

Center for Optoelectronics and Optical Communications
Publications, Patents and Grants
2008 –2009

Books and Book Chapters

Metallic Nanomaterials for Life Sciences, ed. Wiley-VCH Weinheim, 2009, Chapter: Approaches to Synthesis and Characterization of Spherical & Anisotropic Palladium Nanomaterials, R. G. Freemantle, M. Liu, W. Guo, S. O. Obare, Kumar, C. S. S. R., Volume 1, pp 305-355

Lighter Side of Adaptive Optics, SPIE Press, Bellingham, WA, 2009, ISBN: **9780819475619** R. K. Tyson

Engineering a High-Tech Business, Editors: Jose Miguel Lopez-Higuera and Brian Culshaw, SPIE Press, 2008, Chapter: "University Research and the Optics Industry", F. Farahi, page. 243

Artificial Life Models in Hardware, Editor: Andy Adamatzky, Springer: London, 2009, Chapter: The History and Future Of Stiquito, a Hexapod Insectoid Robot, J. M. Conrad, J. W. Mills

Journals and Conference Publications

M. Wang, W. Yueh, C.-T. Lee, C. Henderson, K. E. Gonsalves, Fullerene Grafted Photoacid Generator (PAG) bound Polymer Resists. *J. Photopol. Sci. Technol.* **2008**, 21(6) 747-751.

M. Wang, W. Yueh, K. E. Gonsalves, Fluorine-contained Photoacid Generators (PAGs) and Corresponding Polymer Resists. *J. Fluorine Chem.* **2008**, 129, 607-612.

M. Wang, C.-T. Lee, C. L. Henderson, W. Yueh, J. M. Roberts, and K. E. Gonsalves, Incorporation of Ionic Photoacid Generator (PAG) and Base Quencher into the Resist Polymer Main Chain for Sub-50 nm Resolution Patterning. *J. Mater. Chem.* **2008**, 18, 2704 - 2708.

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- B. Mullany, E. Corcoran, "An Innovative Look at Precision Polishing Tools", Proceedings of the 3rd CIRP International Conference on High Performance Cutting, Dublin, Ireland, June 12-13, ISBN 978-1-905254-32-3, pp 589-598, 2008
- B. Mullany, E. Corcoran, "New Metrics for Polishing Pitch", Topical Meeting of the Optical Fabrication & Testing (OF&T) Topical Meeting, Rochester, NY, Oct 2008.
- W. Williams, B. Mullany, P. Moyer, W. Parker, M. Randles, "Characterizing Quantum Dots for Use in Detecting Subsurface Damage", Proceedings of the 23rd Annual Meeting of the American Society for Precision Engineering, October 19-24, Portland, Oregon, Volume 44, p. 440, 2008.
- S. S. Amin, S. Li, J. R. Roth, T. T. Xu, "Single Crystalline Alkaline Earth Metal Hexaboride One-Dimensional (1D) Nanostructures: Synthesis and Characterization", Chemistry of Materials, 21(4), 763-770, (2009).
- X. X. Wu, T. T. Xu, "Young's Modulus Measurement of Alkaline Earth Metal Hexaboride Nanowires with Nanoindentation", oral presentation in TMS annual meeting, Feb. 15 – 19, 2009, San Francisco, USA.
- H. T. Zhang, T. T. Xu, M. Z. Tang, T. Her, "Non-catalyst Selective Growth of Tungsten Oxide Nanowires", oral presentation in MRS spring meeting, Apr. 13 – 17, 2009, San Francisco, USA.
- S. W. Waltermire, J. K. Yang, D. Y. Li, X. X. Wu, S. Y. Li, T. T. Xu, "Thermal Conductivity of α -tetragonal Boron Nanoribbons", to be presented in 2009 ASME Summer Heat Transfer Conference, July 19 -23, 2009, San Francisco, USA.
- H. M. Sullivan, F. Ashish, J. K. Krueger, B. T. Cooper, Capillary Zone Electrophoresis of Intrinsic Charge Ladders of Bovine Gelsolin, *Abstracts of Papers*, 235th American Chemical Society National Meeting, New Orleans, LA, April 6-10, 2008.
- J. A. Pohlheber, F. Ashish, J. K. Krueger, B. T. Cooper, Protein Footprinting of Gelsolin-Actin Complexes Using Mass Spectrometry, *Abstracts of Papers*, 235th American Chemical Society National Meeting, New Orleans, LA, April 6-10, 2008.
- B. T. Donovan-Merkert, "Research and Education in Nanotechnology at UNC Charlotte" North Carolina Nanotechnology Commercialization Conference, Raleigh, NC, March 25-26, 2009
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- M. Etzkorn, C. M. Kane, D. T. Nguyen, D.T. Glycoluril-based fluorinated molecular tweezers: toward extended pincer units, *Abstracts of Papers*, 235th American Chemical Society National Meeting, New Orleans, LA, April 6-10, 2008.
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- K. E. Gonsalves, "Organic and Polymer Nanostructures for Harvesting Solar Energy"; Seventh Annual Symposium, Center for Optoelectronics and Optical Communications, UNCC, Nov 2008
- K. E. Gonsalves, "Ethics in Emerging Technologies" symposium funded by NSF at UNC Charlotte, April 2008. Panel member.
- K. E. Gonsalves, "Materials Applications in Bionanotechnology"; Hyperthermia and Nanomaterials- Nanotechnology approaches to medicine Workshop in NanoMedicine; Wake Forest University at Winston-Salem, April 2008.
- K. E. Gonsalves, "Nanotranslational Therapeutics", San Francisco March MRS 2008.
- K. E. Gonsalves, M. Wang, C. T. Lee, C. L. Henderson, W. Yueh, J. M. Roberts, "Synthesis and Properties of New Anionic Photoacid Generators Bound Polymer Resists for e-beam and EUV lithography, *SPIE*, 2008.
- K. E. Gonsalves, M. Wang, N. S. Pujari, "High refractive-index resists composed of anionic photoacid generator (PAG) bound polymers for 193 nm immersion lithography", *SPIE*, 2008.
- K. E. Gonsalves, C. T. Lee, M. Wang, W. Yueh, C. L. Henderson, "Effect of PAG and matrix structure on PAG acid generation behavior under UV and high energy radiation exposure", *SPIE*, 2008.
- K. E. Gonsalves, M. Wang, W. Yueh, "Novel Chemically Amplified Resists Incorporating Anionic Photoacid Generators for EUV Lithography", SPIE Lithography Asia, Taiwan, 2008, Nov., 2008
- S. O. Obare, *Advanced Oxidation Technologies (AOTs-14)*, San Diego, CA 'Organic-Inorganic Hybrid Materials for Environmental Remediation,' September 2008
(Note: Graduate student Wen Guo presented on behalf of Obare)
- S. O. Obare, 'Catalytic Water-Splitting Using Biomolecule-Functionalized Semiconductor Nanoparticles,' 213th *Electrochemical Society Conference*, Phoenix, AZ, May 2008.
- S. O. Obare, 'Metallic Nanoparticles: Effect of Size on the Ability to Store Solar Energy,' 213th *Electrochemical Society Conference*, Phoenix, AZ, May 2008.
- S. O. Obare, 'Electron storage in metallic nanoparticles: Control of chemical charging and discharging', 235th *American Chemical Society National Meeting*, New Orleans, LA, April 2008.
- S. O. Obare, 'Tuning the Size of Metallic Nanoparticles < 4 nm, and Their Roles in Environmental Remediation', 1st *Annual Workshop on Nanostructures and Nanomaterials*, Tunisia, North Africa, March 2008.
- S. O. Obare, 'Educating and Exciting Middle School Students in Chemistry Through Materials Science,' 235th *American Chemical Society National Meeting*, New Orleans, LA, April 2008. Also presented at SCI-MIX session
- K. Pimparkar, R. Lin, R. Y. Ofoli, J. E. Jackson, S. O. Obare and D. J. Miller, 'High Pressure Catalytic Hydrogenation of Acetone in a PDMS Based Recirculating Microreactor System,' American Institute of Chemical Engineers (AIChE) 2008 Annual Meeting, Philadelphia, PA. November 2008.
- S. O. Obare, 'Rational Selection and Synthesis of Organic Ligands for Anisotropic Metallic Nanoparticles,' 236th Meeting of the American Chemical Society, Philadelphia, PA, August 2008
- K. Mukhopadhyay and S. O. Obare, 'Novel Ligand Design for Size-Controlled Metallic and Bimetallic Nanoparticles,' 236th Meeting of the American Chemical Society, Philadelphia, PA, August 2008
- M. Liu and S. O. Obare, 'Synthesis and Characterization of Biofunctionalized Inorganic Nanowires for Selective Interaction with Biological Cells,' 236th Meeting of the American Chemical Society, Philadelphia, PA, August 2008
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- Z. D. Denkins, W. Guo and S. O. Obare, 'Photochemical control of the reactivity of tetraaza-tetrapyrrolopentacene toward the activation of small molecules: An experimental and computational study,' 235th Meeting of the American Chemical Society, New Orleans, LA, April 2008. *Also presented at SCI-MIX session*
- N. M. Kelly, R. G. Freemantle, J. A. Bartz, and S. O. Obare, 'Size-control of biotin stabilized metal nanoparticles,' 235th Meeting of the American Chemical Society, New Orleans, LA, April 2008.
- K. E. Crawford and S. O. Obare, 'One-step approach toward well-defined bimetallic nanoparticles,' 235th Meeting of the American Chemical Society, New Orleans, LA, April 2008.
- S. O. Obare, R. G. Freemantle and T. A. Samuels, 'Exciting Middle and High School Students in Chemistry via Advances in Materials Science,' National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Philadelphia, PA, March 2008.
- R. G. Freemantle and S. O. Obare, 'New Approaches for Size- and Shape-Controlled Ruthenium Nanoparticles,' National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, Philadelphia, PA, March 2008.
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- M. A. James and S. O. Obare. 'Degradation of PCBs Using Functionalized TiO₂,' National Organization for the Professional Advancement of Black Chemists and Chemical Engineers Science Fair, Orlando, FL, March 2008
- C. A. Ogle, E. R. Bartholomew, S. H. Bertz, S. K. Cope, D. C. Dorton, M. D. Murphy, Neutral organocopper(III) complexes. 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008),
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- H. Chaturvedi and J. C. Poler, "Novel 3-D manufacturing paradigm: Interactions of carbon nanotubes and photosensitive ruthenium complexes" *Abstracts of Papers*, 235th American Chemical Society National Meeting, New Orleans LA, April 6th 2008 (PHYS 501)
- J. C. Poler, H. Chaturvedi, A. Giordano, and S. Kobayashi, "Electron transfer enhanced aggregation of carbon nanotubes" *Abstracts of Papers*, 235th American Chemical Society National Meeting, New Orleans LA, April 6th 2008 (COLL 454)
- M. W. Forney, A. Giordano, and J. C. Poler, "Aggregation Kinetics of Novel Carbon Nanotube and Ruthenium Metallodendrimer Supramolecular Assemblies Under Various Solvent Conditions" Symposium JJ, Materials Research Society Conference, Boston MA, November 30th 2008 .

- H. Chaturvedi and J. C. Poler, "Photon Enhanced Aggregation in Metallodendrimer "Docked" Single Walled Carbon Nanotubes" Symposium JJ, Materials Research Society Conference, Boston MA, November 30th 2008
- J. R. Alston and J. C. Poler, "Photo-resistivity of Functionalized Carbon Nanotube Networks", Symposium FF, Materials Research Society Conference, Boston MA, November 30th 2008
- N. Herring and J. C. Poler, "In Situ Electron Transfer Studies of Rigid, Ruthenium Complexes Inducing Aggregation of Spherical Nanoparticles", Symposium NN, Materials Research Society Conference, Boston MA, November 30th 2008
- N. Herring and J. C. Poler, In Situ Electron Transfer Studies of Rigid, Ruthenium Complexes Inducing Aggregation of Spherical Nanoparticles, Abstracts of papers, 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN, United States, November 12-15 (2008) SERM-054
- J. D. Shah, L. E. Roberts, J. Springs, J. C. Poler, Photoresistivity of aligned and random carbon nanotube networks. Abstracts of Papers, 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008) PHYS-503
- H. Chaturvedi, J. C. Poler, Novel 3-D manufacturing paradigm: Interactions of carbon nanotubes and photosensitive ruthenium complexes. Abstracts of Papers, 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008) PHYS-501
- S. N. Rosse, J. C. Poler, Computational modeling of rigid ruthenium dendrimers interacting with carbon nanotubes. Abstracts of Papers, 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008), PHYS-462
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- S. Kobayashi, J. C. Poler, Synthesis and characterization of rigid supramolecular coagulants, modifications of morphology and charge state, Abstracts of Papers, 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008) INOR-157
- J. C. Poler, H. Chaturvedi, A. Giordano, S. Kobayashi, Electron transfer enhanced aggregation of carbon nanotubes, Abstracts of Papers, 235th ACS National Meeting, New Orleans, LA, United States, April 6-10, 2008 (2008), COLL-454
- J. M. Risley, W. M. York, T. D. Dubois (2008) "Insights into the Mechanism for Human Glycosylasparaginase through Unrestrained Molecular Dynamics Simulations" 24th International Carbohydrate Symposium Oslo, Norway, July-August, 2008 (Abst. # C-P043)
- T. A. Pinder, K. A. Kreisel, G. P. A. Yap, D. Rabinovich, "Bis(mercaptoimidazolyl)methane Complexes of Copper and Silver", 235th ACS National Meeting, New Orleans, LA (04/06/08). [Abstract INOR 39]
- D. Rabinovich, "Hooked on Sulfur: New Ligands, Unexpected Applications", 235th ACS National Meeting, New Orleans, LA (04/07/08). [invited presentation at the ACS Award in Organometallic Chemistry: Symposium in Honor of Gerard F. R. Parkin] [Abstract INOR 429]
- J. Hsieh, W. H. Monillas, G. P. A. Yap, D. Rabinovich, "Hemidirected Lead(II) Complexes with New Aromatic Bis(thione) Ligands", 235th ACS National Meeting, New Orleans, LA (04/08/08). [Abstract INOR 645]
- D. Rabinovich, "A Missing Link in the Organometallic Chemistry of Lead(II): Arene Interactions", Inorganic Chemistry Gordon Research Conference, Salve Regina University, Newport, RI (07/16/08)
- D. Rabinovich, "Synthetic Analogs of Methanobactin", 236th ACS National Meeting, Philadelphia, PA (08/17/08). [Abstract INOR 222]
- D. Rabinovich, "Chemical Philately and Education: Inorganic Chemistry on Stamps", 236th ACS National Meeting,

Philadelphia, PA (08/17/08). [Abstract CHED 351]

- S. V. John-Rajkumar, L. I. Lozano-Lewis, D. Rabinovich, "Bis(thioether)silanes: Synthesis of the First Tin(IV) Derivatives", 60th ACS Southeast Regional Meeting, Nashville, TN (11/13/08). [Abstract 317]
- D. Rabinovich, "Lead(II) Complexes with Aromatic Bis(thione) Ligands: Unexpected Observation of Lead–Arene Interactions", 60th ACS Southeast Regional Meeting, Nashville, TN (11/13/08). [invited presentation at the "New Organometallic Chemistry of the Main Group and f-Elements" symposium] [Abstract 375]
- A. Aldongarov, I. S. Irgibaeva, J. Merkert, T. A. Schmedake, Synthesis And Spectral Characterization Of Hexacoordinate Polypyridylsilicon Complexes, 41st Silicon Symposium – San Francisco, CA, 2008, A-12.
- R. B. Soriano, T. A. Schmedake, Luminescent colloidal silica. *Abstracts of Papers, 234th ACS National Meeting, New Orleans, LA, April 6-10, 2008* 2008, INOR-1046.
- V. N. Astratov, Fundamentals and Applications of Microsphere Resonator Circuits, accepted to IEEE Proc. of Int. Conf. on Transparent Opt. Networks – ICTON09, Island of São Miguel, Azores, Portugal, June 28-July 2, 4pp. (2009)
- S. Yang, V. N. Astratov, Spectroscopy of Coherently Coupled Whispering Gallery Modes in Supermonodispersive Bispheres, accepted to IEEE Proc. of Int. Conf. on Transparent Opt. Networks – ICTON09, Island of São Miguel, Azores, Portugal, June 28-July 2, 4pp. (2009)
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- S. Yang, V. N. Astratov, Spectroscopy of Photonic Molecular States in Supermonodispersive Bispheres, Proc. of SPIE, accepted for publication, paper 7194-38, Photonics West 2009, San Jose, January 24-29, 2009
- V. N. Astratov, Fundamentals and Applications of Microsphere Resonator Circuits, Missouri University of Science and Technology, Physics Department, Rolla, April 30, 2009
- V. N. Astratov, Optical Transport Phenomena in Coupled Spherical Cavities, University of Georgia, Department of Physics and Astronomy, Athens, GA, March 5, 2009
- V. N. Astratov, Mesoscopic Optical Transport in Coupled Microspheres, University of Wisconsin-Milwaukee, Physics Department, Milwaukee, WI, October 31, 2008
- V. N. Astratov, Mesoscale Photonics: Novel Optical Properties and Applications of Coupled Spherical Microresonators, Virginia Tech, Mat. Science and Engineering, Blacksburg, VA, October 17, 2008, host: L.V.Asryan
- V. N. Astratov, Mesophotonics: Novel Optical Effects in Coupled Microspheres, 6th Annual CRI Summer Workshop "Metamaterials", Charlotte, May 27-30, 2009
- A. Suratkar, A. Davies, F. Farahi, "Absolute Length (Thickness) Measurements Using Wavelength Scanning Interferometry", Extended Abstract, American Society for Precision Engineering Annual Meeting, Portland, OR, October (2008).
- F. Farahi, "Micro-Optic and Guided-Wave Optical Sensing" Invited Talk, IEEE-LEOS Symposium on Components for Optical Sensing, Raleigh, North Carolina, Sept. 25, 2008
- M. Mayeh, F. Farahi, "Geometrically modified multimode interference waveguides using high refractive index SiON material, for application in wavelength multiplexing/demultiplexing" The Fifth International Symposium on High Capacity Optical Networks and Enabling Technologies (HONET), Penang, Malaysia, November 18-20, 2008
- M. A. Fiddy, DARPA MONTAGE workshop, UCSD August 14th, 2008.
- M. A. Fiddy, PERIODIC Workshop, Albuquerque, June 08 and Wake Forrest U (Dec 08).

- N. M. Fried, G. A. Lagoda, L. M. Su, A. L. Burnett, Noncontact optical stimulation of the cavernous nerves in the rat prostate: optimization of the laser parameters. *Journal of Endourology* 22(11):2605-2606, 2008.
Presenter: Nathaniel Fried
- S. Chitchian, M. Fiddy, N. M. Fried, Image processing algorithms for use in optical coherence tomography of the cavernous nerves in the prostate. *Journal of Endourology* 22(11):2604-2605, 2008.
Presenter: Shahab Chitchian
- G. Lagoda, N. Fried, A. Burnett, Optical stimulation of the rat cavernous nerves. *Journal of Sexual Medicine* 6(s1):8, 2009. Presenter: Gwen Lagoda
- G. Gbur, G. A. Swartzlander, Jr., "Complete transverse representation of an optical correlation singularity," 2008 OSA Annual Meeting in Rochester, NY.
- G. Gbur, "Strategies for reduction of scintillation in atmospheric beam propagation," AFOSR EM Workshop, San Antonio, TX 2009.
- G. Gbur, Co-moderator of session on "The Web and the History of Science," ScienceOnline09, Research Triangle Park, NC.
- M. Tang, H. Zhang, T. Her, "Substrate Study of Tungsten Nano-gratings Deposited by a Single Femtosecond laser Beam," CLEO proceeding 2008.
- X. Ao, T. Her, "Effect of Surface Electromagnetic Waves on Gain-Guided Transverse-Grating Waveguides with Large Mode Area," CLEO proceeding 2009
- E. G. Johnson, M. Poutous, Z. Roth, P. Srinivasan, K. Buhl, T. Suleski "3D Dielectric Meta-Optics for Next Generation Laser Systems," Directed Energy Symposium – Honolulu, Hawaii (2008)
- M. Khizar, M. Y. A. Raja, "Nano-Engineered III-Nitride quantum-wells based deep-UV Light Emitting Diodes", INCI 2009 (International Nanotechnology Conference for Industries), King Saud University Riyadh, Saudi Arabia, April 05-07, 2009.
- M. Asghar, H. Noor, M-A. Hasan, M. Y. A. Raja, "Molecular Beam-Epitaxial Synthesis of ZnO Nanorods and Characterization", INCI 2009 (International Nanotechnology Conference for Industries), King Saud University Riyadh, Saudi Arabia, April 05-07, 2009.
- M. Y. A. Raja, Keynote Address at International Symposium "HONET 2008", Penang, Malaysia, Nov 18-20, 2008.
- M. Y. A. Raja, Invited Speaker at "Mini-workshop on Nanophotonics", National Institute of Lasers & Optronics (NILOP) PEAS University Islamabad, Pakistan June 09-10, 2008.
- M. Y. A. Raja, Invited Colloquium Speaker at International Seminar "Nanophotonics in Information & Communication Technologies 2008" NUST Islamabad, Pakistan June 06th, 2008.
- M. Y. A. Raja, Invited Speaker & co-Organizer "Two-day Workshop Topics in Semiconductor Materials & Nanodevices", Physics Department at IUB Bahawalpur Pakistan, June 02-03, 2008
- O. V. Smolski, Y. O. Yilmaz, V. O. Smolski, E. G. Johnson, "Compact blue light sources based on grating coupled surface emitting lasers" in *Solid State Lasers XVIII: Technology and Devices*, edited by W. Andrew Clarkson, Norman Hodgson, Ramesh K. Shori Proc. of SPIE Vol. 7193, 71931E (2009).
- O. Smolski, Y. Yilmaz, V. Smolski, E. Johnson, "Compact blue light sources based on grating coupled surface emitting lasers" oral presentation at Photonics West, San Jose, CA, January 2009
- T. J. Suleski*, E. G. Johnson, "(Macro), Micro, and Nano-Optics for Compact Integrated Imaging Systems," UNC Charlotte, Charlotte, NC, *5th Annual CRI Summer Conference, Computational Imaging and Superresolution*, June 12, 2008.

- M. A. Davies*, B. S. Dutterer, T. J. Suleski, M. L. Barkman, "Manufacturing and measurement of precision milli- and micro-scale germanium optics array for novel thermal imaging systems," 23rd ASPE Annual Meeting and 12th ICPE, Paper 2556, Portland Oregon, October 21, 2008.
- E. G. Johnson, M. Poutous, Z. Roth, P. Srinivasan, K. Buhl, T. J. Suleski, "3D Dielectric Meta-Optics for Next-Generation Laser Systems," 11th Annual Directed Energy Symposium, November 17-21, 2008, Honolulu, Hawaii.
- M. V. Klibanov, "A new globally convergent numerical method for some coefficient inverse problems and Carleman estimates", Inverse problems: Modeling and Simulations Conference, Fethiye, Turkey, May 2008
- M. V. Klibanov, "Global convergence in inverse problems", Inverse problems and information technologies of nature management Conference, Khanty-Mansiisk, Russia, April 2008 (Khanty-Mansiisk is one of Russian "Oil capitals").
- M. V. Klibanov, "Global convergence in inverse problems", Mathematical problems of geophysics Conference, Novosibirsk, Russia, October 2008.
- B. Vainberg, "Propagation of Waves in Networks of Thin Fibers and Slowing down the Light", International Conference on Integral Methods in Sciences and Engineering, Santander, Spain, July, 2008 (1 hour)
- B. Vainberg, "Propagation of waves in Networks of thin Waveguides", International conference "Analysis, PDE and Applications", Rome, Italy, June-July, 2008. (30 min)
- B. Vainberg, Some generalizations of Lieb-Thirring inequalities, International Workshop on Operator Theory and its Applications, College of William and Mary, Williamsburg, VA, July 2008 (30 min)
- T. R. Lucas, Possible limits to accuracy for diffusion tomography using multiple sources and multiple frequencies for different levels of noise, Session Chair, 4th International Conference on Inverse Problems: Modeling and Simulation, Fethiye, Turkey (24 May 2008 to 1 June 2008).
- Y. Godin, The inverse scattering problem for the difference operators: the decomposition method, 6th International Conference on Inverse Problems in Engineering: Theory and Practice, June 15-19, 2008 Dourdan (Paris), France, 30 min.
- Y. Godin, An efficient solution of the inverse boundary impedance problem in the half-space, The XIXth International Workshop on Operator Theory and its Applications: July 22 - July 26, Williamsburg, VA 2008, 30 min
- A. L. Cooke, M. A. Davies, High-Bandwidth Thermal Microscopy of the Tool-Chip Interface during Orthogonal Machining of AISI 4140 Steel, 12th CIRP Conference on Modelling of Machining Operations, May 7-8, 2009 Donostia-San Sebastián – Spain
- M. A. Davies, K. S. Smith, R. Hocken, B. S. Dutterer, T. Suleski, S. Smith, Manufacturing and metrology research at UNC Charlotte (Invited Presentation), Friday August 22, 2008, Technische Universität Dortmund, Dortmund, Germany (travel paid by TU-Dortmund).
- M. A. Davies, On the measurement of temperature in material removal processes, ETH-Zurich, Zurich, Switzerland, January 2008 (travel paid by ETHZurich).
- S. S. Amin, S. Y. Li, J. R. Roth, T. T. Xu, "Alkaline-Earth Metal Hexaboride One-Dimensional (1D) Nanostructures for Thermoelectric energy Conversion, oral presentation in International Materials Research Conference (IMRC) 2008, June 9 -12, 2008, Chongqing, China
- T. T. Xu, Boron-based One-Dimensional Nanostructures, Department of Mechanical Engineering, Hong Kong University of Science and Technology, June 16, 2008.
- T. T. Xu, Boron-based One-Dimensional Nanostructures, Department of Materials Science and Engineering, Shanghai Jiaotong University, June 24, 2008.

- T. T. Xu, Guest lectures for NANO 9001 and NANO 8104 courses, UNC Charlotte, Fall 2008 and Spring 2009
- A. Nasipuri, R. Cox, H. Alasti, L. Van der Zel, B. Rodriguez, R. McKosky, J. A. Graziano, "Wireless Sensor Network for Substation Monitoring: Design and Deployment", Proceedings of the 6th ACM Conference on Embedded Networked Sensor Systems (SenSys '08), November 5-7, 2008
- H. Alasti, A. Nasipuri, "Spatio-Temporal Monitoring using Contours in Large-scale Wireless Sensor Networks", Second ACM International Workshop on Foundations of Wireless Ad Hoc and Sensor Networking and Computing (FOWANC '09), New Orleans, LA, May 18, 2009
- C. Taft, J. N. Sorge, A. J. Hussey, A. Nasipuri, T. Kuruganti, "Low-Cost Wireless Sensor Testing in a Fossil Power Plant", 19th ISA POWID/EPRI Controls and Instrumentation Conference, Chicago, IL, May 12-14, 2009
- J. M. Conrad, N. BouSaba, D. Hoch, W. Heybruck, P. Schmidt, D. Sharer, Assessing Senior Design Project Deliverables, Proceedings of the 2009 ASEE Conference, Austin, TX, June 2009
- P. Schmidt, J. M. Conrad, D. Hoch, W. Heybruck, M. Kane, D. Sharer, L. Thurman, Student Evaluations of Sponsor Interaction in a Capstone Interdisciplinary Senior Design Program, Proceedings of the 2009 ASEE Conference, Austin, TX, June 2009
- G. B. Gehrig, L. Abrams, D. Bosley, J. M. Conrad, S. Kuyath, The TECT Workshop: Raising High School Teachers and Guidance Counselor Self-Efficacy in Counseling Students about Engineering Careers and Majors, Proceedings of the 2009 ASEE Conference, Austin TX, June 2009
- J. Bikman, T. Meiswinkel, J. M. Conrad, An Implementation of a Color Following System using the CMUcam3, Proceedings of the 2009 IEEE SoutheastCon, Atlanta, GA, March 2009
- J. M. Conrad, D. Hoch, W. Heybruck, P. Schmidt, M. Kane, L. Thurman, F. Skinner, Working with Industry Sponsors in a Multidisciplinary Senior Design Program, Proceedings of the 2008 ASEE Conference, Pittsburgh, PA, June 2008
- A. Willis, J. M. Conrad, Senior Design Project: A Robotic System Using Stereoscopic Cameras for Navigation, Proceedings of the 2008 ASEE Conference Pittsburgh, PA June 2008
- A. Willis, J. M. Conrad, Design of Intelligent Spacecraft: An Interdisciplinary Engineering Education Course, Proceedings of the 2008 ASEE Conference, Pittsburgh, PA, June 2008
- K. Daneshvar, B. Dogan, Application of Quantum Dots as a Fluorescent-Penetrant for Weld Crack Detection, International Conference WELDS 2009, June 24-26, 2009
- K. Daneshvar, Los Avances Technologicos Recientes, Y Su Impacto, Produccion Industrial, Tecnologia E Innovacio, Jueves 10 de Abril de 2008
- R. Hakimzadeh, S.-Y. Ji, K. Ward, K. Najarian, K. Daneshvar, Processing of Transcranial Doppler for Assessment of Blood Volume Loss, IEEE IRI 2009
- T. P. Weldon, Rayleigh and Mie Enhancement of Blackbody Radiation in Nanoscale Devices, IEEE SoutheastCon 2009, Atlanta, GA March 6, 2009
- P. Shoghi, C. J. Barnwell, T. P. Weldon, Experimental Results for a Successive Detection Log Video Amplifier in a Single-Chip Frequency Synthesized Radio Frequency Spectrum Analyzer, IEEE SoutheastCon 2009, Atlanta, GA March 7, 2009
- T. P. Weldon, G. Ye, R. Mulagada, Linearization Conditions for Two and Four Stage Circuit Topologies Including Third Order Nonlinearities, IEEE SoutheastCon 2009, Atlanta, GA, March 7, 2009
- S. Chitchian, T. P. Weldon, N. Fried, 2-D Segmentation of OCT Prostate Images, 24th Engineering and Urology Society Meeting, Chicago, IL, April 25, 2009
- K. Liu, T. A. Schmedake, R. Tsu, Coupling of CdSe/ZnS quantum dots: among themselves and with matrices,

T. LaFave Jr., U. T. Dallas, R. Tsu, The Meaning of Monophasic Capacitance of Few Electron Systems,
15th ICSNN-2008, Aug. 3-8, Natal Brazil

K. Liu, U. T. Dallas, R. Tsu, Enhancement of Photoluminescence with Photonic Structures, 15th ICSNN-2008,
Aug. 3-8, Natal Brazil

Grants Awarded January 08 – June 09

JAMES CONRAD Electrical & Computer Engineering
Zapata Engineering PA \$32,450
An Autonomous Robotic Vehicle for Towing Sensor Array

KENNETH GONSALVES Chemistry
Rohm & Haas \$78,840
Prototype Resists for Nanolithography

KENNETH GONSALVES Chemistry
Rohm & Haas \$78,480
Prototype Resists for Nanolithography

KENNETH GONSALVES Chemistry
LifeSciTech LLC \$33,000
Polymer Resists for EUV Lithography

TERRY XU Mechanical Engineering &
Engineering Science
SHERINE OBARE Chemistry
INNA SOKOLOVA Biology
QIUMING WEI Mechanical Engineering &
Engineering Science
NSF \$556,532
MRI: Acquisition of an Analytical Transmission Electron Microscope System
for Multidisciplinary Research and Education at UNC Charlotte

JORDAN POLER Chemistry
American Chemical Society/Petroleum \$5,000
Research Fund
Synthesis of Novel Metallodendrimers for Electron Transfer Processes at
Nanoscale Interfaces

THOMAS SCHMEDAKE Chemistry
JAMES OLIVER Biology
Dot Metrics Technologies \$28,066
Ultraviolet Germicidal Optical Flow Cell

WEI CAI Mathematics and Statistics
Dept of Energy \$209,032
Numerical Methods of Computational Electromagnetics for Complex
Inhomogeneous Systems

WEI CAI Mathematics and Statistics

DOD/Army/Army Research Office		\$89,161
Multi-scale and Multi-physics Numerical Methods For Modeling Transport in Mesoscopic Systems		
MICHAEL KLIBANOV	Mathematics and Statistics	
DOD/Army/Army Research Office		\$46,874
Globally Convergent Numerical Methods for Coefficient Inverse Problems		
MICHAEL KLIBANOV	Mathematics and Statistics	
University of Texas at Arlington		\$24,693
Computational Optical Tomography for Anty-stroke Therapy		
MICHAEL KLIBANOV	Mathematics and Statistics	
DOD/Army/Army Research Office		\$44,120
The Second Generation of Globally Convergent Numerical Methods for Coefficient Inverse Problems		
MICHAEL KLIBANOV	Mathematics and Statistics	
DOD/Army/Army Research Office		\$101,982
The Second Generation of Globally Convergent Numerical Methods for Coefficient Inverse Problems		
STANISLAV MOLCHANOV	Mathematics and Statistics	
BORIS VAINBERG	Mathematics and Statistics	
NSF		\$68,074
Wave Propagation And Scattering In Networks Of Thin Waveguides		
STANISLAV MOLCHANOV	Mathematics and Statistics	
BORIS VAINBERG	Mathematics and Statistics	
NSF		\$70,594
Wave Propagation And Scattering In Networks Of Thin Waveguides		
VASILY ASTRATOV	Physics and Optical Science	
NSF		\$296,647
Mesoscale Structures and Photonics Devices based on Coupled Spherical Cavities		
MICHAEL FIDDY	Physics and Optical Science	
MICHAEL FIDDY	Electrical & Computer Engineering	
NATHANIEL FRIED	Physics and Optical Science	
TSING-HUA HER	Physics and Optical Science	
PATRICK MOYER	Physics and Optical Science	
STUART SMITH	Mechanical Engineering & Engineering Science	
UNC Chapel Hill		\$318,348
UNC Chapel Hill/ UNC Charlotte University Collaborative Initiative in Biomedical Imaging to Study Complex Diseases		
MICHAEL FIDDY	Physics and Optical Science	
MICHAEL FIDDY	Electrical & Computer Engineering	
Western Carolina University		\$10,000
Sub-wavelength Optical Scalpel		
MICHAEL FIDDY	Physics and Optical Science	

MICHAEL FIDDY Electrical & Computer Engineering
NSF \$7,500
Computational Imaging and Superresolution Workshop

MICHAEL FIDDY Physics and Optical Science
MICHAEL FIDDY Electrical & Computer Engineering
Ziva Corp \$361,029
Electromagnetic Scattering Studies

MICHAEL FIDDY Physics and Optical Science
MICHAEL FIDDY Electrical & Computer Engineering
DOD/Army/Army Research Office \$3,000
Workshop on Optical Waves in Metamaterials and Their Applications

NATHANIEL FRIED Physics and Optical Science
Family Health International \$202,500
Noninvasive Approaches to Male Sterilization

NATHANIEL FRIED Physics and Optical Science
DOD/Army/Medical Res &Matl Command \$459,556
Novel Optical Methods for Identification, Imaging, and Preservation of the
Cavernous Nerves Responsible for Penile Erections during Prostate Cancer
Surgery

GREGORY GBUR Physics and Optical Science
DOD/Air Force/Office of Scientific \$64,572
Research
Generation and Use of 'Superbeams' in Turbulence and Scattering
Applications

GREGORY GBUR Physics and Optical Science
Dept of Energy \$54,000
A study of plasmonic enhanced transmission effects in nano-optics

GREGORY GBUR Physics and Optical Science
DOD/Air Force/Office of Scientific \$63,789
Research
Generation and Use of 'Superbeams' in Turbulence and Scattering
Applications

TSING-HUA HER Physics and Optical Science
DOD/Defense Advanced Research \$178,767
Projects Agency
Gain-Guiding in Photonic Bandgap Fibers: A New Platform for Ultra High-
Power Lasers and Amplifiers

ERIC JOHNSON Physics and Optical Science
ERIC JOHNSON Electrical & Computer Engineering
VizorNet Inc \$137,226
Optical Retro-Reflecting Elements

ERIC JOHNSON Physics and Optical Science
ERIC JOHNSON Electrical & Computer Engineering

NSF		\$189,334
Intergovernmental Personnel Act		
ERIC JOHNSON	Physics and Optical Science	
ERIC JOHNSON	Electrical & Computer Engineering	
TOM SULESKI	Physics and Optical Science	
DOD/Air Force/ Air Force Research Laboratory		\$182,000
3D Dielectric Meta-Optics for Next-Generation Laser Systems		
ERIC JOHNSON	Physics and Optical Science	
ERIC JOHNSON	Electrical & Computer Engineering	
OLEG SMOLSKI	Physics and Optical Science	
Prime Research		\$31,000
Nano-Optical Elements for Polarization Selective Infrared Detectors		
ERIC JOHNSON	Physics and Optical Science	
ERIC JOHNSON	Electrical & Computer Engineering	
OLEG SMOLSKI	Physics and Optical Science	
DOD/Navy/Office of Naval Research		\$99,789
Compact Semiconductor Blue Light Optical Sources		
ERIC JOHNSON	Physics and Optical Science	
ERIC JOHNSON	Electrical & Computer Engineering	
TOM SULESKI	Physics and Optical Science	
DOD/Air Force/Air Force Research Laboratory		\$77,173
3D Dielectric Meta-Optics for Next-Generation Laser Systems		
ERIC JOHNSON	Physics and Optical Science	
ERIC JOHNSON	Electrical & Computer Engineering	
OLEG SMOLSKI	Physics and Optical Science	
DOD/Navy/Office of Naval Research		\$150,000
Compact Semiconductor Blue Light Optical Sources		
M YASIN RAJA	Physics and Optical Science	
NSF		\$32,340
US-Malaysia Workshop on "High-Capacity Optical-Networks Test & Monitoring (HOTM)"		
M YASIN RAJA	Physics and Optical Science	
Gratings, Inc.		\$9,000
Process Development for Low Cost Solar Cells		
M YASIN RAJA	Physics and Optical Science	
Gratings, Inc.		\$40,000
Process Development for Low Cost Solar Cells		
ROBERT TYSON	Physics and Optical Science	
IrisAO Inc.		\$22,968
Optical Vortex Charge Sensor for a Segmented Deformable Mirror		
EDWARD STOKES	Electrical & Computer Engineering	
Dot Metrics Technologies		\$8,788

SBIR (Phase 1B) Ultraviolet Germicidal Optical Flow Cell

EDWARD STOKES Electrical & Computer Engineering
JAMES OLIVER Biology
Dot Metrics Technologies \$129,849
SBIR Phase II: Ultraviolet Germicidal Optical Flow Cell

EDWARD STOKES Electrical & Computer Engineering
Dot Metrics Technologies \$6,720
SBIR Phase 1: Ultraviolet Germicidal Optical Flow Cell

EDWARD STOKES Electrical & Computer Engineering
MICHAEL FIDDY Physics and Optical Science
MICHAEL FIDDY Electrical & Computer Engineering
OLEG SMOLSKI Physics and Optical Science
RAPHAEL TSU Electrical & Computer Engineering
NSF \$298,774
MRI: Development of a High-Pressure MOCVD for III-Nitride Semiconductor Devices

RAPHAEL TSU Electrical & Computer Engineering
MOHAMMED-ALI HASAN Electrical & Computer Engineering
JOHN HUDAK Electrical & Computer Engineering
Northrop Grumman Corp \$205,914
Superlattice - Phase V

RAPHAEL TSU Electrical & Computer Engineering
MOHAMMED-ALI HASAN Electrical & Computer Engineering
JOHN HUDAK Electrical & Computer Engineering
Northrop Grumman Corp \$439,086
Superlattice - Phase V

RAPHAEL TSU Electrical & Computer Engineering
MOHAMMED-ALI HASAN Electrical & Computer Engineering
JOHN HUDAK Electrical & Computer Engineering
Northrop Grumman Corp \$176,061
Large Area SiC for High Power High Temperature Electronics

BRIGID MULLANY Mechanical Engineering &
Engineering Science
UNC Charlotte ADVANCE Program \$1,800
Modal Analysis of Polishing Tools

BRIGID MULLANY Mechanical Engineering &
Engineering Science
ANGELA DAVIES Physics and Optical Science
EDWARD MORSE Mechanical Engineering &
Engineering Science
CPM Affiliates \$99,000
6DOF sensor using optical scattering and Photogrammetry"

STUART SMITH Mechanical Engineering &
Engineering Science
BRIGID MULLANY Mechanical Engineering &

CPM Affiliates Vortex machining study	Engineering Science	\$101,000
TERRY XU	Mechanical Engineering & Engineering Science	
NSF CAREER: Boron-based One-dimensional Nanostructures for Thermoelectric Energy Conversion		\$400,000
TERRY XU	Mechanical Engineering & Engineering Science	
NSF REU Site: NanoSURE at UNC Charlotte		\$240,200
TERRY XU	Mechanical Engineering & Engineering Science	
NSF Collaborative Research: Novel Boron-based One-Dimensional Nanostructures: Synthesis and Measurement of Transport		\$193,869
TERRY XU	Mechanical Engineering & Engineering Science	
UNC Charlotte Faculty Research Grant Study the Feasibility of Large-Scale Synthesis of Boron Nanotubes		\$6,000
TERRY XU	Mechanical Engineering & Engineering Science	
American Chemical Society – Petroleum Research Fund Novel Boron-based Nanomaterials for Thermoelectric Energy Conversion		\$35,000
TERRY XU	Mechanical Engineering & Engineering Science	
American Chemical Society – Petroleum Research Fund Supplement for Summer Research Fellowship (SRF) for the support of Novel Boron-based Nanomaterials for Thermoelectrical Energy Conversion		\$8,000
TERRY XU	Mechanical Engineering & Engineering Science	
NSF Enhance Collaboration, Visibility and Recruitment		\$4,800
MATTHEW DAVIES	Mechanical Engineering & Engineering Science	
TOM SULESKI Raytheon Manufacture Aluminum Optical Components	Physics and Optical Science	\$35,388
MATTHEW DAVIES	Mechanical Engineering & Engineering Science	
Third Wave Systems Inc. Freeform Optical Systems for Defense system Optics		\$180,000

MATTHEW DAVIES	Mechanical Engineering & Engineering Science	
TOM SULESKI	Physics and Optical Science	
II-VI Incorporated		\$96,200
High Speed Micro-Milling of Optical Devices for Infrared Beam Shaping and Imaging		
WEI CAI	Mathematics and Statistics	
ARO		\$89,101
Multiscale and Multiphysics Modeling of Transport in Mesoscopic System		
STUART SMITH	Mechanical Engineering & Engineering Science	
LLNL		\$50,000
Standing Wave Probe Study (additional \$10k due to extension)		
STUART SMITH	Mechanical Engineering & Engineering Science	
CPM Affiliates		\$45,000
MicroCMM probes study		
STUART SMITH	Mechanical Engineering & Engineering Science	
Insitutec Inc.		\$25,000
Multi-dimensional oscillating probes		
STUART SMITH	Mechanical Engineering & Engineering Science	
NIST		\$100,000
Development of an instrumented indenter		
ASIS NASIPURI	Electrical & Computer Engineering	
JAMES CONRAD	Electrical & Computer Engineering	
ROBERT COX	Electrical & Computer Engineering	
EPRI		\$51,666
Scalability and Sustainability Issues of Wireless Mesh Sensor Network for Subsystem Monitoring		
ASIS NASIPURI	Electrical & Computer Engineering	
JAMES CONRAD	Electrical & Computer Engineering	
ROBERT COX	Electrical & Computer Engineering	
EPRI		\$16,779
Wireless Mesh Sensor Network for Fossil Plant Monitoring (Amendment-1)		
JAMES CONRAD	Electrical & Computer Engineering	
NSF		\$300,000
TECT: Teaching Engineering to Counselors and Teachers		
TOM WELDON	Electrical & Computer Engineering	
MOSIS		\$6,500
MOSIS Education Program Chip Fabrication Project Grant		

INVENTION DISCLOSURES

- M. Fiddy, M. Hasan, T. Goveas, T. Dias**; Efficiency enhancement of solar cells using light management
- K. Gonsalves, M. Wang**; LITHOGRAPHIC RESISTS COMPRISING ACID AMPLIFIERS AND ENERGY HARVESTING UNITS
- R. Tsu, Y. Zhang**; Strain-free Epitaxial Graphene
- R. Tsu, J. Hudak, J. Li, P. Batoni**; Columnar Structured Large Area –Silicon Carbide for implementation of power electronics
- R. Tsu**; Novel Photovoltaic Cells
- K. Daneshvar**; Use of Quantum Dots (QDs for Crack Detection)
- K. Daneshvar, T. Weldon**; Rayleigh and Mie Enhancement of Blackbody Radiation in Nanoscale Structures
- F. Farahi**; Waveguide Assisted Solar Energy Harvesting
- S. Smith, S. Woody, B. Mullany, B. Nowakowski**; Surface Modification by Induction of Localized Fluid Circulation
- A. Davies, B. Mullany, E. Morse**; Dimensional measurement through combined optical scattering and photogrammetry
- P. Moyer, M. Shin, G. Elliott**; Fluorescence Blinking Imaging
- P. Moyer, M. Shin, M. Clemens**; Image Analysis Guided high resolution Imaging and tracking of moving objects
- J. Weller, D. Carr, E. Stokes**; Method and Apparatus for Photonic Guiding of Well Array Aliquot Manipulation
- N. Fried**; Thulium Fiber Laser Lithotripsy
- N. Fried**; Noninvasive Laser Vasectomy
- T. Her**; Novel Nanoparticles and Applications Related Thereto

PATENTS

- S. Bobbio, K. Gentry, J. Zara, Stephen Smith**; MEDICAL OPTICAL SCANNER Scanner Apparatus Having Electromagnetic Radiation Devices Coupled to Mems Actuators, 7,420,724
- M. Davies, T. Jacobs, K. S. Smith**; STRUCTURED SURFACES FOR INCREASED DAMPING, 7,427,179

PATENT APPLICATIONS

- M. Fiddy, M. Hasan, T. Goveas, T. Dias**; Efficiency enhancement of solar cells using light management, 61/158,529
- E. Johnson, M. Davies, T. Suleski, A. Cannistra**; INTEGRATED IMAGING SYSTEM, TECHNIQUE, AND ASSOCIATED METHODS, 61/184,498
- K. Gonsalves, M. Wang**; LITHOGRAPHIC RESISTS COMPRISING ACID AMPLIFIERS AND ENERGY HARVESTING UNITS, 61/112,546

K. Gonsalves, M. Wang; LITHOGRAPHIC RESISTS COMPRISING ACID AMPLIFIERS AND ENERGY HARVESTING UNITS, PCT/US09/46957

K. Gonsalves, R. Pillai; NOVEL TARGETED DRUG DELIVERY SYSTEM, 61/177,733

K. Gonsalves, M. Hudson, M. Rabinovich, S. Somayaji; THERAPEUTIC NANOPARTICLES, PCT/US09/30829

B. Hocken, K. S Smith; DYNAMIC METROLOGY METHODS AND SYSTEMS, PCT/US09/41777

R. Tsu, Y. Zhang; Strain-free Epitaxial Graphene, 61/184,364

R. Tsu, J. Hudak, J. Li, P. Batoni; Columnar Structured Large Area –Silicon Carbide for implementation of power electronics, 61/176,678

R. Tsu; Novel Photovoltaic Cells, 61/116,114

K. Daneshvar, T. Weldon; Rayleigh and Mie Enhancement of Blackbody Radiation in Nanoscale Structures, 61/107,529

F. Farahi; Waveguide Assisted Solar Energy Harvesting, 61/185,369

C. Ogle; BASE FREE CONVERSION OF FATS AND OILS INTO LONG CHAIN FATTY ACID ESTERS, METHODS AND COMPOSITIONS THEREOF, 61/081,833

C. Ogle; NOVEL PHARMACEUTICAL AGENTS WITH AXIAL CHIRALITY THAT MIMIC COLCHICINE, 61/090,774

M. Khizar, Y. Raja; HIGH-POWER INTERCONNECTED MICRO-EMITTER ARRAY FLIP CHIP LIGHT EMITTING DEVICES (LEDS AND LASERS), 61/143,878

S. Smith, S. Woody, B. Mullany, B. Nowakowski; Surface Modification by Induction of Localized Fluid Circulation, 61,098,296

V. Astratov; OPTICAL MICROPROBE WITH SUBWAVELENGTH RESOLUTION, 61/187,690

J. Pagan, T. Schmedake, E. Stokes; Bacterial Disinfection Unit, 61/139,022

J. Weller, D. Carr, E. Stokes; Method and Apparatus for Photonic Guiding of Well Array Aliquot Manipulation, 61/166,292

T. Suleski, E. Stokes, P. Batoni; Methods and Applications of Pseudo-random Surface Nanotexturing, 61/080,438

C. Gibas, J. Pagan, E. Stokes, J. Weller; Method and apparatus for monitoring of real-time DNA hybridization, 61/077,635

R. Tyson; Optical Vortex Charge Sensor, 61/138,285

N. Fried; Thulium Fiber Laser Lithotripsy, 61/146,030

N. Fried; Noninvasive Laser Vasectomy, 61/103,671

T. Her; Apparatuses and Methods for Performing Gain Guiding, PCT/US2008/085565

T. Her; Tungsten Nanostructures, 12/323,729

B. Mullany, K. S. Smith; A METHOD TO QUANTIFY AND CHARACTERIZE LAPPING, POLISHING AND BUFFING MEDIUMS AND LAPPING, POLISHING AND BUFFING TOOLS AND MACHINES, 61/180,905