Laystrom-Woodard, D.M. King, D.L. Carroll, and W.C. Solomon, "Low Pressure Schlieren Imaging of a Multi-Stream Injection Nozzle," AIAA Paper 2010-4756, 2010.
19. A.D. Palla, D.L. Carroll, J.T. Verdeyen, and M.C. Heaven, "Modeling of the XPAL System," AIAA Paper 2010-4878, 2010.
20. R. Burton, J.G. Eden, S.-J. Park, M.L. de Chadenedes, S. Garrett, L. Raja, H. Sitaraman, J. Laystrom-Woodard, G. Benavides, and D. Carroll, "Development of the MCD Thruster for Nanosat Propulsion," JANNAF Conference, Colorado Springs, CO, 3 – 7 May 2010.
21. R. Burton, V. Coverstone, G. Swenson, J. Laystrom-Woodard, A. Pukniel, A. Gosh, A. Moctezuma, G. Benavides, and D. Carroll, "Initial Development of the CubeSail/UltraSail Spacecraft," JANNAF Conference, Colorado Springs, CO, 3 – 7 May 2010.
22. D.L. Carroll, G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, M.T. Day, J.T. Verdeyen, and W.C. Solomon, "Enhanced performance of an electric oxygen-iodine laser," *LASE 2010 Conference*, San Francisco, California, 25-28 January 2010, SPIE Vol. 7581, 7581-01 (2010).
23. A.D. Palla, D.L. Carroll, J.T. Verdeyen, J.D. Readle, T.M. Spinka, C.J. Wagner, J.G. Eden, and M.C. Heaven, "Multi-Dimensional Modeling of the XPAL System," *LASE 2010 Conference*, San Francisco, California, 25-28 January 2010, SPIE Vol. 7581, 7581-20 (2010).

24. J.D. Readle, C.J. Wagner, J.T. Verdeyen, T.M. Spinka, D.L. Carroll, and J.G. Eden, "Excimer-pumped alkali vapor lasers: A new class of photoassociation lasers," *LASE 2010 Conference*, San Francisco, California, 25-28 January 2010, SPIE Vol. 7581, 7581-19 (2010).
25. A.M. Ragheb, G.S. Elliott, J.K. Laystrom-Woodard, D.M. King, D.L. Carroll, and W.C. Solomon, "Low Pressure PLIF Visualization and Mixing Quantification in a Multi-Stream Injection Nozzle," AIAA Paper 2010-1439, AIAA 48th Aerospace Sciences Meeting, Orlando, FL, 4-7 January 2010.
26. D.L. Carroll, G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Systematic Technology Development of the Electric Oxygen-Iodine Laser (ElectricOIL)," presented at the 12th Annual Directed Energy Symposium, San Antonio, TX, 2-6 Nov. 2009.
27. R.L. Burton, J.G. Eden, S-J Park, J.K. Yoon, M. de Chadenedes, S. Garrett, L.L. Raja, H. Sitaraman, J. Laystrom-Woodard, G.F. Benavides, and D.L. Carroll, "Initial Development of the Microcavity Discharge Thruster," IEPC Paper 2009-169, 31st International Electric Propulsion Conference, Univ. of Michigan, Ann Arbor, MI, 20-24 Sept. 2009.
28. J.W. Zimmerman, G.F. Benavides, B.S. Woodard, D.L. Carroll, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Measurements of Improved ElectricOIL Performance, Gain, and Laser Power," AIAA Paper 2009-4059, AIAA 40th Plasma Dynamics and Lasers Conference, San Antonio, TX, 22-25 June 2009.
29. G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, D.L. Carroll, J.T. Verdeyen, and W.C. Solomon, "Spatial and recovery measurements of gain in an electric oxygen-iodine laser," *LASE 2009 Conference*, San Jose, California, 26-27 January 2009, SPIE Vol. 7196, pp. 719603-1-10 (2009).
30. B.S. Woodard, J.W. Zimmerman, G.F. Benavides, D.L. Carroll, J.T. Verdeyen, A.D. Palla, T.H. Field, W.C. Solomon, S. Lee, W.T. Rawlins, and S.J. Davis, "Demonstration of an iodine laser pumped by an air-helium electric discharge," *LASE 2009 Conference*, San Jose, California, 26-27 January 2009, SPIE Vol. 7196, pp. 719606-1-12 (2009).
31. J.D. Readle, C.J. Wagner, J.T. Verdeyen, D.L. Carroll, and J.G. Eden, "Lasing in alkali atoms pumped by the dissociation of alkali-rare gas exciplexes (excimers)," *LASE 2009 Conference*, San Jose, California, 26-27 January 2009, SPIE Vol. 7196, pp. 71960D-1-8 (2009).
32. D.L. Carroll, G.F. Benavides, J.W. Zimmerman, B.S. Woodard, A.D. Palla, J.T. Verdeyen, and W.C. Solomon, "Systematic development of the electric discharge oxygen-iodine laser," Proceedings of the XVII International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Lisbon, Portugal, 15 – 19 September 2008, The International Society for Optical Engineering, Vol. 7131, pp. 71310B-1-8 (2009).
33. D.L. Carroll, J.T. Verdeyen, G.F. Benavides, A.D. Palla, T.H. Field, J.W. Zimmerman, B.S. Woodard, and W.C. Solomon, "Measurements of Improved Hybrid ElectricOIL Discharge Performance, Gain, and Laser Power," AIAA Paper 2008-4008, AIAA 39th Plasma Dynamics and Lasers Conference, Seattle, WA, 23-26 June 2008.
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AWARDS

- Fellow, American Institute of Aeronautics and Astronautics (AIAA), 2011.
- Outstanding Recent Alumnus Award, Department of Aeronautical and Astronautical Engineering, University of Illinois at Urbana-Champaign, 2003.
- AIAA 36th Plasmadynamics and Lasers Best Paper Award, "Simulation of Time-Dependent Oscillations in a CW HF Chemical Laser Confocal Unstable Resonator," June 2005.
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INVITED LECTURES / SEMINARS

1. "Super-linear Enhancement of the Electric Oxygen-Iodine Laser," *XIX International Symposium on high Power Laser Systems and Applications*, Istanbul, Turkey, 10 Sept. 2012.
2. "Overview of High Energy Lasers: Past, Present, and Future?" AIAA 42nd Plasmadynamics and Lasers Conference, Waikiki Beach, HI, 27 June 2011.
3. "Is Technology Entrepreneurship for You?" Invention to Venture Symposium, University of Illinois at Urbana-Champaign, Urbana, IL, 26 February 2011.
4. "Recent electric oxygen-iodine laser experiments and modeling," *LASE 2011 Conference*, San Francisco, California, 23 January 2011.
5. "The Scientific Contributions of Lee H. Sentman III" AIAA Aerospace Sciences Meeting, Orlando, FL, 6 January 2011.
6. "CU Aerospace: An Aerospace Research and Development Company," Illinois Space Society Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, 29 March 2010.
7. "Development of the Electrically Pumped Oxygen-Iodine Laser," Aerospace Engineering Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL, 2 October 2006.
8. "Development of the Electric Discharge Oxygen-Iodine Laser," Invited paper presented at the XVI International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Gmunden, Austria, 4-8 September 2006.
9. "Electric Discharge Oxygen-Iodine Laser," N.G. Basov Quantum Physics Seminar Series, Lebedev Physics Institute, Russian Academy of Sciences, Moscow, Russia, 20 May 2005.
10. "Recent Work on the Development of an Electric Discharge Oxygen Iodine Laser," Invited paper presented at the XIV International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Wroclaw, Poland, 26-30 August 2002.
11. "Experimental study of cutting thick aluminum and steel with a chemical oxygen-iodine laser using an N₂ or O₂ gas assist," Invited paper presented at the XI International Symposium on Gas Flow and Chemical Lasers and High Power Laser Conference, Edinburgh, UK, 25-30 August 1996.
12. "Chemical Laser Modeling with Genetic Algorithms," Aeronautical and Astronautical Engineering Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL, 12 December 1994.
13. "Experimental and Theoretical Studies of Short Wavelength Chemical Laser Performance," Aeronautical and Astronautical Engineering Seminar Series, University of Illinois at Urbana-Champaign, Urbana, IL, 4 April 1994.
14. "Experimental and Theoretical Study of cw HF Overtone Performance," Mechanical and Aerospace Engineering Seminar Series, University of Texas at Austin, Austin, TX, 23 June 1992.

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Applied Physics Letters
 Journal of Quantum Electronics
 Applied Optics
 AIAA Journal
 Optics Express
 Optics Communications
 SPIE Volumes
 Chemical Engineering Science
 AIAA Journal of Guidance, Control and Dynamics
 Encyclopedia of Electrical and Electronics Engineering
 Journal of the Brazilian Chemical Society
 Measurement Science and Technology
 University of Illinois at Urbana-Champaign Campus Research Board

OTHER

Chair, AIAA Plasmadynamics and Lasers Technical Committee, 2011-present
Vice Chair, AIAA Plasmadynamics and Lasers Technical Committee, 2009-2011
AIAA Plasmadynamics and Lasers Technical Committee, 2002-present
36th AIAA Plasmadynamics and Lasers Technical Program Chair, 2005
International Advisory Committee for the International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conf., 2005-present
Program Committee for SPIE High Energy/Average Power Lasers and Applications, Photonics West LASE Conference, 2007-present

ORGANIZATIONS

American Institute of Aeronautics and Astronautics
The International Society for Optical Engineering (SPIE)
IEEE
Tau Beta Pi
Sigma Gamma Tau (Treasurer, Univ. of Illinois Chapter, 1985)
Laser Institute of America
Optical Society of America
National Space Society
United States Tennis Association