Jim Werner

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EDUCATION

Cornell University (Ithaca, NY)
1998 Ph.D. in Applied Physics
1994 M.S. in Applied Physics

1992 **California Institute of Technology** (Pasadena, CA)
BS in Applied Physics

RESEARCH INTERESTS

Instrument development (microscopes, flow cytometry systems, microfluidics); Nanotechnology and nano-science; Laser spectroscopy (fluorescence, time-resolved, and Raman); Biophysics (cellular signaling processes, membrane dynamics, protein folding and conformational fluctuations); Analytic and biophysical applications of single molecule detection by laser induced fluorescence.

EMPLOYMENT HISTORY

Los Alamos National Laboratory, Technical Staff Member (2002-present)
University of New Mexico, Adjunct Assistant Professor, Department of Physics (2009-present)
Los Alamos National Laboratory, Postdoctoral Research Associate (1998-2002)
Cornell University, Hertz Foundation Fellow (1992-1998)

SELECTED AWARDS

Los Alamos Distinguished Patent Award (2011)
R&D 100 Award *"NanoCluster Beacons"* (2011)
Los Alamos Postdoctoral Distinguished Mentor Award (2011)
Best Paper Award, IEEE Conference on Nano/Micro Engineered and Molecular Systems (2011)
Best Paper Award, Single Molecule Session of Photonics West (2009)
R&D 100 Award *"3D Tracking Microscope"* (2008)
Hertz Foundation Fellowship (1992-1997)
Caltech Carnation Merit Award (2/3^{rds} tuition; 1990-91 and 1991-92)

SKILLS

- **PROGRAM DEVELOPMENT:** Have grown internal, highly competitive (~8% pay-line) proposal based funding into award-winning programs supported through external sponsors, such as the National Institutes of Health. Submit, organize, and participate in a number of multi-investigator research proposal efforts each year.
- **SUPERVISORY EXPERIENCE:** Have mentored 10 postdoctoral research associates and a number of research technologists and summer research students. Former postdocs have gone onto successful careers in industry, academia, and national laboratories. One of 3 recipients of the inaugural LANL Distinguished Postdoctoral Mentor Award in 2011.
- **LASER SPECTROSCOPY:** Single molecule fluorescence spectroscopy, time correlated single photon counting, fluorescence correlation spectroscopy, four-wave mixing and nonlinear optics, optical trapping, CW and pulsed laser sources from the vacuum ultra-violet to the mid IR**.**
- **OPTICAL MICROSCOPY:** Confocal and wide field fluorescence microscopy, including the full instrument development (hardware + software) of a new confocal microscope which employs a unique spatial filter geometry and active feed-back to follow individual fluorescent molecules in 3 spatial dimensions.
- **COMPUTER PROGRAMMING:** C/C++, Labview, Fortran, and Igor Pro. Experience with the writing and use of simple Monte Carlo simulations for data interpretation and instrument design.

WORK EXPERIENCE IN DETAIL

Los Alamos National Laboratory, Technical Staff Member (2002-present)

General job responsibilities include postdoctoral supervision, responding to external (NIH, DTRA, DARPA) and internal (LDRD) proposal calls, running and maintaining several laser spectroscopic instruments (home built and commercial) and communicating results to the scientific community. One recent effort involved leading a team in the design and construction of a proprietary and award-winning microscope capable of tracking single molecules in 3 dimensions. Other recent efforts have involved developing novel bioassays with new fluorescent reporters (noble metal nanoclusters). As part of the DOE sponsored Center for Integrated Nanotechnologies, I assist with helping external users acquire and interpret data on home-built and commercial microscopy and spectroscopy systems.

Los Alamos National Laboratory, Postdoctoral Research Associate (1998-2002)

2000-2002: Probed the folding and unfolding kinetics of protein secondary structure by laser-initiated temperature jumps and time resolved vibrational spectroscopy. Advisor: R. Brian Dyer.

1998-2000: Designed and implemented experiments in single molecule detection using laser-induced fluorescence and time correlated single photon counting in efforts to sequence single DNA molecules. Advisors: Peter Goodwin and Richard Keller.

Cornell University, Hertz Foundation Fellow (1992-1998)

Set up a four-wave mixing system to generate tunable vacuum ultra violet (120-160 nm) radiation from visible laser sources. Used this VUV light as an ionization source to perform time of flight mass spectrometry on radicals extracted by a molecular beam from a flame front. Constructed detailed chemical kinetic models to describe the measured flame chemistry. Dissertation title: "VUV Photoionization Studies of Selected Flames," Advisor: Terrill Cool.

SERVICE & PROFESSIONAL MEMBERSHIPS

- LDRD ER review panel member for the Atomic Molecular Optical Physics Committee, 2004.
- LDRD ER review panel member for the Biology, Biochemistry, and Biophysics Committee, 2005.
- Chaired a session on *Biological and Non-Biological Optical Microscopy* for the National OSA meeting (Frontiers in Optics XIX) San Jose, CA, September 20, 2007.
- LDRD ER review panel member for the Chemistry Committee, 2009.
- LDRD ER review panel member for the Chemistry Committee, 2010.
- LDRD ER review panel member for the Chemistry Committee, 2011
- Served on a LANL committee (chaired and organized by Alan Perelson) to outline scientific directions of the Complex Biological Systems component of LDRD (2011).
- Reviewer for *Nature Methods, Analytical Chemistry, Proceedings of the National Academy of Sciences, Journal of the American Chemical Society, Biophysical Journal, Analyst, Journal of Physical Chemistry, PLoS One,* and many others.
- Member of the Biophysical Society and the American Chemical Society (2000-present).

PATENTS & PATENT APPLICATIONS

Yeh, HC, Sharma, JK, Martinez, JS and Werner, JH*, "Chameleon NanoCluster Beacons to Detect Single Nucleotide Polymorphisms,"* **LANL Invention Disclosure S-121,585**, (2011).

Yeh, HC, Sharma, JK, Martinez, JS and Werner, JH*, "Probe and Method for DNA Detection,"* **US Patent Application No. 20110212540**, (2011).

Werner, JH, Goodwin, PM and Shreve, AP*, "3 Dimensional Imaging at Nanometer Resolutions,"* **US Patent 7,675,045**, (2010).

Werner, JH, Goodwin, PM and Lessard, GA*, "Apparatus and method for tracking a molecule or particle in three dimensions,"* **US Patent 7,498,551**, (2009).

PATENTS & PATENT APPLICATIONS (Continued)

Cai, H, Goodwin, PM, Keller, RA and Werner, JH*, "Rapid Haploid Genotyping by Single Molecule Detection,"* **US Patent Application 20060008799**, (2006).

Werner, JH, Reed, SM and Swanson, BI*, "Screening of libraries using fluorescently reactive lipids and fluorescence correlation spectroscopy,"* **US Patent Application 20050191705**, (2005).

SELECTED ORAL PRESENTATIONS

NSRC workshop on Nanoparticle Science, Center for Nanoscale Materials, Argon National Laboratory. Nov. 5-6, 2012. *Time-resolved Individual Nanoparticle Characterization in Solution by 3D Tracking Microscopy.* **(Invited)**

NanoTech Conference and Expo, Santa Clara, CA, June 19, 2012.*Time-Resolved Three Dimensional Molecular Tracking in Live Cells.* **(Invited)**

Systems Imaging Symposium, University of New Mexico Albuquerque NM, January 12, 2012, *Time-Resolved Three dimensional Molecular Tracking in Live Cells.* **(Invited)**

University of New Mexico Integrative Graduate Education and Research Traineeship Program Symposium: Nanotechnology in Cellular Biology, Albuquerque NM, September 26, 2011, *Three Dimensional Molecular Tracking and New Fluorescent Probe Development.* **(Invited)**

Banff International Research Station for Mathematical Innovation and Discovery. Stochasticity in Biochemical Reaction Networks, Banff, Alberta, Canada, September 15, 2011. *Time-resolved Three-Dimensional Molecular Tracking in Live Cells.* **(Invited)**

242nd American Chemical Society Annual Meeting Advances in Optical Microscopy, Denver CO, August 2011. *Time-Resolved Three-Dimensional Molecular Tracking in Live Cells.* **(Invited)**

Q-Bio Summer School, Los Alamos National Laboratory, Los Alamos NM, August 2011, *Single Molecule Techniques in Biology.* **(Invited)**

Bioscience Capability Review Los Alamos National Laboratory, Los Alamos NM, May 2011. *Time-Resolved Three-Dimensional Molecular Tracking in Live Cells.* **(Invited)**

94th Annual Meeting of the Optical Society of America (OSA), Frontiers in Optics: Laser Science XXVI Rochester, NY October 2010, *Time Resolved 3D Tracking of Single Quantum Dot Labeled Proteins in Live Cells via Confocal Feedback.* **(Invited)**

Q-Bio Summer School, Los Alamos National Laboratory, Los Alamos NM, August 2010. *Fluorescence Correlation Spectroscopy and Single Molecule Methods.* **(Invited)**

CNLS Experimental Techniques Lecture Series, Los Alamos, NM, March 2010. *Single Molecule Spectroscopy and Microscopy.* **(Invited).**

54th Annual Meeting of the Biophysical Society. San Francisco, CA February 2010. *Confocal, 3D Tracking of Single Quantum Dots: Following Receptor Traffic and Membrane Topology.*

University of Virginia Chemistry Department Colloquium Charlottesville VA, January 2010, *Tracking Single Quantum Dots in Three Dimensions: Examination of 3D Membrane Topology.* **(Invited)**

93rd Annual Meeting of the Optical Society of America (OSA), Frontiers in Optics: Laser Science XXV San Jose CA, October 2009, *Tracking Single Quantum Dots in Three Dimensions: Following Cell Receptor Traffic and Membrane Topology.* **(Invited)**

University of New Mexico, Bio-Medical Engineering Department Colloquium Albuquerque, NM, Sept. 9, 2009 *Confocal, 3D tracking of Single Quantum Dots: Following Receptor Traffic and Membrane Topology.* **(Invited)**

Excited State Processes in Electronic and Bio Nanomaterials Santa Fe NM, June 29-July 2, 2009, *Confocal, 3D Tracking of Single Quantum Dots: From Time-Resolved Emission to Cellular Membrane Dynamics.* **(Invited)**

Nanoscale Science Research Centers Contractors Meeting, Annapolis MD, June 3-6, 2009, *Tracking Single Quantum Dots in Three Dimensions: Following Cell Receptor Traffic and Membrane Topology***.**

SELECTED ORAL PRESENTATIONS (continued)

Sandia National Laboratories, CINT Seminar Series, Albuquerque NM, May 21, 2009, *Tracking Single Quantum Dots in 3D: Application to Membrane Dynamics.*

Lujan Seminar Series, Los Alamos National Laboratory, Los Alamos NM, May 19, 2009, *Confocal, 3D Tracking of Single Quantum Dots: Application to Membrane Dynamics.* **(Invited)**

University of New Mexico Physics Department Colloquium Feb. 13, 2009, *Tracking single quantum dots in 3D: Following cell receptor traffic and membrane topology.* **(Invited)**

Q-Bio Seminar Series, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos NM, Feb. 10, 2009. *Tracking Single Quantum Dots in Three Dimensions: Following Cell Receptor Traffic and Membrane Topology.* **(Invited)**

Institute for Multi-scale Materials Studies (IMMS) Meeting, Los Alamos National Laboratories, Los Alamos NM, Sept. 2008, *Following Individual Quantum Dots in 3D.* **(Invited)**

Center for Biosecurity Science (CBSS) meeting, Los Alamos National Laboratories, Los Alamos NM, August 2008, *Ultra-Sensitive Bioanalytic Methods.* **(Invited)**

91st Annual Meeting of the Optical Society of America (OSA), Frontiers in Optics: Laser Science XXIII San Jose CA, September 2007, *Tracking Single Quantum Dots in 3 Dimensions.* **(Invited)**

University of New Mexico IGERT symposium: Nanotechnology in Cellular Biology, Albuquerque NM, August 14, 2007, *Three Dimensional Tracking of Single Quantum Dots.* **(Invited)**

27th Annual Meeting of the Center for Nonlinear Studies, Santa Fe NM, May 2007, *Three Dimensional Tracking of Individual Quantum Dots*. **(Invited)**

Aspen Center for Physics, Single Molecule Biophysics, Aspen CO, February 2007, *Tracking Single Quantum Dots in 3 Dimensions.*

Portland State University Chemistry Department Seminar Series, Portland OR, October 2005, *An Approach to Tracking Single Fluorophores in 3-D.* **(Invited)**

Pittcon: Everything Science Under the Sun, Orlando, FL, March 2005, *An Approach to Tracking Single Molecules in 3-D.* **(Invited)**

Sandia National Laboratories, Albuquerque NM, August 2004, *Single Molecule Tracking.* **(Invited)**

Aspen Center for Physics, Single Molecule Biophysics, Aspen CO, January 2003, *Energy Transfer Distributions Measured by Single Molecule Fluorescence Flow Cytometry.*

American Chemical Society Annual Meeting, San Diego CA, April 2002 *Dynamics of the Primary Processes in Protein Folding: Helix Nucleation.*

Photonics West, San Jose CA, January 1999, *Current Status of DNA Sequencing by Single Molecule Detection.*

INVITED BOOK CHAPTERS

[53] Han, JJ, Shreve, AP and Werner, JH, *"Super-Resolution Optical Microscopy,"* **Characterization of Materials**, (2012). EL Kaufmann, editor.

[52] Ambrose, WP, Cai, H, Goodwin, PM, Grace, KG, Habbersett, RC, Jett, JH, Larson, EJ, Werner, JH and Keller, RA, *"DNA Fragment Sizing by Flow Cytometry,"* **Topics in Fluorescence VI: DNA Technology**, (2003). JR Lakowicz, editor.

SUBMITTED MANUSCRIPTS

[51] Han, JJ, Kiss, C, Bradbury, A and Werner, JH, *"Time-Resolved, Confocal Single Molecule Tracking of Individual Organic Dyes and Fluorescent Proteins in Three Dimensions,"* **ACS Nano**, (submitted in 2012).

[50] Crochet, JJ, Duque, JG, Werner, J, Brahim, L, Laurent, C and Doorn, SK, *"Disorder Limited Exciton Transport in Colloidal Carbon Nanotubes,"* **Nano Letters**, (submitted in 2012).

[49] Keller, RA, Jett, JH, Martin, JC, Soper, SA, Werner, JH and Goodwin, PM, *"A Brief History of Single Molecule Sequencing,"* **Analyst**, (submitted in 2011).

PUBLICATIONS

[48] Yeh, HC, Sharma, JK, Shih, IM, Vu, DM, Martinez, JS and Werner, JH, *"A Fluorescence Light-Up Ag Nanocluster Probe That Discriminates Single-Nucleotide Variants by Emission Color,"* **JACS**, DOI: 10.1021/ja3024737, (2012).

[47] So, WY, Hong, J, Kim, JJ, Sherwood, GA, Chacon-Madrid, K, Werner, JH, Shreve, AP and Peteanu, LA, *"Effects of Solvent Properties on the Spectroscopy and Dynamics of Alkoxy-Substituted PPV Oligomer Aggregates,"* **The Journal of Physical Chemistry B**, (2012).

[46] Yau, SH, Abeyasinghe, N, Orr, M, Upton, L, Varnavski, O, Werner, JH, Yeh, HC, Sharma, J, Shreve, AP and Martinez, JS, *"Bright two-photon emission and ultra-fast relaxation dynamics in a DNA-templated nanocluster investigated by ultra-fast spectroscopy,"* **Nanoscale**, (2012).

[45] Sharma, J, Rocha, R, Phipps, ME, Yeh, HC, KA, B, Vu, DM, Shreve, AP, Werner, J and Shreve, AP, *"A DNA-templated fluorescent silver nanocluster with enhanced stability,"* **Nanoscale**, DOI: 10.1039/c2nr30662j, (2012).

[44] Crochet, JJ, Duque, JG, Werner, JH and Doorn, SK, *"Photoluminescence imaging of electronic-impurity-induced exciton quenching in single-walled carbon nanotubes,"* **Nature Nanotechnology**, 7, 126-132, (2012).

[43] Shepherd, DP, Li, N, Hong-Geller, E, Munsky, B and Werner, JH, *"New tools for discovering the role sRNA plays in cellular regulation,"* **Proc. of the SPIE**, 8228, 8228-1, (2012).

[42] Temirov, J, Werner, JH, Goodwin, PM and Bradbury, ARM, *"Sizing the oligomers of Azami Green fluorescent protein with FCS and Antibunching,"* **Proc. of the SPIE**, 8228, 8228-1 to 8228-10, (2012).

[41] Peteanu, LA, Sherwood, GA, Werner, JH, Shreve, AP, Smith, TM and Wildeman, J, *"Visualizing Core-shell Structure in Substituted PPV Oligomer Aggregates using Fluorescence Lifetime Imaging Microscopy (FLIM),"* **Journal of Physical Chemistry C**, 115, 15607-15616, (2011).

[40] Yeh, HC, Sharma, J, Martinez, JS and Werner, JH, *"NanoCluster Beacon- A new Molecular Probe for Homogeneous Detection of Nucleic Acid Targets,"* **IEEE Nanotechnology Magazine**, 5, 28-33, (2011).

PUBLICATIONS (continued)

[39] Sharma, J, Yeh, HC, Yoo, H, Werner, JH and Martinez, JS*, "Silver nanocluster aptamers: In situ generation of intrinsically fluorescent recognition ligands for protein detection,"* **Chemical Communications**, 47, 2294-2296, (2011).

[38] Wells, NP, Lessard, GA, Goodwin, PM, Phipps, ME, Cutler, PJ, Lidke, DS, Wilson, BS and Werner, JH*, "Time-resolved three-dimensional molecular tracking in live cells,"* **Nano Letters**, 10, 4732-4737, (2010).

[37] Yeh, HC, Sharma, J, Han, JJ, Martinez, JS and Werner, JH*, "A DNA- Silver Nanocluster Probe That Fluoresces upon Hybridization,"* **Nano Letters**, 10, 13308-13313, (2010).

[36] Vela, J, Htoon, H, Chen, Y, Park, YS, Ghosh, Y, Goodwin, PM, Werner, JH, Wells, NP, Casson, JL and Hollingsworth, JA*, "Effect of shell thickness and composition on blinking suppression and the blinking mechanism in "giant" CdSe/CdS nanocrystal quantum dots,"* **Journal of Biophotonics**, 3, 706-717, (2010).

[35] Yeh, HC, Sharma, J, Martinez, JS and Werner, JH*, "Photophysical characterization of fluorescent metal nanoclusters synthesized using oligonucleotides, proteins and small reagent molecules,"* **Proceedings of the SPIE**, 7576, 7576-1 to 7576-10, (2010).

[34] Bao, Y, Yeh, H-C, Zhong, C, Ivanov, SA, Sharma, JK, Neidig, ML, Vu, DM, Shreve, AP, Dyer, RB, Werner, JH and Martinez, JS*, "Formation and Stabilization of Fluorescent Gold Nanoclusters Using Small Molecules,"* **The Journal of Physical Chemistry C**, (2010).

[33] Sharma, J, Yeh, HC, Hyojong, Y, Werner, JH and Martinez, JS*, "A complementary palette of fluorescent silver nanoclusters,"* **Chemical Communications**, 46, 1-3, (2010).

[32] Sherwood, GA, Cheng, R, Smith, TM, Werner, JH, Shreve, AP, Peteanu, LA and Wildeman, J*, "Aggregation Effects on the Emission Spectra and Dynamics of Model Oligomers of MEH-PPV,"* **The Journal of Physical Chemistry C**, 113, 18851-18862, (2009).

[31] Werner, JH, Montano, GA, Garcia, AL, Zurek, NA, Akhadov, EA, Lopez, GP and Shreve, AP*, "Formation and Dynamics of Supported Phospholipid Membranes on a Periodic Nanotextured Substrate,"* **Langmuir**, 25, 2986-2993, (2009).

[30] Wells, NP, Lessard, GA, Phipps, ME, Goodwin, PM, Lidke, DS, Wilson, BS and Werner, JH*, "Going Beyond 2D: Following membrane diffusion and topography in the IgE–Fc[Epsilon]RI system using 3-dimensional tracking microscopy,"* **Proceedings of the SPIE**, 7185, 7185-1 to 7185-13, (2009).

[29] Wells, NP, Lessard, GA and Werner, JH*, "Confocal, 3-Dimensional Tracking of Individual Quantum-Dots in High Background Environments,"* **Analytical Chemistry**, 80, 9830-9834, (2008).

[28] Temirov, JP, Bradbury, A and Werner, JH*, "Measuring an Antibody Affinity Distribution Molecule by Molecule,"* **Analytical Chemistry**, 80, 8642-8648, (2008).

[27] Lessard, GA, Habuchi, S, Werner, JH, Goodwin, PM, De Schryver, FC, Hofkens, J and Cotlet, M*, "Probing dimerization and Intraprotein fluorescence resonance energy transfer in a far red fluorescent protein from the sea anemone Heteractis crispa,"* **Journal of Biomedical Optics**, 13, 031212-1 to 031212-7, (2008).

[26] Dai, M, Temirov, J, Pesavento, E, Kiss, C, Velappan, N, Pavlik, P, Werner, JH and Bradbury, ARM*, "Using T7 phage display to select GFP-based binders,"* **Protein Engineering Design and Selection**, 21, 413-424, (2008).

[25] Lessard, GA, Goodwin, PM and Werner, JH*, "Three dimensional tracking of individual quantum dots,"* **Applied Physics Letters**, 91, 2224106 /1-3, (2007).

PUBLICATIONS (continued)

[24] Werner, JH, McCarney, ER, Keller, RA, Plaxco, KW and Goodwin, PM, *"Increasing the resolution of single pair fluorescence resonance energy transfer measurements in solution via molecular cytometry,"* **Analytical Chemistry**, 79, 3509-3513, (2007).

[23] Dai, M, Fisher, H, Temirov, JP, Kiss, C, Phipps, ME, Pavlik, P, Werner, JH and Bradbury, A, *"The creation of a novel fluorescent protein by guided consensus engineering,"* **Protein Engineering Design and Selection**, 20, 69-79, (2007).

[22] Werner, JH, Joggerst, R, Dyer, RB and Goodwin, PM, *"A two dimensional view of the folding energy landscape of cytochrome c,"* **PNAS**, 103, 11130-11135, (2006).

[21] Temirov, JP, Bradbury, A and Werner, JH, *"Surface-immobilized antibody-antigen binding affinity studies by single molecule fluorescence imaging,"* **Proceedings of the SPIE**, 6092, 60920O1 to 60920O10, (2006).

[20] Lessard, GA, Goodwin, PM and Werner, JH, *"Three dimensional tracking of single fluorescent particles,"* **Proceedings of the SPIE**, 6092, 609205-1 to 609205-8, (2006).

[19] Cotlet, M, Habuchi, S, Whitier, JE, Werner, JH, De Schryver, FC, Hofkens, J and Goodwin, PM, *"Single Molecule Spectroscopic Characterization of a Far-Red Fluorescent protein (HcRed) from the Anthozoa Coral Heteractis Crispa,"* **Proc. of the SPIE**, 6098, 609804-1 to 690804-11, (2006).

[18] Cotlet, M, Goodwin, PM, Waldo, GS and Werner, JH, *"Time-resolved Detection of the One- and Two-Photon Excited Fluorescence of Single Molecules of a Folding Enhanced Green Fluorescent Protein,"* **Proc. of the SPIE**, 6092, 609204-1 to 609204-10, (2006).

[17] Cotlet, M, Goodwin, PM, Waldo, GS and Werner, JH, *"A comparison of the fluorescence dynamics of single molecules of a green fluorescent protein: one- vs two-photon excitation,"* **ChemPhysChem**, 7, 250-260, (2006).

[16] Werner, JH, Cai, H, Keller, RA and Goodwin, PM, *"Exonuclease I hydrolyzes DNA with a distribution of rates,"* **Biophysical Journal**, 1403-1412, (2005).

[15] McCarney, ER, Werner, JH, Bernstein, SL, Ruczinski, I, Makarov, DE, Goodwin, PM and Plaxco, KW, *"Site-specific dimensions across a highly denatured protein; a single molecule study,"* **Journal of Molecular Biology**, 352, 672-682, (2005).

[14] Werner, JH, Cai, H, Jett, JH, Reha-Krantz, L, Keller, RA and Goodwin, PM, *"Progress towards single-molecule DNA sequencing: A one color demonstration,"* **Journal of Biotechnology**, 102, 1-14, (2003).

[13] Baker, GA, Baker, SN, McCleskey, TM and Werner, JH, *"Aspects of chemical recognition and biosolvation within room temperature ionic liquids,"* **ACS Symposium Series: Ionic Liquids as Green Solvents**, 856, 212-224, (2003).

[12] Werner, JH, Baker, SN and Baker, GA, *"Fluorescence correlation spectroscopic studies of diffusion within the ionic liquid 1-butyl-3-methylimidazolium hexafluorophosphate,"* **Analyst**, 128, 786-789, (2003).

[11] Werner, JH, Dyer, RB, Fesinmeyer, RM and Andersen, NH, *"Dynamics of the primary processes of protein folding: Helix nucleation,"* **Journal of Physical Chemistry B**, 106, 487-494, (2002).

[10] Goodwin, PM, Ambrose, WP, Cai, H, Grace, WK, Larson, EJ, Marrone, BL, Jett, JH, Werner, JH and Keller, RA, *"Single molecule nucleic acid analysis by fluorescence flow cytometry,"* **NATO Advanced Research Workshop on Biological, Biophysical and Theoretical Aspects of Polymer Structure and Transport**, 87, 351-370, (2002).

PUBLICATIONS (continued)

[9] Werner, JH, Larson, EJ, Goodwin, PM, Ambrose, WP and Keller, RA, *"Effects of fluorescence excitation geometry on the accuracy of DNA fragment sizing by flow cytometry,"* **Applied Optics**, 39, 2831-9, (2000).

[8] Werner, JH and Cool, TA, *"Kinetics of the combustion of trichloroethylene for low Cl/H ratios,"* **Combustion and Flame**, 120, 125-142, (2000).

[7] Ambrose, WP, Goodwin, PM, Jett, JH, Van Orden, A, Werner, JH and Keller, RA, *"Single molecule fluorescence spectroscopy at ambient temperature,"* **Chemical Reviews**, 99, 2929-2956, (1999).

[6] Werner, JH and Cool, TA, *"Kinetic model for the decomposition of DMMP in a hydrogen/oxygen flame,"* **Combustion and Flame**, 117, 78-98, (1999).

[5] Werner, JH, Cai, H, Goodwin, PM and Keller, RA, *"Current status of DNA sequencing by single molecule detection,"* **Proceedings of the SPIE**, 3602, 355-366, (1999).

[4] Werner, JH and Cool, TA, *"The combustion of trichloroethylene studied with vacuum ultraviolet photoionization mass spectrometry,"* **27th International Symposium on Combustion**, 413-423, (1998).

[3] Werner, JH and Cool, TA, *"Flame sampling photoionization mass spectrometry of dichloro-ethenol.,"* **Chemical Physics Letters**, 290, 81-7, (1998).

[2] Werner, JH and Cool, TA, *"Flame sampling photoionization mass spectrometry of CH3PO2 and CH3OPO2,"* **Chemical Physics Letters**, 275, 278-82, (1997).

[1] Satyapal, S, Werner, JH and Cool, TA, *"An extended flame zone in the combustion of CH3Cl,"* **Combustion Science and Technology**, 106, 229-238, (1995).