

Publications, Presentations and Patents

Reviewed Journal Publications Published in FY 2007-2008:

“Engineering the collected field for single-molecule orientation determination,” Z. Sikorski and L. M. Davis, *Opt. Express*. 16, pp. 3660-3673, 2008.

“Computational Predictions in Single-Dimensional Laser Machining of Alumina”, Anoop N. Samant and Narendra B. Dahotre, *International Journal of Machine Tools & Manufacture*, May 21, 2008.

“Ab initio Physical Analysis of Single Dimensional Laser Machining of Silicon Nitride”, Anoop N. Samant and Narendra B. Dahotre, *Advanced Engineering Materials*, May 20, 2008.

“Laser Based Biomimetic and Bioactive Coatings”, Sameer R. Paital and Narendra B. Dahotre, *Materials Science and Technology*, February 8, 2008.

“Multiscale Wear of Plasma Sprayed Carbon Nanotube Reinforced Aluminum Oxide-Nanocomposite Coating,” K. Balani, S. Harmikar, A. K. Keshri, Y. Chen, N. B. Dahotre and Arvind Agarwal, *Acta Materialia*, June 26, 2008.

“Computational Approach to Photonic Drilling of Silicon Carbide,” by Anoop N Samant, Claus Daniel, Ron H Chand, Craig A Blue and Narendra B Dahotre, *International Journal of Advanced Manufacturing Technology*, June 6, 2008.

“Laser Melting of Plasma Sprayed Aluminum Oxide Coatings Reinforced with Carbon Nanotubes,” Y. Chen, A. Samant, K. Balani, Narendra B. Dahotre, A. Agarwal, *Applied Physics-A: Materials Science & Processing*, April 17, 2008.

“Rapid Surface Microstructuring of Porous Alumina Ceramic Using Continuous Wave Nd:YAG Laser,” Sandip P Harimkar, Narendra B Dahotre, *Applied Surface Science*, March 19, 2008.

“Fabrication and Evaluation of Pulse Laser Induced Ca- P Coating on a Ti-alloy for Bioapplication,” Sameer R. Paital, Kantesh Balani, Arvind Agarwal, and Narendra B. Dahotre, *Biomedical Materials*, May 22, 2008.

“How keratoconus influences optical performance of the eye,” Y.L. Chen, B. Tan, K. Baker, J.W. L. Lewis, L. Shi, T. Swartz, and M. Wang, *Journal of Vision* 2008, 8; 2(13) 1-10.

“Analysis of High-Order Aberrations in Low-cost Photorefractive,” YL Chen, L Shi, B Tan, J.W.L. Lewis, M Wang, *Invest Ophthalmol Vis Sci* 2008;49 (5): 983.

“Ametroptic Cornea Biometry,” Bo Tan, Ying-Ling Chen, Lei Shi, J. W. L. Lewis, Ming Wang, Pam Hull, *Invest Ophthalmol Vis Sci* 2008;49 (5): 132.

“Simulation of realistic retinoscopic measurement,” Y.-L. Chen, B. Tan, K. Baker, J.W. L. Lewis, and M. Wang, *Optics Express*, 2007, Vol. 15, Issue 5, pp2753-61.

“Optical Impact of Keratoconus Cone: Theoretical Investigation,” K. C. Baker, Y.-L. Chen, J. W. L. Lewis and M. Wang, *Invest Ophthalmol Vis Sci* 2007;48: 1840.

“Detection of High-Order Aberrations in Photorefractive,” J. W. Lewis, Y.-L. A. Chen, K. Baker and M. Wang, *Invest Ophthalmol Vis Sci* 2007;48: 1849.

“Controlled Evolution of Morphology and Microstructure in Laser Interference Structured Zirconia,” Claus Daniel, Beth L. Armstrong, Narendra B. Dahotre, *J. Amer. Ceram. Soc.*, Vol. 91, No. 7, pp. 2138-2142, 2008.

“Process Optimization in Laser Surface Structuring of Alumina,” Anoop N. Samant, Sameer R. Paital and Narendra B. Dahotre, *J. Mater. Proc. Tech.*, No. 203, pp. 498-504, 2008.

“Microindentation Fracture Behavior of Laser Surface Modified Alumina Ceramic,” Sandip P. Harimkar and Narendra B. Dahotre, *Scripta Materialia*, No. 58, pp. 545-548, 2008.

“Effect of Microstructural Evolution on Wettability of Laser Coated Calcium Phosphate on Titanium Alloy,” Anil K. Kurella, Michael Z. Hu, and Narendra B. Dahotre, *Materials Science and Engineering -C: Biomimetic Materials, Sensors and Systems*, Online: MSC-02279, 2008.

“Effect of Laser Surface Treatment on Corrosion and Wear Resistance of ACM720 Mg Alloy,” A. K. Mondal, S. Kumar, C. Blawert and Narendra B. Dahotre, *Surface & Coatings Technology*, Vol. 202, pp. 3187-3198, 2008.

“Multilevel Residual Stress Evaluation in Laser Surface Modified Alumina,” Anoop N. Samant, and Narendra B. Dahotre, *Applied Physics A: Materials Science & Processing*, Vol. 90, pp. 493-499, 2008.

“Laser Surface Processing of Ti6Al4V in Gaseous Nitrogen: Corrosion Performance in Physiological Solution,” Raghuvir Singh, S. Ghosh Chowdhury, S. K. Tiwari and Narendra B. Dahotre, *J. Mater. Sci: Mater. Med.*, Vol. 19, pp. 1363-1369, 2008.

“Influence of Laser Fluence on the Microstructure Evolution and Fractal Dimensions of Laser Surface Modified Alumina Ceramic,” Sandip P. Harimkar and Narendra B. Dahotre, *Materials Characterization*, Vol. 59, pp. 700-707, 2008.

“Laser Beam Operation Mode Dependent Grain Morphology of Alumina,” Anoop N. Samant, Sandip P. Harimkar and Narendra B. Dahotre, *J. Appl. Phys.*, 102, 123105, 2007.

“Laser Surface Treatment for Porous and Textured Ca-P Bio-Ceramic Coating on Ti-6Al-4V,” Sameer R. Paital and Narendra B. Dahotre, *Biomedical Materials*, Vol. 2, pp. 274-281, 2007.

“Laser Surface Cladding of Fe-Cr-Mo-Y-B-C Bulk Metallic Glass on AISI 4041 Steel,” A. Basu, A. N. Samant, S. P. Harimkar, J. Dutta Majumdar, I. Manna, and Narendra B. Dahotre, *Surface and Coatings Technology*, Vol. 202, pp. 2623-2631, 2007.

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“Laser Surface Modifications of Advanced ceramics – A Modeling Approach,” Anoop N. Samant, Sandip P. Harimkar, and Narendra B. Dahotre, *Journal of Minerals, Metals and Materials Society (JOM)*, Vol. 59, No. 8, 2007.

“Validation of Crystallographic Correlation for Faceted Morphology in Laser Surface Engineered Alumina Ceramic,” S.P. Harimkar, C. Daniel, C. Holzapfel, P. Leibenguth, F. Mücklich, and Narendra B. Dahotre, *Scripta Mater*, Vol. 57, Issue 5, pp. 401-404, 2007.

“Gap-dependent chiral coupling in T-shaped gold nanodimers,” M. Kauranen, H. Husu, B. K. Canfield, J. Laukkanen, B. Bai, M. Kuittinen, and J. P. Turunen, *Proc. SPIE* 6988, 69880K, 2008.

“Maximum-likelihood position sensing and actively controlled electrokinetic transport for single-molecule trapping,” L. Davis, Z. Sikorski, W. Robinson, G. Shen, X. Li, B. Canfield, I. Lescano, B. Bomar, W. Hofmeister, J. Germann, J. King, Y. White, and A. Terekhov, *Proc. SPIE* 6862, 68620P, 2008.

“Inhomogeneities in the nonlinear tensorial responses of arrays of gold nanodots,” B. K. Canfield, H. Husu, J. Kontio, J. Viheriälä, T. Rytönen, T. Niemi, E. Chandler, A. Hrin, J. A. Squier, and M. Kauranen, *New J. Phys.* 10, 13001, 2008. Designated IOP Select publication.

“Soluble and Processable Phosphonate Sensing Star Molecularly Imprinted Polymers,” Southard, G. E., Van Houten, K. A and Murray, G. M, *Macromolecules*, 40 (5) 1395-1400, 2007.

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“Temperature distribution in dental tissue after interaction with femtosecond laser pulses,” P. Pike, C. Parigger, R. Splinter, and P. Lockhart, *Appl. Optics* 46, 8374-8378, 2007.

“Spontaneous Emission from the C3 Radical In Carbon Plasma,” L. Nemes, A.M. Keszler, J.O. Hornkohl, C.G. Parigger, H. Michelsen, and V. Stakhursky, *Applied Optics* 46, 4032-4040, 2007.

“Enhanced up-converted fluorescence in Nd-doped fluorozirconate-based glass ceramics,” Bernd Ahrens, Christian Eisenschmidt, Jacqueline A. Johnson, Paul T. Miclea and Stefan Schweizer. *Applied Physics Letters* 92 061905, 2008.

“Paramagnetic hyperfine splitting in the ^{151}Eu Mössbauer spectra of $\text{CaF}_2:\text{Eu}^{2+}$,” J. Selling, B. Bielemeier, G. Wortmann, J.A. Johnson, E.E. Alp, Tsi-tsi Chen, D.E. Brown, C.E. Johnson, and S. Schweizer. *Phys. Rev. B* 77 224442, 2008.

“Light Emission from Rare-Earth Doped Silicon Nanostructures,” J. Li, O.H.Y. Zalloum, T. Roschuk, C. L. Heng, J. Wojcik, and P. Mascher, *Advances in Optical Technologies*, vol. 2008, Article ID 295601, doi:10.1155/2008/295601, 2008.

“On the effects of double-step anneal treatments on light emission from Er-doped Si-rich silicon oxide” Heng, C. L., O. H. Y. Zalloum, J. Wojcik, T. Roschuk, and P. Mascher, *Journal of Applied Physics* 103, 024309 (2008).

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“Local-field effects in the nonlinear optical response of metamaterials,” H. Husu, B. K. Canfield, J. Laukkanen, B. Bai, M. Kuittinen, J. Turunen, and M. Kauranen, *Metamaterials*, 2008.

“Glass Ceramics for High-Resolution Imaging,” Jacqueline A. Johnson, Stefan Schweizer, Alexander Kolesnikov, and Rick Weber. Accepted by Proceedings of ASME International Mechanical Engineering Congress and Exposition, 2008.

“Erbium- and chlorine-doped fluorozirconate-based glasses for up-converted fluorescence,” Bastian Henke, Bernd Ahrens, Paul T. Miclea, Jacqueline A. Johnson, and Stefan Schweizer. Accepted by JNCS, 2008.

“Laser Induced Breakdown Spectroscopy with 10.6 micron Laser Radiation,” C.G. Parigger, J. O. Hornkohl and L. Nemes, in *Biomedical Optics/Digital Holography and Three-Dimensional Imaging/Laser Applications to Chemical, Security and Environmental Analysis on CD-ROM* (The Optical Society of America, Washington, DC, 2008), JMA27.

“Tissue Scaffolding Diagnostics with Femtosecond Laser Radiation,” C. G. Parigger, R. Splinter, P.J Pike, in *Biomedical Optics/Digital Holography and Three-Dimensional*

Imaging/Laser Applications to Chemical, Security and Environmental Analysis on CD-ROM (The Optical Society of America, Washington, DC, 2008), JMA35.

“Time resolved Spectroscopy Measurements of Graphite Ablation with Nd:YAG Laser Radiation,” C.G. Parigger, J.O. Hornkohl, and L. Nemes, in Biomedical Optics/Digital Holography and Three-Dimensional Imaging/Laser Applications to Chemical, Security and Environmental Analysis on CD-ROM (The Optical Society of America, Washington, DC, 2008), JMA45.

“Laser Induced Breakdown Spectroscopy for Measurement of Fuel/Oxygen Mixing in Combustion,” M. Dackman, J.W.L. Lewis, Y. Chen, and C.G. Parigger, in Biomedical Optics/Digital Holography and Three-Dimensional Imaging/Laser Applications to Chemical, Security and Environmental Analysis on CD-ROM (The Optical Society of America, Washington, DC, 2008), JMA22.

“Tensorial Multipole Interference in Second-harmonic Radiation from Gold Nanoparticles,” S. Kujala, B. K. Canfield, M. Kauranen, Y. Svirko, and J. Turunen, submitted to Opt. Express, June 2008.

“Optical Activity in Diffraction from a Planar Array of Achiral Nanoparticles,” S. N. Volkov, K. Dolgaleva, R. W. Boyd, K. Jefimovs, J. Turunen, Y. Svirko, B. K. Canfield, and M. Kauranen, submitted to Phys. Rev. Lett., May 2008.

“Chiral Coupling in Gold Nanodimers,” H. Husu, B. K. Canfield, J. Laukkanen, B. Bai, M. Kuittinen, J. Turunen, and M. Kauranen, submitted to Opt. Lett., March 2008.

“Enhanced up-converted fluorescence in fluorozirconate based glass ceramics for high efficiency solar cells,” Bernd Ahrens, Bastian Henke, Paul T. Miclea, Jacqueline A. Johnson, and Stefan Schweizer, submitted to Proceedings of SPIE Europe Photonics Europe, 2008.

“In-situ TEM Evidence for Sliding-Induced Formation of Graphitic Transfer Layers on Nearly Frictionless Carbon Films,” A. P. Merkle, O. L. Eryilmaz, J. A. Johnson, A. Erdemir, L. D. Marks. Submitted to App. Phys. Lett., 2008.

“Carbon-hydrogen bonding in near-frictionless carbon,” J. A. Johnson, J. B. Woodford, D. Rajput, A. Kolesnikov, J. Schleuter, O. Eryilmaz, and A. Erdemir. Submitted to App. Phys. Lett., 2008.

“Laser-induced breakdown spectroscopy using CO₂ laser radiation,” C. G. Parigger, J. O. Hornkohl, and L. Nemes, submitted to Appl. Opt., April 2008.

“Time Resolved Spectroscopy Measurements of Graphite Ablation,” C. G. Parigger, L. Nemes, and J. O. Hornkohl, submitted to Appl. Opt., April 2008.

“Time resolved spectroscopy measurements of hydrogen alpha, beta, and gamma emissions,” C. G. Parigger, M. Dackman, and James O. Hornkohl, submitted to Appl. Opt. April 2008.

“The tower nozzle solid freeform fabrication technique,” L. Costa, D. Rajput, K. Lansford, W. Yue, W. Hofmeister; submitted to Rapid Prototyping Journal, 2008.

“Laser Powder Deposition,” L. Costa, R. Vilar; submitted to Rapid Prototyping Journal, 2008.

“Molybdenum-on-Chromium Dual Coating on Steel,” D. Rajput, K. Lansford, L. Costa, W. Hofmeister, submitted to Surface and Coatings Technology, 2008.

“Unique corrosion and wear resistant identification tags via LISI™ laser marking,” L. Costa, K. Lansford, D. Rajput, W. Hofmeister, submitted to Surface and Coatings Technology, 2008.

“Single-pulse ultrafast-laser machining of high aspect nano-holes at the surface of SiO₂,” Yelena V. White, Xiaoxuan Li, Zbigniew Sikorski, Lloyd M. Davis, and William Hofmeister, *accepted for publication*, Optics Express, 2008.

“The formation of light emitting cerium silicates in cerium- doped silicon oxides,” Jing Li, Othman Zalloum, Tyler Roschuk, Chenglin Heng, Jacek Wojcik, and Peter Mascher. Submitted to Applied Physics Letters, 2008.

Patents

“Material with a Repetitive Pattern of Micro-Features for Application in a Living Organism and Method of Fabrication”, Claus Daniel (ORNL) and Narendra B. Dahotre (UTK), application filed to U.S. PTO, August 3, 2007.

“Polymer Based Permeable Membrane for Removal of Ions” Murray, G. M., U.S. Patent #. 7,279,096, October 9, 2007.

“A novel Bragg grating-based optical waveguide sensor for extreme environments,” Othman H.Y. Zalloum and William H. Hofmeister. Invention disclosure. Submitted to The University of Tennessee Research Foundation (UTRF), 2008.

Books and Book Chapters

Laser Machining and Fabrication of Materials, Narendra Dahotre, co-author, Springer, New York, November 2007, pp. 450.

“Infrared photorefractive screening,” Ying-Ling Chen, J. W. L. Lewis, and L. Shi; Book title: Keratconus and Keratoectasia: New Modalities of Diagnosis, Prevention and Treatment. editor: Ming Wang, MD PhD, to be published in 2008.

“Optical Eye Modeling and Applications,” Ying-Ling Chen, James W. L. Lewis, and Bo Tan; book title: Computational Image Modeling of Human Eye (Volume-2); editor: Sumeet Dua, Ph.D. to be published in 2009.

“Molecularly Imprinted Polymer Receptors for Sensors and Arrays,” Southard, G. E. and Murray, G. M., Zourob, M., Elwary, S. and Turner, A. Eds., Springer Verlag, in Principles of Bacterial Detection: Biosensors, Recognition Receptors and Microsystems, 2008.

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Presented at Conferences:

“Laser Surface Engineering,” Narendra B. Dahotre, ASM International Pune Chapter, Pune, India, December 11, 2008.

“Cast carbide-metal composite components via laser based solid freeform fabrication,” W. Hofmeister, L. Costa, D. Rajput, K. Lansford, 26th ICALEO, Orlando, FL USA, October 29-November 1, 2007, LIA.

“Laser Surface Engineering: Laser Induced Reaction Coating for Automotive Application,” Narendra B. Dahotre, Symposium on Materials and Processes in Ground Vehicle Transportation, MS&T’07, September 17-20, 2007, Detroit, MI.

“Process Optimization in Laser Processing of Ceramics,” Anoop Samant and Narendra Dahotre, 2008 TMS Annual Meeting & Exhibition, New Orleans, LA March 9-13, 2008.

“Microstructure and Bioactivity of Laser Induced Geometrically Textured and Porous Ca-P Coating on Ti-6Al-4V,” Sameer R. Paital and Narendra B. Dahotre. 2008 TMS Annual Meeting & Exhibition, New Orleans, Louisiana, March 9-13, 2008.

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“Laser-Ceramic Interaction: A Modeling Approach,” Anoop N. Samant and Narendra B. Dahotre, 2008 TMS Annual Meeting & Exhibition, New Orleans, LA, March 9-13, 2008.

“Laser Processing of Ceramics: A Modeling Approach,” Anoop N. Samant and Narendra B. Dahotre, the Oak Ridge Chapter of ASM, the Materials Information Society and the Smoky Mountain of the Society of Plastic Engineers , November 15, 2007.

“Laser Induced Biomimetic and Biocompatible Ca-P Coatings on Ti-6Al-4V,” Sameer R. Paital, Peter E. Murray, Franklin Gracia-Godoy, and Narendra B. Dahotre, the Oak Ridge Chapter of ASM, the Materials Information Society and the Smoky Mountain of the Society of Plastic Engineers , November 15, 2007.

“Chemical Recognition for Illicit Substance Detection Using Molecular Imprinting,” Murray, G. M., Middle Tennessee State University, April 2, 2007.

“Detection of Biological Molecules Via Molecularly Imprinted Polymers Coupled with Surface Plasmon Resonance,” Baird, L. M., Levin, S. M., Van Houten, K. A., Pilato, R. S., Murray, G. M., Izenberg, N. R., Abstract for the 38th LPSC Lunar and Planetary Science Conference, Houston TX, March, 2008.

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“Enhanced up-converted fluorescence in fluorozirconate based glass ceramics for high efficiency solar cells,” Bernd Ahrens, Bastian Henke, J.A. Johnson, Paul T. Miclea, and Stefan Schweizer. SPIE Europe Photonics Europe, Strasbourg, France, April, 2008.

“Erbium-doped barium chloride nano-crystals in fluorozirconate based glasses for enhanced up-converted fluorescence,” Bastian Henke, Bernd Ahrens, Paul T. Miclea, Jacqueline A. Johnson, and Stefan Schweizer. 16th International Symposium on Non oxide and New Optical Glasses, ISNOG, Montpellier, France, April, 2008.

“Strontium Environment Transition in Tin Silicate Glasses by Neutron and X-ray Diffraction,” Jacqueline. A. Johnson, Jacob Urquidi, Diane Holland, Charles Johnson, and Paul Appleyard. The American Ceramic Society, Glass and Optical Materials Division Meeting, Tucson, USA, May 2008.

“Laser-induced breakdown spectroscopy for measurement of fuel/oxygen mixing in combustion,” M. Dackman, J.W.L. Lewis, Ying-Ling Chen, Lei Shi, C.G. Parigger, 74th Annual APS Meeting of the Southeastern Section of the APS, Nashville, TN, Nov 2007

“Nd:YAG laser induced carbon plasma spontaneous emission spectroscopy,” L. Nemes, A.M. Keszler, J.O. Hornkohl, C.G. Parigger, F. Goulay, and H.A. Michelson, in Workshop on Basic Aspects of Nanocluster Formation by Laser Ablation Processes, Plasma Nanotechnology Research Center (PLANT) Nagoya University, March 18, 2008.

“Tissue Scaffolding Diagnostics with Femtosecond Laser Radiation,” C. G Parigger, R. Splinter, P.J Pike, peer-reviewed presentation at 2008 Spring Optics and Photonics Congress, St. Petersburg, FL, March 2008.

“Laser Induced Breakdown Spectroscopy with 10.6 micron Laser Radiation,” C.G. Parigger, J. O. Hornkohl and L. Nemes, peer-reviewed presentation at 2008 Spring Optics and Photonics Congress, St. Petersburg, FL, March 2008.

“Time resolved Spectroscopy Measurements of Graphite Ablation with Nd:YAG Laser Radiation,” C.G. Parigger, J.O. Hornkohl, and L. Nemes, peer-reviewed presentation at 2008 Spring Optics and Photonics Congress, St. Petersburg, FL, March 2008.

“Laser Induced Breakdown Spectroscopy for Measurement of Fuel/Oxygen Mixing in Combustion,” M. Dackman, J.W.L. Lewis, Y. Chen, and C.G. Parigger, peer-reviewed presentation at 2008 Spring Optics and Photonics Congress, St. Petersburg, FL, March 2008.

“Novel refractory cermelt coatings on graphite,” D. Rajput, L. Costa, K. Lansford, W. Hofmeister, 2008 International Conference on Tungsten, Refractory & Hardmaterials VII, Washington, DC, June 8-12, 2008.

“Axis-symmetric solid freeform fabrication of W-TiC cermelt rocket nozzles,” L. Costa, W. Hofmeister, D. Rajput, K. Lansford, 2008 World Congress on Powder Metallurgy & Particulate Materials, Washington, DC, June 8-12, 2008, MPIF/APMI.

“Actively-controlled electrokinetic delivery of single fluorescent biomolecules in fluidic nanochannels,” L. M. Davis, B. Canfield, X. Li, W. Hofmeister, I. Lescano, B. Bomar, Z. Sikorski, W. Robinson, J. King, J. Germann, G. Shen, J. Wikswo, D. Markov, P. Samson, and C. Daniel, *7th International Weber Symposium on Innovative Fluorescence Methodologies in Biochemistry and Medicine*, Kauai, Hawaii, June 6-12, 2008

“Maximum-likelihood position sensing and actively controlled electrokinetic transport for single-molecule trapping,” L. M. Davis, Z. Sikorski, W. Robinson, G. Shen, X. Li, B. Canfield, I. Lescano, B. Bomar, W. Hofmeister, J. Germann, J. King, Y. White, and A. Terekhov, *BiOS, Photonics West 2008*, 19-24 January, 2008, San Jose, California,

“Polarization engineering of collected fluorescence for improved determination of the molecular emission dipole orientation in single-molecule spectroscopy,” Z. Sikorski and L. M. Davis, *74th Annual Meeting of the APS Southeastern Section*, Nashville, Tennessee, November 8–10, 2007.

“Numerical modeling of single-molecule detection and trapping in a nanochannel,” W. Robinson, Z. Sikorski, and L. M. Davis, *74th Annual Meeting of the APS Southeastern Section*, Nashville, Tennessee, November 8–10, 2007.

“16-channel digital correlator and hardware simulator for fluorescence correlation spectroscopy, dynamic light scattering and multichannel photon time stamping,” Isaac P.

Lescano-Mendoza and Lloyd M. Davis, 74th Annual Meeting of the American Physical Society Southeastern Section, Nashville, Tennessee, November 8–10, 2007.

“Characterization of 4-foci pulse-interleaved two-photon fluorescence confocal microscope for particle tracking and trapping,” James A. Germann, Alexander Tekerov, Guoqing Shen, and Lloyd M. Davis, 74th Annual Meeting of the American Physical Society Southeastern Section, Nashville, Tennessee, November 8–10, 2007.

“Characterization of Single-Photon Avalanche Diodes for Time-Resolved Single-Molecule Spectroscopy,” Jason K. King, Guoqing Shen, and Lloyd M. Davis, 74th Annual Meeting of the American Physical Society Southeastern Section, Nashville, TN, Nov. 8–10, 2007.

“Effects of laser excitation saturation in measurements of biomolecule binding by FCS,” You Li, Guoqing Shen, and Lloyd M. Davis, 74th Annual Meeting of the American Physical Society Southeastern Section, Nashville, Tennessee, November 8–10, 2007.

“Electrokinetic Control of Single Molecules in Fused Silica Fluidic Nanochannels,” B. K. Canfield, X. Li, W. Hofmeister, and L. M. Davis, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest (Optical Society of America, Washington, DC, 2008), CThZ7.

“Simulations of Keratoconus Patient Vision with Optical Eye Modeling” Bo Tan , Ying-Ling Chen , J.W.L. Lewis , Lei Shi , Ming Wang, 74th American Physics Society (APS) Annual Meeting of the Southeastern Section, Nov. 2007 Nashville, CB00001.

“Refractive Error Evaluation in Eccentric Photorefractation” K. Baker, B. Tan , L. Shi , Y. Chen , J.W.L. Lewis, 74th APS Annual Meeting of the Southeastern Section, Nov. 2007 Nashville, CB00002.

“Zernike Interpretation in Ocular Photorefractation Images” Lei Shi , Ying-Ling Chen , Kevin Baker , J.W.L. Lewis , Bo Tan , Ming Wang, 74th SESAPS Annual Meeting, Nov. 2007, Nashville, CB00003.

“Ophthalmic simulation for medical training” J. W. L. Lewis, Ying-Ling Chen, Bo Tan, and Ming Wang, 2007 annual conference, American Telemedicine Association

“Development of Automatic Analysis for Mobile Ocular Screening ” Ying-Ling Chen, Bo Tan, J. W. L. Lewis, and Ming Wang, 2007 annual conference.

“Electrokinetic Control of Single Molecules in Fused Silica Fluidic Nanochannels,” B. K. Canfield, X. Li, W. Hofmeister, and L. M. Davis, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest, Optical Society of America, Washington, DC, 2008, CThZ7.

“Enhanced Second-harmonic Generation in an Array of Gold Nanocones,” J. M. Kontio, J. Simonen, J. Viheriälä, M. Pessa, H. Husu, B. K. Canfield, and M. Kauranen, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest Optical Society of America, Washington, DC, 2008, QThA2.

“Gap-dependent Nonlinear Optical Activity in Chiral Gold Nanodimers,” H. Husu, B. K. Canfield, M. Kauranen, J. Laukkanen, B. Bai, M. Kuittinen, and J. Turunen, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest Optical Society of America, Washington, DC, 2008, QThA3.

“Tensorial Inhomogeneities in the Nonlinear Responses of an Array of Gold Nanoparticles,” M. Kauranen, H. Husu, B. K. Canfield, J. Kontio, J. Viheriälä, T. Rytönen, Tapio Niemi, E. Chandler, A. Hrin, and J. A. Squier, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest, Optical Society of America, Washington, DC, 2008, QThA5.

“Polarization Changes in Diffraction from Planar Periodic Patterns with Pure Structural and Molecular Chirality,” K. Dolgaleva, R. W. Boyd, S. N. Volkov, K. Jefimovs, J. Turunen, Y. Svirko, B. K. Canfield, and M. Kauranen, in Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference and Photonic Applications Systems Technologies 2008 Technical Digest, Optical Society of America, Washington, DC, 2008, QFH6.

“Single-molecule trapping and tracking,” Lloyd M. Davis, Invited presentation at the Huygen’s Laboratory, University of Leiden, Netherlands, May 8, 2008.

T. Moeller, J.T. Lineberry, L.L. Begg, and R.J. Litchford, "HVEPS Combustion Driven MHD Power Demonstration Tests," Paper No. 13100, 39th AIAA Plasmadynamics and Lasers Conference, Seattle, WA, June 23-26, 2008.

Yevgeny Raitses, Trevor Moeller, James Szabo, “AEDC Plume Measurements Using Bi-directional Ion Flux Probes,” the 30th International Electric Propulsion Conference, Florence, Italy, September 17-20, 2007.

D. Rooney, T. Moeller, D. Keefer, R. Rhodes, and C. Merkle, “Experimental and Computer Simulation Studies of a Pulsed Plasma Accelerator,” AIAA-2007-5225, the 2007 Joint Propulsion Conference, Cincinnati, OH, July 2007.

D. Li, C. Merkle, W.M. Scott, D. Keefer, T. Moeller, and B. Rhodes, “A Hyperbolic Algorithm for Numerical Solutions of Coupled Plasma-EM Fields Including Both Real and Displacement Currents,” AIAA-2007-5745, the 2007 Joint Propulsion Conference, Cincinnati, OH, July 2007.

Student Presentations Mentored:

“Ultrasensitive Fluorescence Spectroscopy Using a Laser Diode,” Jason Pappafotis (Physics major at Middle Tennessee State University), Annual Meetings of the Tennessee section of the American Association of Physics Teachers (TAAPT) and the Society for Physics Students, Austin Peay State University, Clarksville, Tennessee, March 28-29, 2008.

“Second Harmonic Generation for Laser Manufacture of Nanochannels,” Ksenia Kuznetsova, Annual Meetings of the Tennessee section of the American Association of Physics Teachers (TAAPT) and the Society for Physics Students, Austin Peay State University, Clarksville, Tennessee, March 28-29, 2008.

“Second Harmonic Generation for Laser Manufacture of Nanochannels,” Ksenia Kuznetsova, Tullahoma High School, Tullahoma, Tennessee, entry in Middle Tennessee Science and Engineering Fair, Austin Peay State University, March 13-15, 2008; 2nd prize, 12th grade.

“Mixing Spectra: When Red Meets Blue,” Jenna Davis, Webb School, Bell Buckle, Tennessee, entry in Middle School program of the Middle Tennessee Science and Engineering Fair, Austin Peay State University, March 13-15, 2008; 1st prize, 6th grade.