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POSITIONS

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| 2001-present | Distinguished Research Staff Member, Solid State Division
Oak Ridge National Laboratory, Oak Ridge, Tennessee |
| 1996–2001 | Senior Research Staff Member, Solid State Division
Oak Ridge National Laboratory, Oak Ridge, Tennessee |
| 1987–1996 | Research Staff Member, Solid State Division
Oak Ridge National Laboratory, Oak Ridge, Tennessee |
| 1986–1987 | Post-doctoral fellow, University of Illinois, Champaign, Illinois.
Department of Electrical and Computer Engineering
Assistantships, University of Illinois, Urbana-Champaign |
| 1982–1986 | Research assistant, Department of Electrical Engineering |
| 1979–1982 | Research assistant, Department of Physics |
| 1978–1983 | Teaching assistant, Department of Physics
Assistantships, University of Maryland, Baltimore County |
| 1976–1978 | Research assistant, Department of Physics |
| 1974–1976 | Teaching assistant, Department of Mathematics |

EDUCATION AND DEGREES

Ph.D., (Physics), University of Illinois, Urbana-Champaign, 1986.
M.S., (Physics), University of Illinois, Urbana-Champaign, 1980.
B.S. (Physics), University of Maryland, Baltimore County, 1978.

TECHNICAL SPECIALTIES

Investigation of nanomaterials-synthesis and thin films growth processes through the development of fast spectroscopic diagnostics for in situ studies. Techniques include gated optical imaging, spatially- and temporally-resolved emission and absorption spectroscopy, ion probe measurements, time-of-flight mass spectrometry, Rayleigh scattering detection and in situ photoluminescence spectroscopy of gas-suspended nanoparticles. Carbon nanotube synthesis and applications. Deposition, modeling, and fundamental understanding of thin film growth and etching by pulsed laser ablation and laser CVD. Experimental laser spectroscopic investigations of atomic physics, including measurements of absolute photoionization, photodetachment, and excited state absorption cross sections. Metal halide photochemistry and excimer laser kinetics.

RECENT BOOK CHAPTER

“Diagnostics and Characteristics of PLD Laser Plasmas,” Chapter 5 in *Pulsed Laser Deposition of Thin Films*, Ed. by D. B. Chrisey and G. K. Hubler, (Wiley-Interscience), 1994.

RECENT CONFERENCE CO-CHAIRMANSHIP

Co-Chair, European Materials Research Society, "*Laser Interactions in Materials: Nanoscale to Mesoscale*", Strasbourg, France, June 2004.

Co-Chair, American Physical Society Focused Session, "*Nanotubes and Related Materials*", Indianapolis, March 2004.

Co-Chair, SPIE Photonics West Symposium 4636 - "*Nanoscience Using Laser-Solid Interactions*" - San Jose, January 2004.

Co-Chair, SPIE Photonics West Symposium 4636 - "*Nanoscience Using Laser-Solid Interactions*" - San Jose, January 2003.

Co-Chair, American Physical Society Focused Session, "*Nanotubes and Related Materials*", Indianapolis, March 2002.

Co-Chair, SPIE Photonics West Symposium 4636 - "*Nanoscience Using Laser-Solid Interactions*" - San Jose, January 2002.

Co-Chair, Materials Research Society Symposium W - "*Nanotubes, Fullerenes, Nanostructured and Disordered Carbon*" - San Francisco, April 2001.

Chair, Gordon Research Conference on Laser Interactions with Materials, New Hampshire, June 2000.

Co-Chair, Fourth International Conference on Laser Ablation (COLA'97), July 21-25, 1997 in Monterey, CA with R.E. Russo, K. Murakami, and R. Haglund.

Co-Chair of The Third International Conference on Laser Ablation (COLA'95), (with E. Fogarassy and M. Stuke) held in conjunction with the European Materials Research Society meeting in Strasbourg, France, May 22-26, 1995. Co-editor, Conference Proceedings, Elsevier-North Holland, and *Applied Surface Science* **96-98**, (1996).

Co-Chair of The Second International Conference on Laser Ablation (COLA'93), (with J.C. Miller) Knoxville, TN, April 1993. Co-editor, *Amer. Inst. of Physics Conf. Proc.* **288**: *Second Inter. Conf. on Laser Ablation*, ed. by D. B. Geohegan and J. C. Miller, Amer. Inst. of Physics, New York, 1993.

AWARDS

Lockheed Martin Technical Achievement Award for Sustained Research, 1999.

Lockheed Martin Technical Achievement Award, 1998.

Martin Marietta Energy Systems Technical Achievement Award, 1990.

Outstanding Graduate Assistant Award, Teaching, Physics Dept., UIUC, 1983.

PROFESSIONAL AND HONOR SOCIETIES

American Physical Society, Materials Research Society, Phi Kappa Phi, Sigma Xi

PROFESSIONAL SERVICE, SOCIETIES, CONSULTING, AND COMMITTEES

Search Committee, for Editor of *Journal of Applied Physics* (2000).
Editorial board of *Applied Physics Letters*, *Journal of Applied Physics* (1997-1999).
Referee for the *Journal of Applied Physics*, *Applied Physics Letters*, *Applied Physics A*, *Applied Physics B*, *Applied Surface Science*, *Applied Spectroscopy*
Membership Committee, Sigma Xi.

INVITED TALKS

- October 2003 Seventh International Conference on Laser Ablation (COLA'03)
"Laser Synthesis and Processing of Nanotubes and Composites"
Crete, Greece
- July 2002 Gordon Research Conference on Laser Interactions with Materials
"Fundamental Mechanisms, in situ Diagnostics, and Methods of Laser-Synthesis of Single-Wall Carbon Nanotubes" Andover, New Hampshire
- June 2002 Plenary Lecture, European Materials Research Society Meeting, *Laser Synthesis and Processing of Single-Wall Carbon Nanotubes for Advanced Electronics and Composites* - Strasbourg, France
- November 2001 ICASE Lecture - NASA-Langley Research Center - *Time-Resolved Growth Studies and Properties of Single-Wall Carbon Nanotubes* - Hampton, VA
- October 2001 ICALEO'01 Plenary Session "Lasers and Nanotechnology"
"Laser Synthesis of Single-Wall Carbon Nanotubes with Time-Resolved in situ Diagnostics", Jacksonville, FL
- September 2001 ALT'01 - International Conference on Advanced Laser Technologies
"Laser-Synthesis and Annealing of Carbon Nanotubes", Constanta, Romania
- June 2001 The Knowledge Foundation 2nd Annual Conference on Nanostructured Materials: Applications and Commercialization, Chicago, IL
"Understanding and Controlling Single-Wall Carbon Nanotube Synthesis with Time-Resolved in situ Diagnostics"
- January 2001 National Science Foundation Workshop - Partnership in Nanotechnology, Nanoscience at Oak Ridge National Laboratory, Washington
- October 2000 Laser-Induced Damage Conference, Boulder, Colorado
"Time-resolved diagnostics and mechanisms of Carbon Nanotube Synthesis by the Laser Vaporization Technique"
- January 2000 SPIE's International Symposium on LASE 2000, San Jose
"In Situ Plasma Diagnostics of Laser Ablated Carbon Plumes for Optimized Formation of Thin Films and Carbon Nanotubes"
- November 1999 Materials Research Society Fall Meeting, Symposium U, Boston
"Time Resolved Measurements of Carbon Nanotube Synthesis by Laser Ablation"
- July 1999 COLA'99 - Fifth International Conference on Laser Ablation, Göttingen, Germany- Keynote address - *"Dynamics of Materials Synthesis by Laser Ablation"*
- April 1999 ICMCTF'99 - International Conference on Metallurgical Coatings and Thin Films, San Diego, California
- June 1998 LASERION Workshop 98 - Microfabrication, Nanostructured Materials and Biotechnology, Tegernsee, Germany

"Gas-Phase Synthesis of Photoluminescent Nanomaterials by Laser Ablation"

- April 1998 Spring Materials Research Society Meeting, San Francisco
"Dynamics of Nanoparticle Formation by Laser Ablation"
- March 1998 First International NIMC Conference on Photoreaction Control and Photofunctional Materials (PCPM'98) - Tsukuba, Japan
"Photoluminescence from Gas-Suspended Nanoparticles: A Pathway to Optimized Nanomaterials"
- December 1997 Dept. of Physics Colloquium, Kyushu University, Fukuoka Japan
"In Situ Photoluminescence and Rayleigh-Scattering Imaging of Nanoparticle Synthesis by Laser Ablation into Background Gases"
- October 1997 University of Central Florida/CREOL - Dept. of Physics Colloquium
"Gas Dynamic Effects on Laser Ablation Materials-Synthesis: Amorphous Diamond, Plume Splitting, and Photoluminescent Nanoparticles"
- September 1997 Advanced Laser Technologies (ALT'97) - International Conference on Laser Surface Processing, Limoges, France
"Gas Phase Studies of Laser Ablation of Materials Synthesis Processes in Vacuum and Background Gases"
- May 1997 Physics Departmental Colloquium, Harvard University
"Dynamics of Pulsed Laser Ablation Relevant to Materials Synthesis and Analysis"
- March 1997 American Physical Society March Meeting, Kansas City, Missouri
"Dynamics of Pulsed Laser Ablation Relevant to Materials Synthesis and Analysis"
- November 1996 Physics Department Colloquium, University of Maryland, Baltimore Co.
"Dynamics of Pulsed Laser Ablation for Thin Film Growth"
- October 1996 43rd American Vacuum Society National Symposium, Philadelphia,
"Advances in Pulsed Laser Deposition Technology and Diagnostics"
- October 1996 49th Annual Gaseous Electronics Conference, Argonne, IL
"Dynamics of Laser Ablation Plasmas in Vacuum and Background Gases: Effects of Scattering and Interplume Collisions on Velocity Distributions Used for PLD Film Growth"
- August 1996 IEEE/LEOS, Summer Topicals 1996 Conference, Keystone, CO
"Dynamics of Pulsed Laser Ablation for Thin Film Growth"
- June 1996 Optical Society of America Conference on Lasers and Electro-Optics (CLEO 96),
"Dynamics of Laser Ablation for Thin film Growth by Pulsed Laser Deposition"
- April 1996 Chemistry Department Colloquium, University at Buffalo
"Nanosecond Investigations of Laser Ablation Plume Dynamics in Vacuum and Background Gases"
- April 1996 Physics Department Colloquium, Harvard University

"Nanosecond Investigations of Laser Ablation Plume Dynamics in Vacuum and Background Gases"

- January 1996 The 12th Yokohama 21st Century Forum on Fullerenes and Laser Processing, Yokohama, Japan *"Nanosecond Investigations of Laser Ablation Plume Dynamics in Vacuum and Background Gases: Cluster Growth and Pulsed Laser Deposition"*
- January 1996 EPSRC Workshops on the Basic Science of Laser Ablation and the Pulsed Laser Deposition of Thin Films, Queen's University, Belfast, Northern Ireland *"Nanosecond Investigations of Laser Ablation Plume Dynamics during Pulsed Laser Deposition "*
- December 1995 Materials Research Society Fall Meeting, Symposium N, Boston *"Species-Resolved Imaging and Gated Photon Counting Spectroscopy of Laser Ablation Plume Dynamics During KrF- and ArF-Laser PLD of Amorphous Diamond Films"*
- February 1995 SPIE Conference - Laser Induced Thin Film Processing, San Jose *"Laser Ablation Plume Dynamics in Vacuum & Background Gases: Time-resolved imaging, spectroscopic and ion-probe diagnostics"*
- August 1994 Gordon Research Conference on Laser Surface Interactions, Plymouth, NH *"Gas Dynamics in Laser Ablation Plasmas Used for Pulsed Laser Deposition"*
- June 1994 LASERION Workshop - Tegernsee, Germany, *"Dynamics of Laser Ablation Plasmas Used for Pulsed Laser Deposition"*
- February 1994 Engineering Foundation Conference - UV/VUV Lasers, Santa Barbara *"Time Resolved Diagnostics of Excimer Laser Generated Ablation Plasmas Used for Pulsed Laser Deposition"*
- October 1993 International Laser Science/Optical Society of America Conference, Toronto *"Fast Diagnostics of the Pulsed Laser Deposition Process"*
- September 1993 NATO-ASI on Excimer Lasers, Crete, *"Time -Resolved Diagnostics of Excimer Laser Generated Ablation Plasmas: Optical and Ion Probe Studies"*
- September 1993 International Union of Materials Research Societies - International Conference on Advanced Materials, IUMRS-ICAM'93, Tokyo, Japan *"Physics and Diagnostics of Pulsed Laser Deposition Laser Plasmas"*
- May 1993 Conference on Lasers and Electro-Optics (CLEO/IQEC), Baltimore *"Fast Diagnostics of Laser Ablation used for Pulsed Laser Deposition"*
- March 1993 American Physical Society March Meeting, Seattle, *"Fast Diagnostics of the Pulsed Laser Ablation Process"*
- July 1992 Gordon Conference on Particle Solid Interactions, Plymouth NH *"Laser Plasma Formation and Propagation in Vacuum and Background Gases used for Pulsed Laser Deposition"*
- May 1992 Conference on Lasers and Electro-Optics (CLEO/IQEC), Anaheim

"Fast Imaging of Ablation Plume Propagation Through Background Gases at Pressures used for Pulsed Laser Deposition"

- April 1992 International Conference on Metallurgical Coatings and Thin Films, San Diego, "Physics and Diagnostics of Laser Ablation for High-Tc Superconductor Thin Film Growth"
- March 1992 American Physical Society Meeting, Indianapolis, "Mechanisms of YBCO Plume Transport Through Background Gases Studied by Fast ICCD Photography"
- September 1991 European Materials Research Society Meeting, Carcans-Maubuisson, France, "Effects of Ambient Background Gases on YBCO Plume Propagation under Film Growth Conditions: Spectroscopic, Ion Probe , and Fast Photographic Studies"
- November 1990 Materials Research Society Symposium X, Frontiers in Physics, "Laser Ablation Processing"

PUBLICATIONS

"In situ Growth Rate Measurements and Length Control During Chemical Vapor Deposition of Vertically-Aligned Multiwall Carbon Nanotubes" D. B. Geohegan, A. A. Puzetky, I. N. Ivanov, S. Jesse, and G. Eres, J. Y. Howe, *Appl. Phys. Lett.* (in press, Sep 1, 2003).

"Comment on "Single-Crystals of Single-Walled Carbon Nanotubes Formed by Self-Assembly"" M. F. Chisholm, Y. Wang, A. R. Lupini, G. Eres, A. A. Puzetky, B. Brinson, A. V. Melechko, D. B. Geohegan, H. Cui, M. P. Johnson, S. J. Pennycook, D. H. Lowndes, S. Arepalli, C. Kittrell, S. Sivaram, M. Kim, G. Lavin, J. Kono, R. Hauge, and R. E. Smalley *Science* **300** , 1236b (2003)

"Nucleation of Single-Walled Carbon Nanotubes" X. Fan, R. Buczko, A. A. Puzetky, D. B. Geohegan, J. Y. Howe, S. T. Pantelides, and S. J. Pennycook *Phys. Rev. Lett.* **90** , 145501 (2003)

"Growth behavior of carbon nanotubes on multilayered metal catalyst film in chemical vapor deposition" H. Cui, G. Eres, J. Y. Howe, A. Puzetky, M. Varela, D. B. Geohegan and D. H. Lowndes *Chem. Phys. Lett.* **374** , 222 (2003).

"Operation of individual integrally gated carbon nanotube field emitter cells" M. A. Guillorn, M. D. Hale, V. I. Merkulov, M. L. Simpson, G. Y. Eres, H. Cui, A. A. Puzetky , and D. B. Geohegan *Appl. Phys. Lett.* **81**, 2860 (2002)

"The electrodeposition of metal at metal/carbon nanotube junctions " D. W. Austin, A. A. Puzetky, D. B. Geohegan, P. F. Britt, M. A. Guillorn, and M. L. Simpson *Chem. Phys. Lett.* **361** , 525 (2002)

"Investigations of single-wall carbon nanotube growth by time-restricted laser vaporization" Alex A. Puzetky, Henrik Schittenhelm, Xudong Fan, Michael J. Lance, Larry F. Allard, Jr., and David B. Geohegan *Phys. Rev. B* **65** , 245425 (2002)

"Time-Resolved Diagnostics of Single-Wall Carbon Nanotube Synthesis by Laser Vaporization" Alex A. Puzetky, David B. Geohegan, C. Henrik Schittenhelm, Xudong Fan, Michael A. Guillorn, *Applied Surface Science*, (2002).

"Laser-Synthesis of Single-Wall Carbon Nanotubes with Time-Resolved in situ Diagnostics" David B. Geohegan, Alex A. Puzetky, Henrik Schittenhelm, Xudong Fan, Phillip F. Britt, Michael A. Guillorn, Michael L. Simpson, Vladimir I. Merkulov, Derek W. Austin, Stephen J. Pennycook and David C. Joy , in "Nanoscience using Laser Solid Interactions", K. Murakami, D. B. Geohegan, and F. Trager, editors, SPIE Proceedings vol. 4636, pp.1-10, (2002).

"Laser-Synthesis of Single-Wall Carbon Nanotubes with Time-Resolved in situ Diagnostics" David B. Geohegan, Alex A. Puzetky, Henrik Schittenhelm, Xudong Fan, Phillip F. Britt, Michael A. Guillorn, Michael L. Simpson, Vladimir I. Merkulov, Derek W. Austin, Stephen J. Pennycook and David C. Joy , SPIE Proceedings of ALT'01 Conference, p.260ff (2002).

"Synthesis and characterization of single-wall carbon nanotube-amorphous diamond thin-film composites" H. Schittenhelm, D. B. Geohegan, G. E. Jellison, A. A. Puzetky, M. J. Lance, P. F. Britt *Appl. Phys. Lett.* **81**, 2097 (2002).

"Laser-Synthesis of Single-Wall Carbon Nanotubes with Time-Resolved in situ Diagnostics"
David B. Geohegan, Alex A. Puzos, Henrik Schittenhelm, Xudong Fan,
Phillip F. Britt, Michael A. Guillorn, Michael L. Simpson, Vladimir I. Merkulov,
Derek W. Austin, Stephen J. Pennycook and David C. Joy , *ICALEO 2001, Laser Institute of America,
Congress Proceedings, Volume 92/93*, pp.13-22, (2002).

"Condensed Phase Growth of Single-Wall Carbon Nanotubes from Laser Annealed Nanoparticulates"
D. B. Geohegan, H. Schittenhelm, X. Fan, S. J. Pennycook, A. A. Puzos, M. A. Guillorn, D. A. Blom
and D. C. Joy *Appl. Phys. Lett.* **78**, 3307 (2001).

"Time-Resolved Diagnostics and Mechanisms of Single-Wall Carbon Nanotube Synthesis by the Laser
Vaporization Technique", D. B. Geohegan, A. A. Puzos, X. Fan, S. J. Pennycook, M. A. Guillorn, M. L.
Simpson, V. I. Merkulov, D. W. Austin, D. C. Joy, p. 1 in "Laser-Induced Damage in Optical Materials
2000, Gregory J. Exarhos, Arthur H. Guenther, Mark R. Kozlowski, Ketih L. Lewis, M. J. Soileau,
Editors, SPIE Vol. **4347** (2001).

"Characterization of Thin-Film Amorphous Semiconductors using Spectroscopic Ellipsometry", G. E.
Jellison, Jr., V. I. Merkulov, A. A. Puzos, D. B. Geohegan, G. Eres, D. H. Lowndes, and J. B.
Caughman, *Thin Solid Films* **377-378**, 68 (2000).

"In situ plasma diagnostic investigations of single-wall carbon nanotube synthesis by laser ablation of
C-Ni-Co targets" D. B. Geohegan, A. A. Puzos, X. Fan, M. A. Guillorn, M. L. Simpson, V. I.
Merkulov, and S. J. Pennycook, in *Laser Plasma Generation and Diagnostics*, vol. 3935, ed. by R.F.
Haglund, Jr. and R. F. Wood, published by SPIE – The International Society for Optical Engineering
(2000).

"Computer modeling of the interaction of a laser-ablated plume with an ambient background gas", J. N.
Leboeuf, R. F. Wood, K. R. Chen, D. B. Geohegan, A. A. Puzos, pp. 48-56 in "*Laser Plasma Generation
and Diagnostics*", Proceedings of the SPIE, vol. 3935 (2000).

"Aspects of Nanoparticle Formation During Pulsed Laser Ablation", R. F. Wood, J. N. Leboeuf, D. B.
Geohegan, A. A. Puzos, K. R. Chen, pp. 57-65 in "*Laser Plasma Generation and Diagnostics*",
Proceedings of the SPIE, vol. 3935 (2000).

"Mechanisms of single-wall carbon nanotube growth by the laser vaporization technique: In situ
imaging and spectroscopy" D. B. Geohegan, A. A. Puzos, X. Fan, M. A. Guillorn, M. L. Simpson, V. I.
Merkulov, and S. J. Pennycook, pp. 3-14 in *Amorphous and Nanostructured Carbon*, ed. by T. Allen, B. F.
Coll, J. Robertson, J. P. Sullivan, and O. Zhou, Materials Research Society, Pittsburgh, Pennsylvania,
(2000).

"Direct Observation of Intercalant and Catalyst Particles in Single-Wall Carbon Nanotubes" X. Fan, E.
C. Dickey, P. Eklund, K. Williams, L. Grigorian, A. A. Puzos, D. B. Geohegan, R. Buczko, S. T.
Pantelides, and S. J. Pennycook, p.129-134 in *Amorphous and Nanostructured Carbon*, ed. by T. Allen, B.
F. Coll, J. Robertson, J. P. Sullivan, and O. Zhou, Materials Research Society, Pittsburgh,
Pennsylvania, (2000).

"Dynamics of the Vapor Plumes Produced by the MALDI Technique", B. S. Luk'yanchuk, N. A.
Kirichenko, A. A. Puzos, and D. B. Geohegan, p. 166 in Proceedings of the SPIE, vol. 4070 (2000).

"Dynamics of Single-Wall Carbon Nanotube Synthesis by Laser Vaporization," A. A. Puzos, D. B.
Geohegan, X. Fan, and S. J. Pennycook, *Appl. Phys. A* **70**, 153 (2000).

"In Situ Imaging and Spectroscopy of Single-Wall Carbon Nanotube Synthesis by Laser Vaporization," A. A. Puretzky, D. B. Geohegan, X. Fan, and S. J. Pennycook, *Appl. Phys. Lett.* **76**, 182 (2000).

"Gas-Phase Nanoparticle Formation and Transport During Pulsed Laser Deposition of $Y_1B_{a_2}Cu_3O_{7-d}$ " D. B. Geohegan, A. A. Puretzky, and D.J. Rader. *Appl. Phys. Lett.* **74**, 3788 (1999).

"Imaging of Vapor Plumes Produced by Matrix Assisted Laser Desorption: A New Plume Sharpening Effect" A.A. Puretzky, D.B. Geohegan, G. B. Hurst, M. V. Buchanan and B. Luk'yanchuk, *Phys. Rev. Lett.* **83**, 444 (1999).

"Theory and Numerical Modeling of Accelerated Expansion of Laser Ablated Material Near a Solid Surface" K. R. Chen, T. C. King, J. H. Hes, J. N. Leboeuf, D. B. Geohegan, R. F. Wood, A. A. Puretzky, and J. M. Donato. *Phys. Rev. B* **60**, 8373 (1999).

"Pulsed-Laser Deposited Amorphous Diamond and Related Materials: Synthesis, Characterization, and Field Emission Properties" V. I. Merkulov, D. H. Lowndes, L.R. Baylor, G.E. Jellison, Jr., A. A. Puretzky, and D.B. Geohegan, in *Laser Applications in Microelectronic and Optoelectronic Manufacturing IV*, Proceedings of the SPIE (in press, 1999).

"Ion Beam Synthesis of CdS, ZnS, and PbS Compound Semiconductor Nanocrystals," C. W. White, J. D. Budai, J. D. Zhu, S. P. Withrow, R. A. Zuhr, E. Sonder, A. A. Puretzky, D. B. Geohegan, and D. O. Henderson, pp.399 in "*Mat. Res. Soc. Symp. Proc. Vol. 504*," ed. by J. C. Barbour, D. Ila, S. Roorda, M. Tsujioka, Materials Research Society, Pittsburgh, Penn., (1998).

"Surface Engineering of Silicon and Carbon by Pulsed Laser Ablation" D.H. Lowndes, V.I. Merkulov, A. J. Pedraza, J. D. Fowlkes, A. A. Puretzky, D.B. Geohegan, and G.E. Jellison, Jr. p.113 in *Surface Engineering: Science and Technology I*, ed. by A. Kumar, Y.-W. Chung, J.J. Moore, and J.E. Smugeresky, The Minerals, Metals, and Materials Society (1999).

"In situ Diagnostics of Nanomaterial Synthesis by Laser Ablation: Time Resolved Photoluminescence Spectra and Imaging of Gas-Suspended Nanoparticles Deposited for Thin Films" D. B. Geohegan, A. A. Puretzky, A. Meldrum, G. Duscher, and S. J. Pennycook, p.359 in *Microcrystalline and Nanocrystalline Semiconductors* ed. by L. Canham, M. Sailor, K. Tanaka, and C.-C. Tsai, Materials Research Society, Pittsburgh, Pennsylvania, 1999.

"Photoluminescence from Gas-Suspended SiO_x Nanoparticles Synthesized by Laser Ablation" D. B. Geohegan, A.A. Puretzky, G. Duscher, and S.J. Pennycook, *Appl. Phys. Lett.* **73**, 438 (1998).

"Time-Resolved Imaging of Gas Phase Nanoparticle Synthesis by Laser Ablation" D. B. Geohegan, A.A. Puretzky, G. Duscher, and S.J. Pennycook, *Appl. Phys. Lett.* **72**, 2987 (1998).

"Gas-Phase Diagnostics and LIF-Imaging of 3-Hydroxypicolinic Acid MALDI-Matrix Plumes," A.A. Puretzky and D.B. Geohegan, *Chem. Phys. Lett.* **286**, 425 (1998).

"LIF-Imaging and Gas-Phase Diagnostics of Laser Desorbed MALDI Matrix Plumes," A.A. Puretzky and D.B. Geohegan, *Appl. Surf. Sci.* **127/129**, 151 (1998).

"Dynamics of Plume Propagation and Splitting During Pulsed Laser Ablation of Si in He and Ar," R.F. Wood, J.N. Leboeuf, D.B. Geohegan, A. A. Puretzky and K.R. Chen,, *Phys. Rev. B* **58**, 1533 (1998).

"Time-Resolved Imaging and Photoluminescence of Gas-Suspended Nanoparticles Synthesized by Laser Ablation: Dynamics, Transport, Collection, and Ex Situ Analysis" D. B. Geohegan, A.A. Puretzky, G. Duscher, and S.J. Pennycook, p. 47 in *Advances in Laser Ablation of Materials* ed. by R. Singh, D. H.

Lowndes, D. B. Chrisey, E. Fogarassy, and J. Narayan, Materials Research Society, Pittsburgh, Pennsylvania, (1998).

R. F. Wood, J. N. Leboeuf, K. R. Chen, D. B. Geohegan, and A. A. Puretzky, "Dynamics of Plume Propagation, Splitting, and Nanoparticle Formation During Pulsed-Laser Ablation," *Appl. Surf. Sci.* **127–129**, 151 (1998).

"Amorphous Diamond Films Deposited by Pulsed Laser Ablation: The Optimum Carbon-ion Kinetic Energy and Effects of Laser Wavelength" D.H. Lowndes, V.I. Merkulov, A.A. Puretzky, D.B. Geohegan, G. E. Jellison, Jr., C.M. Rouleau, and T. Thundat, p. 325 in *Advances in Laser Ablation of Materials* ed. by R. Singh, D. H. Lowndes, D. B. Chrisey, E. Fogarassy, and J. Narayan, Materials Research Society, Pittsburgh, Pennsylvania, (1998).

"Characterization of Pulsed-Laser Deposited Amorphous Carbon Films by Spectroscopic Ellipsometry", G.E. Jellison, Jr., D.B. Geohegan, D. H. Lowndes, A. A. Puretzky, and V. Merkulov, p. 349 in *Advances in Laser Ablation of Materials* ed. by R. Singh, D. H. Lowndes, D. B. Chrisey, E. Fogarassy, and J. Narayan, Materials Research Society, Pittsburgh, Pennsylvania, (1998).

"Dynamics of Plume Propagation and Splitting During Pulsed Laser Ablation," R.F. Wood, K.R. Chen, J.N. Leboeuf, A. A. Puretzky, and D.B. Geohegan, *Phys. Rev. Lett.* **79**, 1571 (1997).

"Laser Ablation Plume Thermalization Dynamics in Background Gases: Combined Imaging, Optical Absorption and Emission Spectroscopy, and Ion Probe Measurements," D. B. Geohegan and A. A. Puretzky, *Appl. Surf. Sci.* **96–98**, 131 (1996).

"Comparative Diagnostics of ArF- and KrF- Laser Generated Carbon Plumes Used for Amorphous Diamond-Like Carbon Film Deposition," A. A. Puretzky, D. B. Geohegan, G. E. Jellison Jr., and M. M. McGibbon, *Appl. Surf. Sci.* **96–98**, 859 (1996).

"Synthesis of Novel Thin-Film Materials by Pulsed Laser Deposition," D. H. Lowndes, D. B. Geohegan, A. A. Puretzky, D. P. Norton, and C. M. Rouleau, *Science* **273**, 898 (1996).

"Species-Resolved Imaging and Gated Photon Counting Spectroscopy of Laser Ablation Plume Dynamics During KrF- and ArF-Laser PLD of Amorphous Diamond Films," David B. Geohegan and A. A. Puretzky, p. 55 in *Advanced Laser Processing of Materials—Fundamentals and Applications*, ed. by R. Singh, D. P. Norton, J. Narayan, and J. Cheung, Materials Research Society, **397**, Pittsburgh, Pennsylvania, (1996).

"Effect of Ambient Gas Pressure on Pulsed Laser Ablation Plume Dynamics and ZnTe Film Growth," C.M. Rouleau, D. H. Lowndes, M. A. Strauss, S. Cao, A. J. Pedraza, D. B. Geohegan, A. A. Puretzky, and L.F. Allard, p. 119 in *Advanced Laser Processing of Materials—Fundamentals and Applications*, ed. by R. Singh, D. P. Norton, J. Narayan, and J. Cheung, Materials Research Society, **397**, Pittsburgh, Pennsylvania, (1996).

"Epitaxial Growth of Metal Fluoride Thin Films by Pulsed-Laser Deposition," D. P. Norton, J. D. Budai, B. C. Chakoumakos, D. B. Geohegan, and A. A. Puretzky, p. 259 in *Advanced Laser Processing of Materials—Fundamentals and Applications*, ed. by R. Singh, D. P. Norton, J. Narayan, and J. Cheung, Materials Research Society, **397**, Pittsburgh, Pennsylvania, (1996).

"Pulsed Laser Ablation Growth and Doping of Epitaxial Compound Semiconductor Films", Douglas H. Lowndes, Christopher M. Rouleau, D. B. Geohegan, A. A. Puretzky, M. A. Strauss, A. J. Pedraza, J. W. Park, J. D. Budai, and D. B. Poker, p.107 in *Advanced Laser Processing of Materials—Fundamentals and*

Applications, ed. by R. Singh, D. P. Norton, J. Narayan, and J. Cheung, Materials Research Society, **397**, Pittsburgh, Pennsylvania, (1996).

"Dynamics of Laser Ablation for Thin Film Growth by Pulsed Laser Deposition"

David B. Geohegan and Alexander A. Puretzky, *Technical Digest of the American Conference on Laser and Electro-Optics*, **9**, 252 (1996).

"Mechanisms Affecting Kinetic Energies of Laser-Ablated Plasmas," K. R. Chen, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, C. L. Liu, and A. A. Puretzky, *J. Vac. Sci. & Technol. A*, **14**(3) 1111 (1996).

"Laser-Solid Interaction and Dynamics of Laser-Ablated Materials," K. R. Chen, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, C. L. Liu, and A. A. Puretzky, *Appl. Surf. Sci.* **96-98**, 45 (1996)

"Modeling of Plume Dynamics in Laser Ablation Processes for Thin Film Deposition of Materials," J. N. Leboeuf, K. R. Chen, J. M. Donato, D. B. Geohegan, C. L. Liu, A. A. Puretzky, and R. F. Wood, *Phys. Plasmas* **3** (5) 2203 (1996).

"Modeling of Dynamical Processes in Laser Ablation," J. N. Leboeuf, K. R. Chen, J. M. Donato, D. B. Geohegan, C. L. Liu, A. A. Puretzky, and R. F. Wood, *Appl. Surf. Sci.*, **96-98**, 14 (1996).

"Modeling of Thermal, Hydrodynamic, and Dynamic Deposition Processes for Pulsed-Laser Deposition of Thin Films," C. L. Liu, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, K. R. Chen, and A. A. Puretzky, *Phys. Plasmas*, **3**, 2203 (1996).

"Computational Modeling of Physical Processes During Laser Ablation," C. L. Liu, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, K. R. Chen, and A. A. Puretzky, pp.70-77 in *Proc. Engineering Foundation Conference on Materials Processing and Advanced Application of Lasers*, M. Balkanski, H. Kamimura, S. Mahajan eds., Elsevier Science (1997).

"Accelerated Expansion of Laser-Ablated Materials near a Solid Surface," K.R. Chen, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, C. L. Liu, and A. A. Puretzky, *Phys. Rev. Lett.* **75**, 4706 (1995).

"Dynamics of Laser Ablation Plume Penetration Through Low Pressure Background Gases," D. B. Geohegan and A. A. Puretzky, *Appl. Phys. Lett.* **67**, 197 (1995).

"Laser Ablation Plume Thermalization Dynamics in Background Gases Studied by Time-Resolved Imaging, Spectroscopic, and Ion Probe Diagnostics," David B. Geohegan and Alexander A. Puretzky, p. 15 in *Laser-Induced Thin Film Processing*, ed. by Jan J. Dubowski, SPIE-Vol. **2403** -The International Society for Optical Engineering," San Jose, California, (1995).

"Collisional Effects of Background Gases on Pulsed-Laser Deposition Plasma Beams," David B. Geohegan and Alex A. Puretzky, p.21 in *Film Synthesis and Growth Using Energetic Beams*, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Growth of Highly Doped p-Type ZnTe Films by Pulsed-Laser Ablation in Molecular Nitrogen," C. M. Rouleau, D. H. Lowndes, J. W. McCamy, J. D. Budai, D. B. Poker, D. B. Geohegan, A. A. Puretzky, and S. Zhu, *Appl. Phys. Lett.* **67**, 2445 (1995).

"Amorphous Diamond-Like Carbon Film Growth by KrF- and ArF- Excimer Laser PLE; Correlation with Plume Properties," A. A. Puretzky, D. B. Geohegan, G. E. Jellison, Jr. and M. M. McGibbon, p.145 in

Film Synthesis and Growth Using Energetic Beams, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Growth of Highly Doped p-Type ZnTe Films by Pulsed-Laser Ablation in Molecular Nitrogen," D. H. Lowndes, C. M. Rouleau, J. W. McCamy, J. D. Budai, D. B. Poker, D. B. Geohegan, A. A. Puzetzky, and Z. Zhu, p. 85 *Film Synthesis and Growth Using Energetic Beams*, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Modeling of Thermal, Electronic, Hydrodynamic, and Dynamic Deposition Processes for Pulsed Laser Deposition of Thin Films," C. L. Liu, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, K. R. Chen, and A. A. Puzetzky, p. 675–680 in *Beam-Solid Interactions for Materials Synthesis and Characterization*, ed. by Dale C. Jacobson, David E. Luzzi, Tony F. Heinz, and Masaya Iwaki, Materials Research Society, Pittsburgh, Penn., (1995).

"Dynamical Modeling of Laser Ablation Processes," J. N. Leboeuf, K. R. Chen, J. M. Donato, D. B. Geohegan, C. L. Liu, A. A. Puzetzky, and R. F. Wood, p. 3–33 in *Film Synthesis and Growth Using Energetic Beams*, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Laser-solid interaction and dynamics of the laser-ablated materials", K. R. Chen, J. N. Leboeuf, D. B. Geohegan, J. M. Donato, R. F. Wood, C. L. Liu, and A. A. Puzetzky, pp. 27-32 in *Film Synthesis and Growth Using Energetic Beams*, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Vapor Breakdown During Ablation by Nanosecond Laser Pulses," C. L. Liu, J. N. Leboeuf, R. F. Wood, D. B. Geohegan, J. M. Donato, K. R. Chen, and A. A. Puzetzky, p. 133–138 in *Film Synthesis and Growth Using Energetic Beams*, ed. by H. A. Atwater, J. T. Dickinson, D. H. Lowndes, A. Polman, Materials Research Society, **388**, Pittsburgh, Pennsylvania, (1995).

"Diagnostics and Characteristics of PLD Laser Plasmas," David B. Geohegan, Chapter 5 in *Pulsed Laser Deposition of Thin Films*, Ed. by D. B. Chrisey and G. K. Hubler, (Wiley-Interscience Publisher), 1994.

"Imaging and Blackbody Emission Spectra of Hot Particulates Generated During Laser Ablation," D. B. Geohegan p. 407 in *Laser Ablation: Mechanisms and Applications II*, edited by J. C. Miller and D. B. Geohegan, Amer. Inst. of Physics Conf. Proc. **288**, Amer. Inst. of Physics, New York, (1994).

"Laser Ablation of Graphite in Different Buffer Gases" A. A. Puzetzky, D. B. Geohegan, R. E. Haufler, R. L. Hettich, X.-Y. Zheng, and R. N. Compton, p. 365 in *Laser Ablation: Mechanisms and Applications II*, edited by J. C. Miller and D. B. Geohegan, Amer. Inst. of Physics Conf. Proc. **288**, Amer. Inst. of Physics, New York, (1994).

"Time Resolved Diagnostics of Excimer Laser Generated Ablation Plasmas Used For Pulsed Laser Deposition", David B. Geohegan, p. 165 in *Excimer Lasers: The Tools, Fundamental Processes and Applications*, Kluwer Academic Publishers, Netherlands, (1994).

"Gated ICCD Photography of the KrF-Laser Ablation of Graphite into Background Gases," David B. Geohegan, A. A. Puzetzky, R. L. Hettich, X.-Y. Zheng, R. E. Haufler, and R. N. Compton, in *Advanced Materials '93, IV/ Laser and Ion Beam Modification of Materials*, edited by I. Yamada, et al. IUMRS-ICAM Conference, Trans. Mat. Res. Soc. Jpn., **17**, 349 (1994).

"Imaging and Blackbody Emission Spectra of Particulates Generated in the KrF-Laser Ablation of BN and YBCO," David B. Geohegan, *Appl. Phys. Lett.* **62**, 1463 (1993).

"Fast ICCD-Photography of YBCO Laser Ablation Plume Propagation in Vacuum and Ambient Oxygen," D. B. Geohegan, *Appl. Phys. Lett.* **60**, 2732–2734, (1992).

"Physics and Diagnostics of Laser Ablation Plume Propagation for High- T_c Superconductor Film Growth," D. B. Geohegan, *Thin Solid Films* **220**, 138 (1992).

"Ablation, Melting, and Smoothing of Polycrystalline Alumina by Pulsed Excimer Laser Radiation," Douglas H. Lowndes, M. DeSilva, M. J. Godbole, A. J. Pedraza, and D. B. Geohegan, p. 191–196 in *Laser Ablation in Materials Processing—Fundamentals and Applications*, ed. by Bodil Braren, Jan Dubowski, and David Norton, Materials Research Society, **285**, Pittsburgh, Pennsylvania (1992).

"Fast Photographic and Gated Photon Counting Measurements of Blackbody Emission from Particulates Generated in the KrF-Laser Ablation of BN and YBCO," David B. Geohegan, p. 27 in *Laser Ablation in Materials Processing—Fundamentals and Applications*, ed. by Bodil Braren, Jan Dubowski, and David Norton, Materials Research Society, **285**, Pittsburgh, Pennsylvania (1992).

"Effects of Ambient Background Gases on YBCO Plume Propagation Under Film Growth Conditions: Spectroscopic, Ion Probe, and Fast Photographic Studies," David B. Geohegan, p. 73–88 in *Laser Ablation of Electronic Materials, Basic Mechanisms and Applications*, ed. by E. Fogarassy and S. Lazare, European Materials Research Society **4**, Elsevier Science Publishers, (1992).

"Laser Ablation Processing," David B. Geohegan, *J. Mater. Educ.* **12**, 383–411, (1991).

"Spectroscopic and Ion Probe Characterization of Laser Produced Plasmas Used for Thin Film Growth," David B. Geohegan, p. 28 in *Laser Ablation: Mechanisms and Applications*, ed. by J. C. Miller and R. F. Haglund, Jr., Springer-Verlag, Heidelberg (1991).

"In Situ Laser Ablation Plasma Diagnostics in the Film Growth Regime - Effects of Ambient Background Gases," D. B. Geohegan, in *Surface Chemistry and Beam-Solid Interactions*, ed. by Harry A. Atwater, Frances A. Houle and Douglas H. Lowndes, Materials Research Society **201**, 557 (1991).

"Studies of Neutral and Ion Transport During Laser Ablation of 1:2:3 Superconductors by Optical Absorption Spectroscopy," D. B. Geohegan and D. N. Mashburn, p. 153 in *Superconductivity and Applications*, ed. by H. S. Kwok et al., Plenum Press, New York, (1990).

"Characterization of Ground State Neutral and Ion Transport During Laser Ablation of 1:2:3 Superconductors by Transient Optical Absorption Spectroscopy," David B. Geohegan and Douglas N. Mashburn, in *High Temperature Superconductors: Fundamental Properties and Novel Materials Processing*, ed. by David Christen, Jagdish Narayan, and Lynn Schneemeyer, Materials Research Society **169**, 501, (1990).

"Spectroscopic and Ion Probe Characterization of the Transport Process Following Laser Ablation of $YBa_2Cu_3O_x$," D. B. Geohegan and Douglas N. Mashburn, in *Laser Ablation for Materials Synthesis*, ed. by David C. Paine and John C. Bravman, Materials Research Society **191**, 211 (1990).

" $Y_{1-x}Ba_xCu_3O_{7-x}$ Laser-Ablation plume Dynamics Measurement by Nanosecond Response Ion Probe: Comparison with Optical Measurements," D. N. Mashburn and D. B. Geohegan, in *Processing of Films for High- T_c Superconducting Electronics*, ed. by T. Venkatesan, SPIE Proceedings **1187**, 172–181 (1990).

"Characterization of Ground State Neutral and Ion Transport During Laser Ablation of $YBa_2Cu_3O_{7-x}$ Using Transient Optical Absorption Spectroscopy," D. B. Geohegan and D. N. Mashburn, *Appl. Phys. Lett.* **55**, 2345 (1989).

"Heteroepitaxial Growth of Ge Films on (100) GaAs by Pyrolysis of Digermane," Djula Eres, Douglas H. Lowndes, J. Z. Tischler, J. W. Sharp, D. B. Geohegan, and S. J. Pennycook, *Appl. Phys. Lett.* **55**, 858 (1989).

"Excimer Laser-Controlled Photochemical Deposition of Thin Films and Artificially Structured Materials", D. H. Lowndes, D. Eres, D. B. Geohegan, J. Z. Tischler, D. N. Mashburn, and S. J. Pennycook, p. 382 in *Advances in Laser Science-IV*, ed. by James L. Gole, Donald F. Heller, Marshall Lapp, and William C. Stwalley, American Institute of Physics, New York (1989).

"ArF (193 nm) Laser Photochemical Deposition of Amorphous Silicon from Disilane: Spectroscopic Studies and Comparison with Thermal CVD", D. Eres, D. B. Geohegan, D. H. Lowndes, and D. N. Mashburn, *Appl. Surf. Sci.* **36**, 70 (1989).

"Low Temperature Photon-Controlled Growth of Thin Films and Multilayered Structures," D. H. Lowndes, D. B. Geohegan, D. Eres, S. J. Pennycook, D. N. Mashburn, and G. E. Jellison, Jr., *Appl. Surf. Sci.* **36**, 59, (1989).

"Pyrolytic and Laser Photolytic Growth of Crystalline and Amorphous Germanium Films From Digermane (Ge_2H_6)," Djula Eres, D. H. Lowndes, J. Z. Tischler, J. W. Sharp, D. B. Geohegan, and S. J. Pennycook, in *Chemical Perspectives of Microelectronic Materials*, ed. by Mihal E. Gross, Joseph Jasinski, and John T. Yates, Mat. Res. Soc. Symp. Proc. Vol. **131**, 517 (1989).

"Absorption spectrum of Kr_2F ($4^2\Pi$) in the near ultraviolet and visible ($335 \leq \lambda \leq 600$ nm): Comparison with Kr_2^+ Measurements," D. B. Geohegan and J. G. Eden, *J. Chem. Phys.* **89**, (6) 3410-3427, (1988).

"Pulsed Laser Deposition of Thin Superconducting Films of $\text{Ho}_{1-x}\text{B}_2\text{Cu}_3\text{O}_{7-x}$ and $\text{Y}_{1-x}\text{B}_2\text{Cu}_3\text{O}_{7-x}$," D. B. Geohegan, D. N. Mashburn, R. J. Culbertson, S. J. Pennycook, J. D. Budai, R. E. Valiga, B. C. Sales, D. H. Lowndes, L. A. Boatner, E. Sonder, D. Eres, D. K. Christen, and W. H. Christie, *J. Mater. Res.* **3**, 1169 (1988).

"Epitaxial Growth of Ge Films on GaAs (285–415°C) by Laser Photochemical Vapor Deposition," V. Tavitian, C. J. Kiely, D. B. Geohegan, and J. G. Eden, *Appl. Phys. Lett.* **52**, 1710 (1988).

"Photon-Controlled Fabrication of Amorphous Superlattice Structures Using ArF (193 nm) Excimer Laser Photolysis," D. H. Lowndes, D. B. Geohegan, D. Eres, S. J. Pennycook, D. N. Mashburn, and G. E. Jellison, Jr., *Appl. Phys. Lett.* **52**, 1868 (1988).

"Deposition of High- T_c Superconductor Thin Films by Pulsed Laser Ablation," D. N. Mashburn, D. B. Geohegan, D. Eres, D. H. Lowndes, L. A. Boatner, B. C. Sales, S. J. Pennycook, R. J. Culbertson, E. Sonder, and D. K. Christen, p. 699 in *High-Temperature Superconductors*, ed., by Merwyn B. Brodsky, Robert C. Dynes, Koichi Kitazawa, and Harry L. Tuller, Materials Research Society **99**, 699 (1988).

"Laser Photochemical Growth of Amorphous Silicon at Low Temperatures and Comparison with Thermal Chemical Vapor Deposition," D. Eres, D. H. Lowndes, D. B. Geohegan, and D. N. Mashburn, in *Laser and Particle-Beam Chemical Processing for Microelectronics*, ed. by D. J. Ehrlich, G. S. Higashi, and M. M. Oprysko, Materials Research Society **101**, 355 (1988).

"Photon-Controlled Growth of Multilayered Structures," D. H. Lowndes, D. B. Geohegan, D. Eres, D. N. Mashburn, and S. J. Pennycook, in *Multilayers: Synthesis, Properties, and Nonelectronic Applications*, ed. by T. W. Barbee, Jr., F. Spaepen, and L. Greer, Materials Research Society **103**, 23 (1988).

"Xe₂Cl and Kr₂F Excited State (4²Π) Absorption Spectra: Measurements of Absolute Cross Sections," *Chem. Phys. Lett.* **519**, 6 (1987).

"Laser Photochemical Vapor Deposition of Ge Films (300 ≤ T ≤ 873 K) from GeH₄ : Roles of Ge₂H₆ and Ge," in *Photon, Beam, and Plasma Stimulated Chemical Processes at Surfaces*, K. K. King, V. Tavitian, D. B. Geohegan, E. A. P. Cheng, S. A. Piette, F. J. Scheltens, and J. G. Eden, ed. by V. M. Donnelly, I. P. Herman, and M. Hirose, Materials Research Society **75**, 189 (1987).

"Absolute photoionization cross sections for Kr(5s) and Kr₂ (5s ³Π_u⁺(1_u 0_u⁻)) excited states at 248 nm", D.B. Geohegan, A.W. McCown, and J. G. Eden, *J. Chem. Phys.* **86**, 577 (1987).

"Resonantly enhanced three-photon ionization of krypton", D. B. Geohegan, A. W. McCown, and J. G. Eden, *Phys. Rev. A*, **33**, 269 (1986).

"Laser photochemical vapor deposition ", J. G. Eden, K. K. King, E. A. P. Cheng, S. A. Piette, and D. B. Geohegan, p. 43 in *Excimer Lasers and Optics*, SPIE Proceedings vol. **710**, (1986).

"XeCl laser power enhancement with an external ultraviolet laser", D. B. Geohegan, A. W. McCown, and J. G. Eden, *IEEE Journal of Quantum Electronics*, **QE-22**, 501 (1986).

"Absorption of electronically excited Xe₂Cl in the ultraviolet", A. W. McCown, M.N. Ediger, D. B. Geohegan, and J. G. Eden, *J. Chem. Phys.* , **82**, 4862 (1985).

"Interaction of ultraviolet laser radiation with a XeCl laser", D. B. Geohegan, A. W. McCown, and J. G. Eden, *J. Opt. Soc. Am. B.*, **2**, 925 (1985).

"Photoionization of vapor phase thallium and indium monohalides in the ultraviolet: absolute cross sections and photofragment spectroscopy by photodetachment of I⁻", D. B. Geohegan, A. W. McCown, and J. G. Eden, *J. Chem. Phys.* **81**, 5336 (1984).

"Column IIIA metal film deposition by dissociative photoionization of metal halide vapors", D. B. Geohegan and J. G. Eden, *Appl. Phys. Lett.* **45**, 1146 (1984).

"Column IIIA metal film deposition by laser photoionization of metal-halide molecules in the vapor phase" D. B. Geohegan, A. W. McCown, and J. G. Eden, p. 93 in *Laser-Controlled Chemical Processing of Surfaces* , Edited by: A.W. Johnson, D.J. Ehrlich, and H. R. Schlossberg, North-Holland, New York, NY, (1984).

"Laser photolysis and ionization of polyatomic molecules: film growth and spectroscopic diagnostics" J. G. Eden, J. F. Osmundsen, C. C. Abele, and D. B. Geohegan, p. 22 in *Laser Assisted Deposition, Etching and Doping*, vol. **459** of the Proceedings of the SPIE - The International Society for Optical Engineering, (1984).

"Phase Control of Atomic Scattering States in Two-Photon Radiative Collisions," Munir H. Nayfeh, G. B. Hillard, and David B. Geohegan, in *Photon-Assisted Collisions and Related Topics*, ed. by N. K. Rahman and C. Guidotti, Harwood Academic Publishers, Chur London, New York (1984).

"Radiative collision-induced electron continuum-continuum scattering", M. H. Nayfeh and D. B. Geohegan, *Phys. Rev. A*, **28**, 1395 (1983).

"Double-exposure speckle photography for the measurement of small displacements" E. S. Wu and D. B. Geohegan, *American Journal of Physics*, **51**, 315 (1983).