

RICHARD B. MILES

Current Activities

Member, Board of Directors, Fannie & John Hertz Foundation, Member, Board of Trustees, Pacific University, Forest Grove OR, Member, Board of Directors, Precision Optics Corporation, Inc., Member (Representative for the AIAA), Elmer A. Sperry Board of Award, Member, Chair, Optical Society of America Ellis R. Lippincott Award Selection Committee, Member, Editorial Board, Laser Physics Letters, Reviewer for Physical Review Letters, Journal of Fluid Mechanics, Optics Letters, Applied Physics Letters, Physics of Fluids.

2007- 2008 Publications

1. Steeves CA, Wadley HNG, Miles RB, et al. A magnetohydrodynamic power panel for space reentry vehicles JOURNAL OF APPLIED MECHANICS-TRANSACTIONS OF THE ASME 74 (1): 57-64 JAN 2007
2. R. B. Miles, Z. Zhang, S.H. Zaidi, M.N. Shneider, "Microwave Scattering from Laser Ionized Molecules: A New Approach to Nonintrusive Diagnostics" AIAA Journal, 54 (3), March 2007, pp 513-515.
3. Z.Zhang, M. N. Shneider and R.B. Miles, "Coherent Microwave Rayleigh Scattering from Resonant Enhanced Multi-photon Ionization in Argon", Physical Review Letters, 98 (26) paper number 265005, June 29, 2007
4. M.N. Shneider, S.O. Macheret, and R.B. Miles, "Electric Charge Buildup in Hypersonic Wind tunnels with Electron Beam Energy Addition", AIAA Journal, 45 (7), July 2007, pp 1556-1561.
5. Likhanskii AV, Shneider MN, Macheret SO, et al. "Modeling of dielectric barrier discharge plasma actuators driven by repetitive nanosecond pulses" PHYSICS OF PLASMAS 14 (7): Art. No. 073501 JUL 2007
6. Musin RR, Shneider MN, Zheltikov AM, et al. "Guiding radar signals by arrays of laser-induced filaments: finite-difference analysis" APPLIED OPTICS 46 (23): 5593-5597 AUG 10 2007
7. Macheret SO, Shneider MN, Miles RB "Optimum performance of electron beam driven magnetohydrodynamic generators for scramjet inlet control" AIAA JOURNAL 45 (9): 2157-2163 SEP 2007
8. Mikhail N. Shneider, Zhili Zhang, and Richard B. Miles, "Plasma induced by resonance enhanced multiphoton ionization in inert gas" J. Appl. Phys. 102, 123103 (2007)
9. A.V. Likhanskii, M.N. Shneider, S.O. Macheret, and R.B. Miles., "Modeling of dielectric barrier discharge plasma actuator in air" JOURNAL OF APPLIED PHYSICS Volume: 103 Issue: 5 Article Number: 053305 Published: MAR 1 2008
10. Opaits DF, Shneider MN, Miles RB, et al., "Surface charge in dielectric barrier discharge plasma actuators," PHYSICS OF PLASMAS Volume: 15 Issue: 7 Article Number: 073505 Published: JUL 2008
11. Shneider MN, Zhang ZL, Miles RB, "Simultaneous resonant enhanced multiphoton ionization and electron avalanche ionization in gas mixtures JOURNAL OF APPLIED PHYSICS Volume: 104 Issue: 2 Article Number: 023302 Published: JUL 15 2008

2007 - 2008 Conference manuscripts

1. C. Kalra, S.Zaidi, B. Aldermen, R. Miles, and Y. Murty, "Magnetically Driven Discharges for Shock-Wave Induced Boundary Layer Control," AIAA-2007-222, 45th AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
2. A. Likhanskii, M. Shneider, S. Macheret and R. Miles, "Optimization of Dielectric Barrier Discharge Plasma Actuators at Atmospheric and Subatmospheric Pressures", AIAA-2007-0633, 45th AIAA-2007-633, AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
3. S. Zaidi and R. Miles, W. Beck, and J. Kline, "Characterization of a Resonance Enhanced NO Imaging Cell," AIAA-2007-873, 45th AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
4. Z. Zhang, M. Shneider and R. Miles, "Microwave Scattering from a Plasma Produced by REMPI in Argon", AIAA-2007-876, 45th AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
5. E. Stockman, S. Zaidi, and R. Miles, "Pulsed Microwave Enhancement of Laminar and Turbulent Hydrocarbon Flames," AIAA-2007-1348, 45th AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
6. B. Pivtorak, M. Shneider, and R. Miles, "Plasma Kinetics in Inert Gas Filled Thermionic Devices," AIAA-2007-1355, 45th AIAA Aerospace Sciences Conference in Reno January 8 – 11, 2007
7. C.S. Kalra, S.H. Zaidi, B.J. Alderman, and R.B. Miles, "Non-Thermal Control of Shock-Wave Induced Boundary Layer Separation using Magneto-Hydrodynamics," AIAA-2007-4138, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.

8. M.N. Shneider, Z. Zhang, and R.B. Miles, "Theory of Plasmas Induced by Resonant Enhanced Multi-Photon Ionization (REMPI) in Inert Gas," AIAA-2007-4381, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.
9. Z. Zhang, M.N. Shneider, S. Zaidi, and R.B. Miles, "Experiments on Microwave Scattering of REMPI in Argon, Xenon and Nitric Oxide," AIAA-2007-4375, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.
10. D.F. Opiats, G. Neretti, A.V. Likhanskii, S. Zaidi, M.N. Shneider, R.B. Miles, and S.O. Macheret, "Experimental Investigation of DBD Plasma Actuators Driven by Repetitive High Voltage Nanosecond Pulses with DC or Low Frequency Sinusoidal Bias," AIAA-2007-4532, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.
11. A.V. Likhanskii, M.N. Shneider, D.F. Opiats, R.B. Miles, and S.O. Macheret, "Numerical Modeling of DBD Plasma Actuators and the Induced Air Flow," AIAA-2007-4533, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.
12. E. Stockman, S. Zaidi, and R.B. Miles, "Hydrocarbon Flame Speed Enhancement with High Power Pulsed Microwaves" AIAA-2007-4601, 38th Plasma Dynamics and Lasers Conference, Miami FL, 25-28 June 2007.
13. E. Stockman, S. Zaidi and R. Miles, Mechanisms of Hydrocarbon Laminar Flame Speed Enhancement with Microwaves AIAA-2008-1364, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan7-10, 2008.
14. Z. Zhang, M. Shneider, S. Zaidi, and R. Miles Temperature Measurement of Flame by RADAR REMPI of Nitric Oxide, AIAA-2008-245, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan7-10, 2008.
15. D. Opiats, G. Neretti, S. Zaidi M. Shneider, and R.B. Miles, A. Likhanskii, and S. Macheret, "DBD Plasma Actuators Driven by a Combination of Low Frequency Bias Voltage and Nanosecond Pulses", AIAA-2008-1372, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan 7-10, 2008.
16. Alexandre V. Likhanskii, Vladimir V. Semak, Mikhail N. Shneider, Dmitry F. Opiats, Richard B. Miles, and Sergey O. Macheret "Parallel code development and numerical investigation of surface charge build-up in DBD plasma actuators". AIAA-2008-1380, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan 7-10, 2008.
17. C. Kalra, S. Zaidi, and R. Miles, "Shockwave Induced Turbulent Boundary Layer Separation Control Using Plasma Actuators", AIAA-2008-1092, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan7-10, 2008.
18. Chiranjeev S. Kalra, Mikhail N. Shneider and Richard B. Miles "Numerical Study of Shockwave Induced Boundary Layer Separation Control Using Plasma Actuators", AIAA-2008-1095, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan 7-10, 2008.
19. K. Timpano and S. Zaidi, Princeton University, Princeton, NJ; C. Steeves, University of California Santa Barbara, Santa Barbara, CA; L. Martinelli, Princeton University, Princeton, NJ; A. Evans, University of California Santa Barbara, Santa Barbara, CA; R. Miles, Princeton University, Princeton, NJ
Design and Test of a Morphing Supersonic Nozzle, AIAA-2008-851, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan7-10, 2008.
20. M. Shneider, Z. Zhang and R. Miles, Simultaneous Resonant Enhanced Multi- Photon Ionization and Electron Avalanche Ionization in Gas Mixtures, AIAA-2008-1107, AIAA Aerospace Sciences Meeting, Reno Nevada, Jan 7-10, 2008.
21. A. Likhanskii and V. Semak, M. Shneider, D. Opiats, R. Miles, and S. Macheret, "Multiprocessor Modeling of DBD Plasma Actuator," AIAA-2008-4284, 38th Fluid Dynamics Conference and Exhibit, Seattle, Washington, June 23-26, 2008
22. C. Kalra, M. Shneider and R. Miles, Effect of Vibrational Mode Excitation of N2 in Plasma Actuators on Shockwave Induced Boundary Layer Separation Control., AIAA-2008-4223, 39th Plasmadynamics and Lasers Conference, Seattle, Washington, June 23-26, 2008 .
23. B. Alderman, P. Howard, M. Shneider, B. Pivtorak, S. Zaidi and R. Miles, "Thermionic Power Conversion for Scramjets and Reentry Vehicles Using Nanosecond Voltage Pulses , " AIAA-2008-4098, 39th Plasmadynamics and Lasers Conference, Seattle, Washington, June 23-26, 2008
24. R. B. Miles, "Seedless Velocimetry in Air by Vibrational Excitation and by Laser Induced Ionization" AIAA-2008-3753, 38th Fluid Dynamics Conference and Exhibit, Seattle, Washington, June 23-26, 2008.
25. M.N. Shneider, Z. Zhang, S.H. Zaidi and R.B. Miles, "Microwave Radar and Radar REMPI Methods for Gas and Gas Flow Diagnostics," International Conference on Methods of Aerophysical Research, ICMAR 2008, June 30-July 6, 2008 Akademgorodok, Novosibirsk Russia.
26. Richard B. Miles, Dmitry Opiats, Mikhail N. Shneider, " Non Thermal Atmospheric Pressure Plasmas for Aeronautic Applications," HAKONE XI Oleron Island September 7-12, 2008

2007- 2008 Invited Talks

- April 7, 2007 "Coherent Microwave Scattering from Resonant Multiphoton Laser Generated Micro Plasmas", Symposium on "Quantum mechanics, informatics, control and quantum materials engineering" .Princeton University.
- April 25, 2007 "Steering High Speed Projectiles with Plasmas", Picatinny Arsenal, NJ
- May 10, 2007 "RADAR REMPI: A New Approach to Detection, Spectroscopy and the Dynamics of Gases for Combustion, Fluid Dynamics and Homeland Defense", CLEO/QELS 2007, Baltimore, Maryland.
- July 16, 2007 "RADAR REMPI for the Detection of Trace Species" TAMU/Princeton Summer School on Quantum Optics and Molecular Physics, Casper WY.
- Aug 12-16, 2007 Radar REMPI for Combustion and Flow Diagnostics, 2007 Gordon Research Conference on Laser Diagnostics, Oxford, UK
- Aug 19-21, 2007 "Applications of RADAR REMPI and Filtered Rayleigh Scattering for Combustion Diagnostics" 1st International SAOT (School in Advanced Optical Technologies) Workshop on Optical Metrology", Erlangen, Germany
- Nov 2, 2007 "RADAR REMPI" The Middleton Meeting on Classical, Semiclassical and Quantum Noise, Princeton NJ
- Feb 8, 2008 "Radar REMPI for Gas Property Measurements and for Trace Molecule Detection," Princeton Plasma Physics Laboratory
- Mar 17, 2008 "Ultra High Sensitivity Detection of NO Photo-fragments by Radar REMPI," LACSEA 2008 meeting, St. Petersburg, Fl
- June 24, 2008 "Seedless Velocimetry in Air by Vibrational Excitation and by Laser Induced Ionization" _AIAA-2008-3753, 38th Fluid Dynamics Conference and Exhibit, Seattle, Washington
- June 30, 2008 "Microwave Radar and Radar-REMPI methods for a gas and gas flow diagnostics," 14th International Conference on the Methods of Aerophysical Research (ICMAR), Novosikersk, Russia (Plenary paper - given by M. Shneider)
- Sept 7, 2008 "Non Thermal Atmospheric Pressure Plasmas for Aeronautic Applications." Hakone XI Conference, Oleron Island, France.