

Mark G. Kuzyk

Department of Physics
and Materials Science Program
Washington State University
Pullman, WA 99164-2814
Ph: 509-335-4672
Fax: 509-335-7816
email: kuz@wsu.edu

DATE: February 1, 2022**EDUCATION**

University of Pennsylvania	B.A. (Physics with honors)	1979
University of Pennsylvania	M.A.	1981
University of Pennsylvania	Ph.D.	1985

EXPERIENCE

Instructor, Delaware County Community College, Media, PA, summer 1982
Research Fellow and Instructor, Department of Physics, University of Pennsylvania, 1981-85
Visiting Professor, Dept. of Technology, Tokyo U. of Agriculture and Technology, 10/1 - 10/10/89
Member of Technical Staff, AT&T Bell Laboratories, 1985-90
Assistant Professor, Department of Physics, Washington State University, 1990-95
Assistant Professor of Materials Science, Washington State University, 1991-95
Associate Professor & Tenure, Department of Physics, Washington State University, 1995-2001
Associate Professor & Tenure, Materials Science Program, Washington State University, 1995-2001
Chair, Material Sciences Program, 1997- 2000
Fellow, Optical Society of America, elected in 1999-
Full Professor, Department of Physics Washington State University, 2001-
Full Professor, Materials Science Program, Washington State University, 2001-
Associate Chair of Physics, 2001-2007
Chair of Graduate Studies, 2001-2007
Regents Professor 2009-
Fellow, SPIE, elected in 2011-
Fellow, American Physics Society, elected in 2012-
Associate Chair of Physics, 2010-2012
Meyer Distinguished Professor of the Sciences, 2015-2018

PROFESSIONAL SOCIETIES

American Physical Society (Fellow)
Optical Society of America (Fellow)
SPIE (Fellow)

PROFESSIONAL RECOGNITION

Pennsylvania Senatorial Scholar, 1976-79
Fellow, Optical Society of America, elected in 1999-
Advisory Board, Marcel Dekker, appointed in 1999-2004
Executive Committee, American Society for Engineering Education, appointed in 1999-
Distinguished Member of National Society of Collegiate Scholars, elected in 2000
Boeing Distinguished Professor 2003-2005
Distinguished Faculty Address, Washington State University 2005.
Visiting Fellow, Katholieke Universiteit Leuven, summer 2006
Visiting Fellow, Katholieke Universiteit Leuven, summer 2009
Regents Professor 2009-

Fellow, SPIE, elected in 2011-
Fellow, American Physics Society, elected in 2012-
Meyer Distinguished Professor of the Sciences 2015-2018
Eminent Faculty Award, 2018

TEACHING AWARDS

Naval Reserve Officer Training Corps Faculty Excellence Award, 1993-94.
Naval Reserve Officer Training Corps Faculty Excellence Award, 1995-96.
Distinguished Member of National Society of Collegiate Scholars, elected in 2000.
Finalist for the Marian E. Smith Faculty Achievement Award 2000-2001
GPSA Award of Excellence for Outstanding Performance and Lasting Contributions as a Faculty Advisor, WSU 2012

Sampling of Media Coverage

1. Fundamental Limits of Susceptibilities (sampling from over 1000 sources)

- [National Geographic](http://news.nationalgeographic.com/news/2004/08/0819_040819_nanointernet.html)
(http://news.nationalgeographic.com/news/2004/08/0819_040819_nanointernet.html)
- [Wired News](http://www.wired.com/news/technology/0,1282,64584,00.html) (<http://www.wired.com/news/technology/0,1282,64584,00.html>)
- [National Post and CanWest News service](#) (Thursday August 12, 2004)
- [Laser Focus World \(online article\)](#)
(http://lfw.pennnet.com/Articles/Article_Display.cfm?Section=OnlineArticles&SubSection=Display&PUBLICATION_ID=12&ARTICLE_ID=210011)
- Laser Focus World* "NONLINEAR MATERIALS: Optical-switching material breaches quantum gap," December, 2004 (print article)
- [PhysOrg.com](http://www.physorg.com/news797.html) (<http://www.physorg.com/news797.html>)
- Physics Daily Online Encyclopedia (http://www.physicsdaily.com/physics/Kuzyk_gap)
- SCI-TECH Today (http://www.sci-tech-today.com/story.xhtml?story_id=27908)
- Nature, *Research Highlights*, Most sensitive molecule, **455**, 236 (18 January 2007).
- Materials World, *Industry and Innovations*, Bumping up a few gears, **15**, 4 (February 2007)
- Chemistry World, *News in Brief*, Tricks of Light **4**, 7 (February 2007).
- Nanoday, *Research News*, "Bumpy molecules break light-sensitive limit," **2**, 13 (February 2007)
- Science Base (<http://www.sciencebase.com/science-blog/explosive-electronics.html>)
- Intute (<http://www.intute.ac.uk/sciences/spotlight/>)
- PhysOrg (<http://www.physorg.com/news86966438.html>)
- New Scientist (<http://www.newscientisttech.com/article/dn10882-new-molecules-are-most-lightsensitive-ever.html>)
- EE Times
(<http://www.eetimes.com/showArticle.jhtml;jsessionid=G3WKVMQEPK5WSQSNLPSKHSCJUNN2JVN?articleID=196800660>)
- The Inquirer (<http://www.theinquirer.net/default.aspx?article=36698>)
- DaniWeb (<http://www.daniweb.com/blogs/entry1217.html>)
- Infomatics (<http://www.infomaticsonline.co.uk/vnunet/news/2171898/optical-molecules-boost>)
- The Nanotechnology Group
(<http://www.thenanotechnologygroup.org/index.cfm?Content=88&PressID=2048>)
- CBC News (<http://www.cbc.ca/technology/story/2007/01/03/optics-internet.html>)
- Computing (<http://www.computing.co.uk/vnunet/news/2171898/optical-molecules-boost>)

- Spotlight on Optics: <http://www.opticsinfobase.org/spotlight/summary.cfm?uri=josab-27-9-1849>
2. Self-Healing Molecules (sampling from over 300 sources)
- United Press International
(http://www.upi.com/NewsTrack/Science/2007/04/10/study_laser_dye_regenerates_in_darkness/5807/)
 - Physics News, *Physicists Find Light-sensitive Molecule Can Heal Itself in the Dark*, Physorg.com
(<http://www.physorg.com/news95408195.html>)
 - Nano News Press Releases
(<http://www.thenanotechnologygroup.org/index.cfm?Content=88&PressID=2320>)
 - Nano News Press Releases
(<http://www.thenanotechnologygroup.org/index.cfm?Content=88&PressID=2320>)
 - Science Base, R&R leads to molecular recovery (<http://www.sciencebase.com/science-blog/rr-leads-to-molecular-recovery.html>)
 - Laser Focus World, print version
(http://www.laserfocusworld.com/display_article/294634/12/ARCHI/none/News/TWO-PHOTON-FLUORESCENCE:-Fluorescent-dyes-recover-after-eight-hours-of-res)
 - Real Science*, *Light Sleepers*, (<http://www.realscience.us/2007/04/10/light-sleepers/>).
 - Softpedia, *Light-sensitive Molecule Heals Itself in the Dark* (<http://news.softpedia.com/news/Light-sensitive-Molecule-Heals-Itself-in-the-Dark-51499.shtml>)
 - Bio Technology, *Molecules Can Repair Themselves if Allowed to 'rest'*
(<http://www.biotechblog.org/entry/molecules-can-repair-themselves-if-allowed-to-rest>)
3. Photomechanical Effect
- Laser Focus World* "[All-optical positioner and stabilizer made from fiber](#) ," August, 1994
4. Blue Light Sources
- Electronic Times

REFEREED JOURNAL PUBLICATIONS

1. J. E. Sohn, A. F. Garito, K. N. Desai, R. Narang, M. Kuzyk, "Synthesis of Chiral Diacetylene Polymers," *Makromol. Chem.* **180**, 2975 (1979).
2. M. Kuzyk, R. Norwood, and A. F. Garito, "Dispersion Measurements of the Third-Order Susceptibility of Organic Systems," *J. Opt. Soc. Am. A* **2**, 45 (1985).
3. K. D. Singer, M. G. Kuzyk, and J. E. Sohn, "Nonlinear Optical Processes in Orientationally Ordered Systems: Relationship Between Microscopic and Bulk Susceptibilities," *J. Opt. Soc. Am. B* **4**, 968 (1987). **Invited**
4. J. D. LeGrange, M. G. Kuzyk, and K. D. Singer, "Effects of Order on Nonlinear Optical Processes in Organic Molecular Materials," *Mol. Cryst. Liq. Cryst.* **150b**, 567 (1987). **Invited**
5. K. D. Singer, M. G. Kuzyk, and J. E. Sohn, "Second Harmonic Generation of Orientationally Ordered Materials," *J. Opt. Soc. Am. B* **4**, 78 (1987).
6. M. G. Kuzyk, J. E. Sohn, and A. F. Garito, "A Model for Solid State X-ray Polymerization," *J. Polym. Sci. B, Polym. Phys. Ed.* **26**, 277 (1988).
7. K. D. Singer, M. G. Kuzyk, R. B. Comizzoli, H. E. Katz, M. L. Schilling, J. E. Sohn, and S. J. Lalama, "Electrooptic Phase Modulation and Second Harmonic Generation in Corona-Poled Polymer Films," *Appl. Phys. Lett.* **53**, 1800 (1988).
8. C. W. Dirk and M. G. Kuzyk, "The Missing State Analysis: A Method for Determining the Origin of Molecular Nonlinear Optical Properties," *Phys. Rev. A* **39**, 1219 (1989).

9. M. G. Kuzyk, R. Norwood, J. Wu and A. F. Garito, "Frequency Dependence of the Optical Kerr Effect and Third-Order Electronic Nonlinear-Optical Processes of Organic Liquids," *J. Opt. Soc. Am. B* **6**, 154 (1989); Erratum, *J. Opt. Soc. Am. B* **6**, 1422 (1989).
10. M. G. Kuzyk, K. D. Singer, H. E. Zahn, and L. A. King, "Second Order Nonlinear Optical Tensor Properties of Poled Films Under Stress," *J. Opt. Soc. Am. B* **6**, 742 (1989).
11. M. G. Kuzyk and C. W. Dirk, "Quick and simple Method to Measure Third-Order Nonlinear Optical Properties of Dye-Doped Polymer Films," *Appl. Phys. Lett.* **54**, 1628 (1989).
12. J. E. Sohn, K. D. Singer, M. G. Kuzyk, W. R. Holland, H. E. Katz, C. W. Dirk, and M. L. Schilling, "Materials for Nonlinear Optics—Orientationally Ordered Polymer Films," *Polym. En. Sci.* **29**, 1205 (1989).
13. C. W. Dirk and M. G. Kuzyk, "Damping Corrections and the Calculation of Optical Nonlinearities in Organic Molecules," *Phys. Rev. B* **41**, 1636 (1990).
14. M. G. Kuzyk, R. C. Moore, and L. A. King, "Second-Harmonic-Generation Measurements of the Elastic Constant of a Molecule in Polymer Matrix," *J. Opt. Soc. Am. B* **7**, 64 (1990).
15. C. W. Dirk and M. G. Kuzyk, "Squarylium Dye-Doped Polymer Systems as Quadratic Electrooptic Materials," *Chem. of Materials* **2**, 5 (1990).
16. K. D. Singer, W. R. Holland, M. G. Kuzyk, G. L. Wolk, and P. A. Cahill, "Guest-Host Polymers for Nonlinear Optics," *Mol. Cryst. Liq. Cryst.* **189**, 123 (1990).
17. M. G. Kuzyk, C. W. Dirk, and J. E. Sohn, "Mechanisms of Quadratic Electrooptic Modulation of Dye-Doped Polymer Systems," *J. Opt. Soc. Am. B* **7**, 842 (1990).
18. M. G. Kuzyk and C. W. Dirk, "Effects of Centrosymmetry on the Nonresonant Electronic Third-Order Optical Susceptibility," *Phys. Rev. A* **41**, 5098 (1990).
19. M. C. Gabriel, N. H. Whitaker, Jr., C. W. Dirk, M. G. Kuzyk, and M. Thakur, "Measurement of Ultrafast Optical Nonlinearities using a Modified Sagnac Interferometer," *Optics Letters* **16**, 1334 (1991).
20. M. G. Kuzyk, U. C. Paek, and C. W. Dirk, "Dye-Doped Polymer Fibers for Nonlinear Optics," *Appl. Phys. Lett.* **59**, 902 (1991).
21. C. W. Dirk, L. T. Cheng, and M. G. Kuzyk, "A Simplified Three-Level Model for Describing the Molecular Third-Order Nonlinear-Optical Susceptibility," *Int. J. Quant. Chem.* **43**, 27 (1992). **Invited**
22. M. P. Andrews, M. G. Kuzyk, and F. Ghebremichael, "Local Field Enhancement of the Cubic Optical Nonlinearity in Fractal Silver Nanosphere/Poly (methylmethacrylate) Composites," *Nonlinear Optics* **6**, 103 (1993).
23. C. W. Dirk, N. Caballerro, and Mark G. Kuzyk, "The Quadratic Electro-optic Effect in Molecules with Large Optical Hyperpolarizabilities," *Chemistry of Materials* **5**, 733 (1993).
24. F. Ghebremichael, M. G. Kuzyk, and C. W. Dirk, "Optical Second Harmonic Generation Studies of Low Temperature Transitions in Dye-Doped Polymers," *Nonlinear Optics* **6**, 123 (1993).
25. D. A. Cleary, R. D. Willett, F. Ghebremichael, and M.G. Kuzyk, "Temperature Dependent Second Harmonic Generation in Tin Phosphorus Sulfides," *Solid State Communications* **88**, 39 (1993).
26. C. Poga, M. G. Kuzyk, and C. W. Dirk, "Quadratic Electroabsorption Studies of Third-Order Susceptibility Mechanisms in Dye-Doped Polymers," *J. Opt. Soc. Am. B* **11**, 80 (1994).
27. K. Zimmerman, F. Ghebremichael, M. G. Kuzyk, and C. W. Dirk, "Electric-Field-Induced Polarization Current Studies in Guest-Host Polymers," *J. Appl. Phys.* **75**, 1267 (1994).
28. R. A. Norwood, M. G. Kuzyk, R. A. Keosian, "Electro-optic Tensor Ratio Determination of Side-Chain Copolymers with Electro-optic Interferometry," *J. Appl. Phys.* **75**, 1869 (1994).
29. D. J. Welker and M. G. Kuzyk, "Photomechanical Stabilization in a Polymer Fiber-Based All-Optical Circuit," *Appl. Phys. Lett.* **64**, 809 (1994).
30. M. G. Kuzyk, D. J. Welker, and S. Zhou, "Photomechanical Effects in Polymer Optical Fibers," *Nonlinear Optics* **10**, 409 (1995).
31. C. W. Dirk, S. Devanathan, M. Velez, F. Ghebremichael, and M. G. Kuzyk, "Second Harmonic Generation Measurements of the Reorientational Elastic Response of a Dye Molecule in a Random Co-Polymer of Styrene and Methyl Methacrylate," *Macromolecules* **27**, 6167 (1994).
32. C. Poga, T. M. Brown, M. G. Kuzyk, and C. W. Dirk, "Characterization of the Excited States of a Squaraine Molecule with Quadratic Electroabsorption Spectroscopy," *J. Opt. Soc. Am. B* **12**, 531 (1995).
33. F. Ghebremichael, C. Poga, and M. G. Kuzyk, "Optical Second Harmonic of Conductor Interfaces," *Appl. Phys. Lett.* **66**, 139 (1995).

34. F. Ghebremichael and M. G. Kuzyk, "Optical Second Harmonic Generation as a Probe of the Temperature Dependence of the Distribution of Sites in a Poly (methyl methacrylate) Polymer Doped with Disperse Red 1 Azo Dye," *J. Appl. Phys.* **77**, 2896 (1995).
35. D. J. Welker and M. G. Kuzyk, "Optical and Mechanical Multistability in a Dye-Doped Polymer Fiber Fabry-Perot Waveguide," *Applied Phys. Lett.* **66**, 2792 (1995).
36. D. W. Garvey, Q. Li, M. G. Kuzyk, and C. W. Dirk, "Sagnac Interferometric Intensity Dependent Refractive Index Measurements of Polymer Optical Fiber," *Optics Letters* **21**, 104 (1996).
37. D. J. Welker and M. G. Kuzyk, "All-optical Devices in Polymer Optical Fiber," *Nonlinear Optics* **15**, 435 (1996).
38. D. W. Garvey, M. G. Kuzyk, C. W. Dirk, S. Martinez, H. Selnau Jr., P. Craig, and L. Green, "Progress Towards Making an All-optical Switch in Polymer Optical Fibers," *Nonlinear Optics* **15**, 455 (1996).
39. D. W. Garvey, K. Zimmerman, P. Young, J. Tostenrude, J. S. Townsend, M. Lobel, M. Dayton, R. Wittorf, M. G. Kuzyk, J. Sunick, and C. W. Dirk, "Single-mode Nonlinear-Optical Polymer Fibers," *J. Opt. Soc. Am. B* **13**, 2017 (1996).
40. D. S. Welker and M. G. Kuzyk, "All-Optical Switching in a Dye-Doped Polymer Fiber Fabry-Perot Waveguide," *Applied Phys. Lett.* **69**, 1835 (1996).
41. D. J. Welker and M. G. Kuzyk, "Suppressing vibrations in a sheet with a Fabry-Perot photomechanical device," *Oppt. Lett.* **22**, 417 (1997).
42. F. Ghebremichael, M. G. Kuzyk and H. Lackritz, "Nonlinear Optics and Polymer Physics," *Polymer Reviews* **22**, 1147 (1997).
43. Z. Zhou, S. Vigil, B. Canfield, J. Tostenrude, and M. G. Kuzyk, "Dual-core single-mode nonlinear fiber coupler," *JOSA B* **15**, 895 (1998).
44. K. Mathis, M. G. Kuzyk, and C. W. Dirk, "The mechanisms of the nonlinear optical properties of squaraine dyes in PMMA polymer," *JOSA B* **15**, 871 (1998).
45. F. Ghebremichael, M. G. Kuzyk, K. D. Singer & J. Andrews, "Relationship Between the Second-Order Microscopic and Macroscopic Nonlinear Optical Susceptibilities of Poled Dye-Doped Polymers," *J. Opt. Soc. Am. B.* **15**, 2294 (1998).
46. D. J. Welker, J. Tostenrude, D. W. Garvey, B. K. Canfield & M. G. Kuzyk, "Fabrication and characterization of single-mode electro-optic polymer optical fiber," *Optics Letters* **23**, 1826 (1998).
47. R. Kruhlak and M. G. Kuzyk, "Side Illumination Fluorescence (SIF) Spectroscopy I: Principles," **16**, 1749 (1999).
48. R. Kruhlak and M. G. Kuzyk, "Side Illumination Fluorescence (SIF) Spectroscopy II: Applications to Squaraine dye-doped polymer optical fibers," **16**, 1756 (1999).
49. M. G. Kuzyk, D. W. Garvey, B. K. Canfield, S. R. Vigil, D. J. Welker, J. Tostenrude, and C. Breckon, "Characterization of single-mode polymer optical fiber and electrooptic fiber devices," *Chemical Physics*, **245**, 327 (1999).
50. M. G. Kuzyk, D. W. Garvey, S. R. Vigil, D. J. Welker, "All-optical devices in polymer optical fiber," *Chemical Physics*, **245**, 533 (1999).
51. D. Sullivan, L. Liu, and M. G. Kuzyk, "Three-Dimensional Optical Pulse Simulation Using the FDTD Methods," *IEEE Transactions on Microwave Theory and Techniques*, **48**, 1127 (2000).
52. M. G. Kuzyk, "Fundamental limits on third-order molecular susceptibilities," *Optics Letters* **25**, 1183 (2000).
53. M. G. Kuzyk, "Physical Limits on Electronic Nonlinear Molecular Susceptibilities," *Physical Review Letters* **85**, 1218 (2000).
54. S. R. Vigil and M. G. Kuzyk, "Absolute molecular optical Kerr-effect spectroscopy of dilute organic solutions and neat organic liquids," *J. Opt. Soc. Am B* **18**, 679 (2001).
55. M. G. Kuzyk, "Quantum Limits of the Hyper-Rayleigh Scattering Susceptibilities," *IEEE Journal on Selected Topics in Quantum Electronics* **7**, 774 (2001). Invited
56. B. K. Canfield, C. S. Kwiatkowski, and M. G. Kuzyk, "Direct Deflection Method For Determining Refractive Index Profiles of Polymer Optical Fiber Preforms," *Applied Optics* **41**, 3404-3411 (2002).
57. M. A. Diaz-Garcia, S. Fernandez De Avila, and M. G. Kuzyk, "Dye-Doped Polymers for Blue Organic Diode Lasers," *Applied Physics Letters* **80**, 4486-4488 (2002).
58. C. Jiang, M. G. Kuzyk, J.-L. Ding, W. E. John, and D. J. Welker, "Fabrication and Mechanical Behavior of Dye-Doped Polymer Optical Fiber," *Journal of Applied Physics* **92**, 4-12 (2002).

59. B. Howell and M. G. Kuzyk, "Amplified Spontaneous Emission and Recoverable Photodegradation in Disperse-Orange-11-Doped-Polymer," *Journal of the Optical Society of America B* **19** (8), 1790 (2002).
60. W. Zhang, S. Bian, S. I. Kim, and M. G. Kuzyk, "High Efficiency Volume Gratings in DR1-doped poly (methyl methacrylate)" –*Optics Letters* **27** (13) 1105 (2002).
61. M. G. Kuzyk, "Using Berry's Phase for Position Sensitive Acoustical and Stress Detection," *J. Opt. Soc. Am. B* **19**, 2346 (2002).
62. S. Bian and M. G. Kuzyk, "Real-Time Holographic Reflection Gratings in Volume Media of Azo-Dye-Doped poly(methyl methacrylate)," *Optics Letters* **27**, 1761 (2002).
63. S. Bian, W. Y. Zhan, S. I. Kim, N. B. Embaye, G. J. Hanna, J. J. Park, B. K. Canfield, M. G. Kuzyk, "High-efficiency optical phase conjugation by degenerate four-wave mixing in volume media of disperse red 1-doped poly(methyl methacrylate)," *Journal of Applied Physics* **92**, (8), 4186-4193 (2002).
64. M. A. Diaz-Garcia, S. Fernandez De Avila, and M. G. Kuzyk, "Energy Transfer from Organics to Rare-Earth Complexes," *Applied Physics Letters* **81**, 3924-3926 (2002).
65. I. Vargas-Baca, A. P. Brown, M. P. Andrews, T. Galstian, Y. Li, H. Vali, and M. G. Kuzyk, "Linear and Nonlinear Optical Responses of a Dye Anchored to Gold Nanoparticles Dispersed in Liquid and Polymeric Matrixes," *Can. J. Chem.* **80**, 1625-1633 (2002).
66. Mark G. Kuzyk, "Fundamental limits on third-order molecular susceptibilities: erratum," *Optics Letters* **28**, 135 (2003).
67. M. G. Kuzyk, "Erratum: Physical Limits on Electronic Nonlinear Molecular Susceptibilities," *Physical Review Letters* **90**, 039902 (2003).
68. Shaoping Bian, Weiya Zhang and Mark G. Kuzyk, "Erasable holographic recording in photosensitive polymer optical fibers," *Optics Letters* **28**, 929 (2003).
69. M. G. Kuzyk, "Fundamental Material Limitations on Optical Devices," *Circuits and Devices* **19** (5), 8 (2003).
70. M. G. Kuzyk "Fundamental limits on two-photon absorption cross-sections," *Journal of Chemical Physics* **119**, 8327 (2003).
71. M. G. Kuzyk, "Fundamental Limits of Nonlinear Susceptibilities," *Optics and Photonic News*, December, page 26 (2003). (Special issue "Optics in 2003") summarizes 29 of "the most exciting research to emerge in the last 12 months ...of cutting edge research."
72. Paul R. Hoffman and Mark G. Kuzyk, "Position Determination of an Acoustic Burst Along a Sagnac Interferometer," *J. Lightwave Tech.* **22**, 494 (2004).
73. S. Bian and Mark G. Kuzyk, "Phase conjugation by low-power continuous-wave degenerate four-wave mixing in nonlinear polymer optical fibers," *Appl. Phys. Lett.* **84**, 858-860 (2004).
74. Mark G. Kuzyk, "Doubly Resonant Two-Photon Absorption Cross-Sections: It doesn't get any bigger than this," *Journal of Nonlinear Optical Physics and Materials* **13**, 461 (2004).
75. S. Bian and Mark G. Kuzyk, "Dark Spatial Solitons in Bulk Azo-Dye-Doped Polymer Using Photoinduced Molecular Reorientation," *Appl. Phys. Lett.* **85**, 1104-1106 (2004).
76. Kakoli Tripathy, Javier Perez Moreno, Mark G. Kuzyk, Benjamin J. Coe, Koen Clays, and Anne Myers Kelley, "Why Hyperpolarizabilities Fall Short of the Fundamental Quantum Limits," *J. Chem. Phys.* **121**, 7932 (2004).
77. B. F. Howell and M. G. Kuzyk, "Lasing Action and Photodegradation of Disperse Orange 11 Dye in Liquid Solution," *Appl. Phys. Lett.* **85**, 1901 (2004).
78. M. A. Diaz-Garcia, E. M. Calzado, J. M. Villalvilla, P. G. Boj, J. A. Quintana, and M. G. Kuzyk, "TPD-Based Blue Organic Lasers," *Journal of Nonlinear Optical Physics and Materials* **13**, 621 (2004).
79. B. K. Canfield and M. G. Kuzyk "Using quadratic electroabsorption to measure the hyperpolarizability, $\chi^{(3)}$, of asymmetric molecules," *J. Opt. Soc. Am. B* **22**, 723 (2005).
80. R. J. Kruhlak and M. G. Kuzyk "Measuring the electronic third-order susceptibility of the silicon-phthalocyanine-monomethacrylate molecule with quadratic electroabsorption spectroscopy," *J. Opt. Soc. Am. B* **22**, 643 (2005).
81. M. G. Kuzyk, Reply to comment on "Physical Limits on Electronic Nonlinear Molecular Susceptibilities," *Physical Review Letters* **95**, 109402 (2005).
82. Javier Pérez Moreno and M. G. kuzyk, "Fundamental Limits of the Dispersion of the Two-Photon Absorption Cross-Section," *J. Chem. Phys.* **123**, 194101 (2005).
83. Mark G. Kuzyk, "Compact sum-over-states expression without dipolar terms for calculating nonlinear susceptibilities," *Phys. Rev. A* **72**, 053819 (2005).

84. Shaoping Bian, Dirk Robinson, and Mark G. Kuzyk, "An optically activated cantilever using photomechanical effects in dye-doped polymer fibers," *J. Opt. Soc. Am. B.* **23**, 697-708 (2006).
85. Mark G. Kuzyk, "Truncated Sum Rules and their use in Calculating Fundamental Limits of Nonlinear Susceptibilities," *Journal of Nonlinear Optical Physics and Materials* **15**, 77-87 (2006).
86. Mark G. Kuzyk and David S. Watkins, "The effects of geometry on the hyperpolarizability," *J. Chem. Phys.* **124**, 244104 (2006).
87. Juefei Zhou, Mark G. Kuzyk, and David S. Watkins, "Pushing the hyperpolarizability to the limit," *Optics Letters* **31**, 2891 (2006).
88. Kakoli Tripathy, Javier Perez-Moreno, Mark G. Kuzyk, Benjamin J. Coe, Koen Clays, and Anne Myers Kelley, "Erratum: Why Hyperpolarizabilities Fall Short of the Fundamental Quantum Limits," *J. Chem. Phys.* **125**, 079905 (2006).
89. Mark G. Kuzyk, "Fundamental limits of all nonlinear-optical phenomena that are representable by a second-order susceptibility," *J. Chem. Phys.* **125**, 154108. (2006).
90. Weiya Zhang and Mark G. Kuzyk, "Effect of a thin optical Kerr medium on a Laguerre-Gaussian beam," *Appl. Phys. Lett.* **89**, 101103 (2006).
91. Javier Perez-Moreno, Yuxia Zhao, Koen Clays, and Mark Kuzyk, "Modulated conjugation as a means for attaining a record high intrinsic hyperpolarizability," *Opt. Lett.* **32**, 59 (2007).
92. Ye Zhu, Juefei Zhou, and Mark G. Kuzyk, "Two-photon fluorescence measurements of reversible photodegradation in a dye-doped polymer," *Opt. Lett.* **32**, 958-960 (2007).
93. Javier Pérez-Moreno, Inge Asselberghs, Yuxia Zhao, Kai Song, Hachiro Nakanishi, Shuji Okada, Kyoko Nogi, Oh-Kil Kim, Jongtae Je, Janka Mátrai, Marc De Maeyer, and Mark G. Kuzyk "Combined molecular and supramolecular bottom-up nano-engineering for enhanced nonlinear optical response: Experiments, modelling and approaching the fundamental limit," *J. Chem. Phys.* **126**, 074705 (2007).
94. Mark G. Kuzyk, "New molecules may revolutionize the performance of optical devices," *SPIE Newsroom* (2007).
95. Juefei Zhou, Mark G. Kuzyk, and David S. Watkins, "Reply to 'Comment on pushing the hyperpolarizability to the limit'," *Opt. Lett.* **32**, 944 (2007).
96. Ye Zhu, Juefei Zhou, and Mark G. Kuzyk, "Self-Healing and Laser Hardening of Nonlinear-Optical Materials," *Optics and Photonics News* **18**, 31 (2007). (Special issue "Optics in 2007") summarizes "the most exciting research to emerge in the last 12 months ...of cutting edge research."
97. W. Zhang and M. G. Kuzyk, "Optical limiting using Laguerre-Gaussian beams," *Appl. Phys. Lett.* **91**, 201110 (2007).
98. Mark C. Kuzyk and Mark G. Kuzyk, "Monte Carlo Studies of the Fundamental Limits of the Intrinsic Hyperpolarizability," *J. Opt. Soc. Am B* **25**, 103 (2008).
99. Juefei Zhou, Urszula B. Szafruga, David S. Watkins, and Mark G. Kuzyk, "Optimizing potential energy functions for maximal intrinsic hyperpolarizability," *Phys. Rev. A* **76**, 053831 (2007).
100. Javier Pérez-Moreno, Koen Clays, and Mark G. Kuzyk, "A new dipole-free sum-over-states expression for the second hyperpolarizability," *J. Chem. Phys.* **128**, 084109 (2008).
101. Juefei Zhou and Mark G. Kuzyk, "Intrinsic Hyperpolarizabilities as a Figure of Merit for Electro-optic Molecules," *J. Phys. Chem. C* **112**, 7978 (2008) **invited**.
102. Natnael B. Embaye, Shiva K. Ramini, and Mark G. Kuzyk, "Mechanisms of reversible photodegradation in disperse orange 11 dye doped in PMMA polymer," *J. Chem. Phys.* **129**, 054504 (2008).
103. R. J. Kruhlak and M. G. Kuzyk, "A General Theory of Inhomogeneous Broadening for Nonlinear Susceptibilities: The Second Hyperpolarizability," *IEEE Journal on Selected Topics in Quantum Electronics*, **14**, 1260 (2008) **invited**.
104. R. J. Kruhlak and M. G. Kuzyk, "A General Theory of Inhomogeneous Broadening for Nonlinear Susceptibilities: The Polarizability and the Hyperpolarizability," *IEEE Journal on Selected Topics in Quantum Electronics* **14**, 1272 (2008) **invited**.
105. Mark G. Kuzyk and Mark C. Kuzyk, "Nature limits the performance of optical devices," *SPIE Newsroom* (2008) **invited**.
106. Javier Perez-Moreno, Y. X. Zhao, Koen Clays, Mark G. Kuzyk, Y. Q. Shen, Ling Qui, J. M. Hao, and K. P. Guo, "Modulated Conjugation as a Means of Improving the Intrinsic Hyperpolarizability," *J. Am. Chem.Soc.* **131**, 5084-5093 (2009).

107. Mark G. Kuzyk, "Using fundamental principles to understand and optimize nonlinear-optical materials," *J. Mat. Chem.* **19**, 7444-7465 (2009).
108. David S. Watkins and Mark G. Kuzyk, "Optimizing the hyperpolarizability tensor using external electromagnetic fields and nuclear placement," *J. Chem. Phys.* **131**, 064110 (2009).
109. Logan DesAutels, Mark G. Kuzyk and Christopher Brewer, "Femtosecond bulk transparent material processing and recovery," *Optics Express* **17**, 18808 (2009).
110. Mark G. Kuzyk, "A Bird's-Eye View of Nonlinear-Optical Processes: Unification Through Scale Invariance," *Nonlinear Optics Quantum Optics* **40**, 1 (2010).
111. Shosh Shafei, Mark C. Kuzyk, and Mark G. Kuzyk, "Monte Carlo studies of the intrinsic second hyperpolarizability," *J. Opt. Soc. Am. B* **27**, 1849 (2010).
112. Urszula B. Szafruga, Mark G. Kuzyk and David S. Watkins, "Maximizing the hyperpolarizability of one-dimensional systems," *J. Nonlinear Optical Physics and Materials* **19**, 379 (2010).
113. Javier Pérez-Moreno and Mark G. Kuzyk, "A Correspondence on "Organometallic complexes for Nonlinear Optics. 45. Dispersion of the Third-Order Nonlinear Optical Properties of Triphenylamine-Cored Alkynylruthenium Dendrimers". Increasing the Nonlinear Optical Response by Two Orders of Magnitude," *Advanced Materials* (2011) DOI: 10.1002/adma.201003421.
114. Nathan J. Dawson, Mark G. Kuzyk, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, " Cascading of liquid crystal elastomer photomechanical optical devices," *Optics Communications* **284**, 991-993 (2011).
115. Benjamin Anderson, Shiva K. Ramini and Mark G. Kuzyk, "Imaging studies of photodamage and self healing in Disperse Orange 11 dye-doped PMMA," *J. Opt. Soc. Am. B* **28**, 528 (2011).
116. David S. Watkins and Mark G. Kuzyk, "The effect of electron interactions on the universal properties of systems with optimized off-resonant intrinsic hyperpolarizability," *J. Chem. Phys* **134**, 094109 (2011).
117. Shosh Shafei and Mark G. Kuzyk, "Critical role of the energy spectrum in determining the nonlinear-optical response of a quantum system," *J. opt. Soc. Am B* **28**, 882 (2011).
118. J. Perez-Moreno, S. T. Hung, M. G. Kuzyk, J. F. Zhou, S. K. Ramini, K. Clays, "Experimental verification of a self-consistent theory of the first-, second-, and third-order (non)linear optical response," *Phys. Rev. A* **84**, 033837 (2011).
119. Nathan J. Dawson, Mark G. Kuzyk, Jeremy Neal, Paul Luchette and Peter Palffy-Muhoray, "Modeling the mechanisms of the photomechanical response of a nematic liquid crystal elastomer," *J. Opt. Soc. Am B* **28**, 2134 (2011).
120. Nathan J. Dawson, Mark G. Kuzyk, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "Experimental Studies of the Mechanisms of Photomechanical Effects in a Nematic Liquid Crystal Elastomer," *J. Opt. Soc. Am. B*, **28**, 1916-1921 (2011).
121. Shiva K. Ramini, Nathan Dawson, and Mark G. Kuzyk, "Testing the diffusion hypothesis as a mechanism of self-healing in Disperse Orange 11 doped in poly(methyl methacrylate)," *J. Opt. Soc. Am B* **28**, 2408 (2011).
122. Nathan J. Dawson, Benjamin R. Anderson, Jennifer L. Schei, and Mark G. Kuzyk, "Classical model of the upper bounds of the cascading contribution to the second hyperpolarizability," *Phys. Rev. A* **84**, 043406 (2011).
123. Nathan J. Dawson, Benjamin R. Anderson, Jennifer L. Schei, and Mark G. Kuzyk, " Quantum mechanical model of the upper bounds of the cascading contribution to the second hyperpolarizability," *Phys. Rev. A* **84**, 043407 (2011).
124. George Stegeman, Mark G. Kuzyk, Dimitris G. Papazoglou, and Stelios Tzortzakis, "Off-resonance and non-resonant dispersion of Kerr nonlinearity for symmetric molecules [Invited]," *Optics Express* **19**, 22486 (2011).
125. Shosh Shafei and Mark G. Kuzyk, "The effect of extreme confinement on the nonlinear-optical response of quantum wires," *J. Nonlin. Opt. Mat. Phys. & Mater.* **20**, 427 (2011).
126. Mark G. Kuzyk, "Dye-Doped Polymers as Emergent Materials," *Nonlinear Optics Quantum Optics* **43**, 159 (2011).
127. Shiva K. Ramini and Mark G. Kuzyk, "A self healing model based on polymer-mediated chromophore correlations," *J. Chem Phys.* **137**, 054705 (2012).
128. David S. Watkins and Mark G. Kuzyk, "Universal properties of the optimized off-resonant intrinsic second hyperpolarizability," *J. Opt. Soc. Am. B* **29**, 1661 (2012).
129. Shosh Sahfei, Rick Lytel, and Mark G. Kuzyk, "Geometry-controlled nonlinear optical response of quantum graphs," *J. Opt. Soc. Am. B* **29**, 3419 (2012).

130. Mark G. Kuzyk, Javier Perez-Moreno, and Shores Shafei, "Sum rules and scaling in nonlinear optics," *Physics Reports* **529**, 297-398 (2013). **invited review article**
131. Mark G. Kuzyk, Kenneth D. Singer and George Stegeman, "Theory of Molecular Nonlinear Optics," *Advances in Optics and Photonics* **5**, 4-82 (2013). **invited review article**
132. Shiva K. Ramini, Benjamin Anderson, Sheng-Ting Hung and Mark G. Kuzyk, "Experimental tests of a new correlated chromophore domain model of self-healing in a dye-doped polymer," *Polym. Chem.* **4**, 4948-4954 (2013).
133. Rick Lytel, Soresh Shafei, Julian H. Smith, and Mark G. Kuzyk, "Influence of geometry and topology of quantum graphs on their nonlinear optical properties," *Phys. Rev. A* **87**, 043824 (2013).
134. Shores Shafei and Mark G. Kuzyk, "Paradox of the many-state catastrophe of fundamental limits and the three-state conjecture," *Phys. Rev. A* **88**, 023863 (2013). **selected as "Editors Suggestion"**
135. Benjamin Anderson, Elizabeth Bernhardt and Mark G. Kuzyk, "A White Light Interferometric Microscope for Measuring Dose-Dependent Reversible Photodegradation," *J. Appl. Phys* **114**, 123103. (2013).
136. Benjamin Anderson, Sheng-Ting Hung, and M. G. Kuzyk, "Influence of an electric field on photodegradation and self-healing in disperse orange 11 dye-doped PMMA thin films," *J. Opt. Soc. Am. B* **30**, 3193 (2013).
137. Rick Lytel and Mark G. Kuzyk, "Dressed quantum graphs with optical nonlinearities approaching the fundamental limit," *J. Nonlin. Opt. Phys. and Mat.* **22**, 1350041 (2013).
138. Xianjun Ye and Mark G. Kuzyk, "Photomechanical response of disperse red 1 azobenzene dye-doped PMMA polymer fiber," *Optics. Communications* **312**, 210 (2014).
139. Rick Lytel, Shores Shafei and Mark G. Kuzyk, "Optimum topology of quasi-one-dimensional nonlinear optical quantum systems," *J. Nonlin. Opt. Phys. and Mat.* **23**, 1450025 (2014).
140. Stijn van Cleuvenbergen, Inge Asselberghs, Wouter Vanormelingen, Thierry Verbiest, Edith Franz, Koen Clays, Mark G. Kuzyk, and Guy Koeckelberghs, "Record-high hyperpolarizabilities in conjugated polymers," *J. Mat. Chem. C* **2**, 4533 (2014).
141. Benjamin Anderson and Mark G. Kuzyk, "Generalizing the correlated chromophore domain model of reversible photodegradation to include the effects of an applied electric field," *Phys. Rev. E* **89**, 032601 (2014).
142. Benjamin Anderson and Mark G. Kuzyk, "The effect of pump depletion on reversible photodegradation," *Optics Communications* **318**, 180 (2014).
143. Benjamin Anderson and Mark G. Kuzyk, "Mechanisms of the refractive index change in DO11/PMMA due to photodegradation," *Optical Materials* **36**, 1227 (2014).
144. Benjamin Anderson, Sheng-Ting Hung, and Mark G. Kuzyk, "Wavelength Dependence of reversible photodegradation of disperse orange 11 dye-doped PMMA thin films," *J. Opt. Soc. Am B* **32**, 1043 (2015).
145. Rick Lytel, Sean Mossman, and Mark G. Kuzyk, "Optimization of eigenstates and spectra for quasi-linear nonlinear optical systems," *J. Nonlin. Opt. Phys. and Mat.* **24**, 1550018 (2015).
146. Rick Lytel, Sean Mossman and Mark G. Kuzyk, "Phase disruption as a new design paradigm for optimizing the nonlinear-optical response," *Optics Letters* **15**, 4735 (2015).
147. Mark G. Kuzyk, "A Heuristic Approach for Treating Pathologies of Truncated Sum Rules in Limit Theory of Nonlinear Susceptibilities," *Nonlinear Optics Quantum Optics* **46**, 159 (2015).
148. Sheng-Ting Hung, Ankita Bhuyan, Kyle Schademan, Joost Steverlynck, Matthew D. McCluskey, Guy Koeckelberghs, Koen Clays, and Mark G. Kuzyk, "Spectroscopic studies of the mechanism of reversible photodegradation of 1-substituted aminoanthraquinone-doped polymers," *J. Chem. Phys.* **144**, 114902 (2016).
149. Dennis M. Sullivan, Sean Mossman, and Mark G. Kuzyk, "Time-Domain Simulation of Three Dimensional Quantum Wires," *PLOS ONE* **11**, e0153802 (2016).
150. Benjamin R. Anderson, Sheng-Ting Hung, and Mark G. Kuzyk, "Imaging studies of temperature dependent photodegradation and self-healing in disperse orange 11 dye-doped polymers," *J. Chem Phys.* **145**, 024901 (2016).
151. Prabodh Dhakal and Mark G. Kuzyk, "Molecular structure and reversible photodegradation in anthraquinone dyes," *Journal of Photochemistry and Photobiology A-Chemistry* **328**, 66 (2016)
152. Ying Zhou, Adam W. Hauser, Nakul P. Bende, Mark G. Kuzyk, and Ryan C. Hayward, "Waveguiding Microactuators Based on a Photothermally Responsive Nanocomposite Hydrogel," *Advanced Functional Materials* **26**, 5547 (2016).
153. Sean Mossman, Richard Lytel and Mark G. Kuzyk, "Dalgarno-Lewis perturbation theory for nonlinear optics," *J. Opt. Soc. B* **33**, E31 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.

154. Javier Perez-Moreno and Mark G. Kuzyk, "Applying universal scaling laws to identify the best molecular design paradigms for Second-order nonlinear optics," J. Opt. Soc. B **33**, E45 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
155. Javier Perez-Moreno and Mark G. Kuzyk, "Applying universal scaling laws to identify the best molecular design paradigms for third-order nonlinear optics," J. Opt. Soc. B **33**, E57 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
156. Richard Lytel, Sean Mossman, and Mark G. Kuzyk, "General solution to nonlinear optical quantum graphs using Dalgarno-Lewis summation techniques," J. Opt. Soc. B **33**, E14 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
157. Sean Mossman, Richard Lytel, and Mark G. Kuzyk, "Fundamental limits on the electro-optic device figure of merit," J. Opt. Soc. B **33**, E109 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
158. Nathan Dawson and Mark G. Kuzyk, "Polynomial potentials determined from the energy spectrum and transition dipole moments that give the largest hyperpolarizabilities," J. Opt. Soc. B **33**, E83 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
159. Dennis Sullivan, Sean Mossman, and Mark G. Kuzyk, "Hybrid quantum systems for enhanced nonlinear optical susceptibilities," J. Opt. Soc. B **33**, E143 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
160. Mark G. Kuzyk, "A path to Ultralarge Nonlinear-Optical Susceptibilities," J. Opt. Soc. B **33**, E150 (2016). Special issue on *Nonlinear Optics at the Fundamental Limits*.
161. Prabodh P. Dhakal and mark G. Kuzyk, "Self-Healing Properties of 1-Amino,2,4-Dibromoanthraquinone Dye Doped in PMMA Polymer," J. Phys. Chem. C **121**, 351 (2017).
162. Rick Lytel, Sean Mossman, Ethan Crowell and Mark G. Kuzyk, "Exact Fundamental Limits of the First and Second Hyperpolarizabilities," Physical Review Letters **119**, 073902 (2017).
163. Najee Stubbs, Mauricio Bridgewater, Micheala Stubbs, Amin Kabir, Michael Crescimanno, Mark G. Kuzyk, and Nathan J. Dawson, "Polylactic acid promotes healing of photodegraded disperse orange 11 molecules," Optical Materials **76**, 11 (2018).
164. Ethan Crowell and Mark G. Kuzyk, "Using excited states and degeneracies to enhance the electric polarizability and first hyperpolarizability," J. Opt. Soc. Am B **35**, 2412-2422 (2018).
165. Elizabeth A Bernhardt, Chad M Garrison, Nathan F Rasmussen, Joseph T Lanska, Mark G. Kuzyk, "An apparatus for measuring a material's photomechanical response," Am. J. Phys. **86**, 943-952 (2018) Editor's Choice.
166. J. Houle, D. M. Sullivan, E. Crowell, S. Mossman, and M. G. Kuzyk, "Three-Dimensional Time Domain Simulation of the Quantum Magnetic Dipole," Int. J. Magnetism Electromagnetism **4** (2018).
167. Sean Mossman and Mark G. Kuzyk, "Using a proxy state to improve the accuracy of truncated hyperpolarizability calculations," Optics Letters **44**, 5-8 (2019).
168. Bojun Zhou, Elizabeth Bernhardt, Ankita Bhuyan, Zoya Ghorbanishiadeh, Nathan Rasmussen, Joseph Lanska and Mark G. Kuzyk, "Theoretical and experimental studies of photomechanical materials," Journal of the Optical Society of America B **36**, 1492-1517 (2019).
169. Mark G. Kuzyk, "Quantum no-cloning theorem and entanglement," American Journal of Physics **87**, 325 (2019).
170. Yunlin Yu, Zoe Lowther, Nicholas D. Christianson, Zhenpeng Li, Eric Beyer, Mark G. Kuzyk and Nathan J. Dawson, "Demonstration of a self-healing all-polymer distributed Bragg reflector laser," Appl. Phys. Lett. **116**, 103301 (2020) – Editor's Choice.
171. Ethan L. Crowell and Mark G. Kuzyk, "Topological control of the nonlinear-optical response of hybrid quantum systems," J. Opt. Soc. Am B **37**, 2256-2263 (2020).
172. Maximillian Hart and Mark G. Kuzyk, "Collecting data with a mobile phone: Studies of mechanical laws such as energy and momentum conservation," Am. J. Phys. **88**, 948-957 (2020).
173. Mark G. Kuzyk and Benjamin R. Anderson, "Imaging studies of photodegradation and self-healing in anthraquinone derivative dye-doped PMMA," Phys. Chem. Chem. Phys. **22**, 28154 (2020).
174. Mark G. Kuzyk and Nathan Dawson, "Photomechanical materials and applications: a tutorial," Advances in Optics and Photonics **12**, 847 (2020).
175. Mark G. Kuzyk, "Length as a paradigm for understanding the classical limit," Am. J. Physics **89**, 185 (2021).

176. Zoya Ghorbanishiadeh, Bojun Zhou, Morteza Sheibani Karkhaneh, Rebecca Oehler and Mark G. Kuzyk, "Photothermal and Reorientational Contributions to the Photomechanical Response of DR1 Azo Dye-Doped PMMA Fibers," *Applied Sciences.*; 12(1), **315** (2022). <https://doi.org/10.3390/app12010315>

BOOKS

1. M. G. Kuzyk "Nonlinear Optical Properties of Organic Materials X," SPIE Proc. 3147 (1997).
2. M. G. Kuzyk, "Third Order Nonlinear Optical Materials," SPIE Proc. **3796** (1998).
3. M. G. Kuzyk and C. W. Dirk, "Measurement Techniques and Tabulations of Organic Nonlinear Optical Materials," Marcel Dekker, New York (1998).
4. M. G. Kuzyk, "Third Order Nonlinear Optical Materials," SPIE Proc. **3473** (1998).
5. M. Eich and M. G. Kuzyk, "Organic Nonlinear Optical Materials," SPIE Proc. **3796** (1999).
6. M. G. Kuzyk, "Linear, Nonlinear, and Power-Limiting Organics," SPIE Proc. **4106** (2000).
7. M. Eich and M. G. Kuzyk, "Linear and Nonlinear Optics of Organic Materials," SPIE Proc. **4461** (2001).
8. M. G. Kuzyk, "Polymer Fiber Optics: Materials, Physics, and Applications," CRC Press, Taylor & Francis Group, Boca Raton (2007).
9. Mark G. Kuzyk, "Lecture Notes in Nonlinear Optics: A student's perspective," CreateSpace (2013).
10. Mark G. Kuzyk, "Nonlinear Optics: A student's perspective – With python problems and examples," CreateSpace (2017).
11. Mark G. Kuzyk, "Size," Create Space North Charleston, SC (2017). ISBN 978-1548451639

BOOK CHAPTERS

1. A. F. Garito and M. G. Kuzyk, *CRC Handbook of Laser Science and Technology Supplement 2: Optical Materials*, Marvin Weber, ed., p. 289-299 and pp. 334-366 (CRC Press, Boca Raton, 1995). **Invited**
2. M. G. Kuzyk and C. Poga, "Quadratic Electrooptics of Guest-Host Polymers," in *Organic Nonlinear Optics: Materials, Physics, and Devices*, J. Zyss, ed. (Academic Press, New York 1994), p. 299.
3. K. D. Singer, M. G. Kuzyk, and J. E. Sohn, "Orientationally Ordered Electrooptic Materials," in *Nonlinear Optical and Electroactive Polymers*, P. N. Prasad and D. Ulrich, eds. (Plenum, New York, 1987). **Invited**
4. J. E. Sohn, K. D. Singer, and M. G. Kuzyk in *Polymers for High Technology—Electronics and Photonics*, M. J. Bowden and S. R. Turner, eds., ACS Symposium Series 346 (Washington 1987) p. 401.
5. R. D. Small, J. E. Sohn, K. D. Singer, and M. G. Kuzyk, "Organic Materials for Nonlinear Optics," in *Photon Switching*, T. K. Gustafson and P. W. Smith, eds. (Springer-Verlag, Berlin, 1988).
6. J. D. LeGrange, L. A. King, M. G. Kuzyk, K. D. Singer, and H. E. Katz, "Orientational Order in Langmuir-Blodgett Monolayers," in *Nonlinear Optical Properties of Polymers*, A. J. Heeger, J. Orenstein, and D. R. Ulrich, eds. (Materials Research Society, Symposium Proceedings, Vol. 109, Pittsburgh, 1988).
7. C. W. Dirk and M. G. Kuzyk, "The Quadratic Electrooptic Effect in Small Molecules," in *Materials for Nonlinear Optics*, ACS Symposium Series on Nonlinear Optical Materials, Vol. 455 (Washington, 1991). **Invited**
8. M. G. Kuzyk, L. A. King, and K. D. Singer, "Nonlinear Optical Problems of Glassy Polymers," in *Laser Optics of Condensed Matter*, Vol. 2. E. Garmire, A. A. Maradudin and K. K. Rebane, Eds. (Plenum, New York, 1991). **Invited**
9. K. D. Singer, M. G. Kuzyk, T. Fang, W. R. Holland, and P. A. Cahill, "Design Considerations for Multi Component Molecular-Polymeric Nonlinear Optical Materials," in *Organic Molecules for Nonlinear Optics and Photonics*, p. 105, J. Messier, ed. (Kluwer, Netherlands, 1991).
10. M. G. Kuzyk, "Third-Order Nonlinear Optical Properties of Doped Polymers," in *Polymers for Electronic Photonic Applications*, C. P. Wong, ed. (Academic Press, New York, 1993), p. 507. **Invited**
11. M. G. Kuzyk, "All-Optical Materials and Devices," in *Organic Thin Films for Waveguiding Nonlinear Optics*, Kajzar and Swalen, eds, p. 759 (Gordon and Breach, Amsterdam, 1996). **Invited**
12. M. G. Kuzyk, "Relationship between the Molecular and Bulk Response," in *Measurement Techniques and Tabulations of Organic Nonlinear Optical Materials*, p. 111, Dekker, (New York, 1998).

OTHERS

1. M. G. Kuzyk, "Feynman and the Busted Bottle," *Physics Today* **42**, 129 (1989).
2. M. G. Kuzyk, "Nonlinear Optics Researchers Converge on Gulf of Mexico," *Photonics Science News* **3**, no 1, Page 2 (1997).
3. M. G. Kuzyk, "Astrology in Seattle: Kepler College Looks to the Stars, but it is not Accredited," *News and Comment, Skeptical Inquirer* **26**, 5 (Nov-Dec 2001).

BOOK REVIEWS

1. M. G. Kuzyk, Review of Modern Nonlinear Optics, *Journal of the American Chemical Society* **116**, 8862 (1994).
2. M. G. Kuzyk, Review of Nonlinear Optics and Photonics, *Physics Today* **68**, 58 (2015).

PATENTS

1. G. T. Harvey, M. S. Heutmaker, M. G. Kuzyk, and K. D. Singer, "Optical Probing Method and Apparatus," European Patent No. 91311489.8 (1992).
2. G. T. Harvey, M. S. Heutmaker, M. G. Kuzyk, and K. D. Singer, "Optical Probing Method and Apparatus," U.S. Patent No 5,126,660 (1992).
3. M. G. Kuzyk and D. J. Welker, "Photomechanical Positioning and Stabilization Method and Devices Using Optical Fibers and Feedback," Patent No. 5,446,808, August 29, 1995.
4. M. G. Kuzyk and D. J. Welker, "Continuation of Photomechanical Positioning and Stabilization Method and Devices Using Optical Fibers and Feedback," Patent No. 5,682,447, October 28, 1997.

PATENT APPLICATION

1. Brent Howell and M. G. Kuzyk, "Robust Dye-Doped Polymer Laser."

KEYNOTE/PLENARY PAPERS PRESENTED

1. Mark G. Kuzyk, Juefei Zhou, Javier Pérez-Moreno, Shiva K. Ramini, Sheng-Ting Hung, and Koen Clays, "A birds-eye view of nonlinear-optical processes: unification through scale invariance," International Symposium on Materials and Devices for Nonlinear Optics, ISOPL'5, [Ile de Porquerolles](#), France, 26 June-1 July (2009). - **Opening Keynote Address**
2. Mark G. Kuzyk, Shiva Ramini, , Eliseo DeLeon, Ben Anderson, Carl W. Dirk, and Nathan Westfall, "Reversing the Arrow of time Using Polymer-Dye Interactions," 10th International Conference on Frontiers of Polymers and Advanced Materials, Santiago, Chile (2009). **Keynote Address**
3. Mark G. Kuzyk, Shiva Ramini and Nathan Dawson, "Reversing the Arrow of Time via Photonics Using Polymer-Dye Interactions," ICOOPMA 10, Budapest, Hungary (2010). **Plenary Talk**
4. Mark G. Kuzyk, "We Can't Begin to Imagine the Applications of Smart Materials," DHL Innovation Day 2012, "Beam me to the future" - Can material be intelligent? (2012)
5. Mark G. Kuzyk, "Harnessing the power of light with photomechanical materials," Proceedings Volume 11812, Molecular and Nano Machines IV; 118120H (2021) <https://doi.org/10.1117/12.2596475>. **Keynote Address**
- 6.

PANELS

1. Mark G. Kuzyk, "We Can't Begin to Imagine the Applications of Smart Materials," DHL Innovation Day 2012, "Beam me to the future" - Can material be intelligent? (2012)

INVITED PROFESSIONAL PAPERS PRESENTED / PROCEEDINGS

1. J. E. Sohn, K. D. Singer, S. J. Lalama, and M. G. Kuzyk, "Polymers for Integrated Optics," *Am. Chem. Soc. Polym. Mat. Sci. Engr. Prepr.* **55**, 532 (1986). **Invited**
2. J. E. Sohn, K. D. Singer, M. G. Kuzyk, and S. J. Lalama, "Polymers for Integrated Optics," 2nd SPSJ International Seminar on Organic Nonlinear Optical Materials, Tsukuba (1986). **Invited**

3. R. D. Small, K. D. Singer, J. E. Sohn, M. G. Kuzyk, and S. J. Lalama, "Thin Film Processing of Polymers for Nonlinear Optics," SPIE Proc. **622**, San Diego (1986). **Invited**
4. K. D. Singer, J. E. Sohn, S. J. Lalama, and M. G. Kuzyk, "Electrooptic Polymer Glasses," Proc. SPIE **612**—EO/LASE'86. **Invited**
5. K. D. Singer, M. G. Kuzyk, and J. E. Sohn, "Orientationally Ordered Electrooptic Materials," ACS Denver (1987). **Invited**
6. J. D. LeGrange, M. G. Kuzyk, and K. D. Singer, "Order and the Photon," NSF Workshop on Ultrathin Films for Nonlinear Optics, Davis (1987). **Invited**
7. J. E. Sohn, K. D. Singer, M. G. Kuzyk, W. R. Holland, C. W. Dirk, and H. E. Katz, "Materials for Nonlinear Optics—Orientationally Ordered Polymer Films," Society of Plastic Engineers, ANTEC 88, Atlanta (1988). **Invited**
8. K. D. Singer and M. G. Kuzyk, "Nonlinear Optics in Ordered Molecular Systems," Topical Workshop on Organic and Polymeric Materials, Virginia Beach (1988). **Invited**
9. M. G. Kuzyk, R. D. Small, J. E. Sohn, and K. D. Singer, "Organic Nonlinear Optical Materials," 41st Pacific Coast Meeting of the American Ceramic Society, San Francisco, CA, Symposium on Nonlinear Optical Materials (1988). **Invited**
10. K. D. Singer, W. R. Holland, M. G. Kuzyk, G. L. Wolk, H. E. Katz, M. L. Schilling, and P. A. Cahill, "Second-Order Nonlinear Optical Devices in Poled Polymers," SPIE Proc. **1147**, 233 (1989). **Invited**
11. M. G. Kuzyk, "Third-Order Nonlinear Optical Properties of Doped Polymers," Proceedings of the 38th Symposium on Macromolecules, Fukui, Japan (1989). **Invited**
12. K. D. Singer, M. G. Kuzyk, W. R. Holland, and P. A. Cahill, "Poled Polymer Films for Nonlinear Optics," Association for the Progress of New Chemistry, Seminar on "Organic Photonic Materials—Nonlinear Optics," Chiba, Japan (1989). **Invited**
13. C. W. Dirk and M. G. Kuzyk, "The Quadratic Electrooptic Effect in Small Molecules," ACS Symposium on Nonlinear Optical Materials, New York (1990). **Invited**
14. M. G. Kuzyk, M. P. Andrews, C. W. Dirk, and U. C. Paek, "Doped Polymers as Third-Order Nonlinear Optical Materials," Materials Research Society, Annual Meeting, Boston (1990). **Invited**
15. M. G. Kuzyk, L. A. King, and K. D. Singer, "Nonlinear Optical Probes of Glassy Polymers," US/USSR Joint Symposium on The Physics of Optical Phenomena and Their Use as Probes of Matter (1990). **Invited**
16. K. D. Singer, M. G. Kuzyk, T. Fang, W. R. Holland, and P. A. Cahill, "Design Considerations for Multicomponent Molecular-Polymeric Nonlinear Optical Materials," NATO Symposium on Organic Molecules for Nonlinear Optics, France (1990). **Invited**
17. M. G. Kuzyk, "Progress in Organic Third-Order Nonlinear-Optical Materials," SPIE Symposium on Photochemistry and Photoelectrochemistry of Organic and Inorganic Molecular Thin Films, Los Angeles (1991). **Invited**
18. M. G. Kuzyk, U. C. Paek, and C. W. Dirk, "Doped Polymer Fibers for Nonlinear Optics," American Ceramic Society Annual Meeting, Cincinnati, OH (1991). **Invited**
19. M. G. Kuzyk, M. P. Andrews, U. C. Paek, and C. W. Dirk, "Guest-Host Polymer Fibers and Fractal Clusters for Nonlinear Optics," SPIE Symposium on Organic Materials for Nonlinear Optics, San Diego, CA (1991). **Invited**
20. M. G. Kuzyk, U. C. Paek, and C. W. Dirk, "Polymer Fibers for Nonlinear Optics," Symposium on Nonlinear Optical Processes in Organic and Polymer Systems and Photonic Devices, Philadelphia (1991). **Invited**
21. M. G. Kuzyk, ACS Symposium on Molecular and Biomolecular Electronics, New York (1991). **Invited**
22. M. P. Andrews and M. G. Kuzyk, "Nonlinear Optical Properties of Polymer/Silver Microsphere Composites," Polymer Preprints **32**, 105 (1991). **Invited**
23. C. W. Dirk, S. Devanathan, J. Bao, A. Tan, M. G. Kuzyk, and L.-T. Cheng, "Further Efforts in Optimizing Nonlinear Optical Molecules," SPIE Symposium on Organic Materials for Nonlinear Optics, San Diego, CA (1992). **Invited**
24. M. P. Andrews, M. G. Kuzyk, and F. Ghebremichael, "Fractal Composites for Nonlinear Optics," Progress in Nonlinear Optics: Organic and Polymeric Materials, Pullman, WA (1992). **Invited**
25. M. G. Kuzyk, J. S. Townsend, and K. A. Zimmerman, "Single-mode Polymer Fibers for All-optical Devices," Symposium on Nonlinear Optics of Liquid Crystals, Polymers, and Ordered Fluids, Cuyahoga Falls, OH (1992). **Invited**

26. M. G. Kuzyk, F. Ghebremichael, and Mark Andrews, "Nonlinear-Optical Properties of Metal Fractal Cluster-Doped Polymers," Miyazaki Symposium, Tokyo (1992). **Invited**
27. M. G. Kuzyk, T. M. Brown, F. Ghebremichael, and M. P. Andrews, "Fractal-Metal-Cluster-Doped Polymers for Enhanced Nonlinearity," Spring MRS Meeting, San Francisco (1993). **Invited**
28. M. G. Kuzyk, Q. Li, D. J. Welker, P. Young, S. Zhou, and C. W. Dirk, "New Device Concepts in Polymer Optical Fibers," ACS/OSA Topical Meeting: Organic Thin Films for Photonic Applications, Toronto (1993). **Invited**
29. M. G. Kuzyk, Q. Li, D. J. Welker, P. Young, S. Zhou, and C. W. Dirk, "All-optical and Photomechanical Devices in Polymer Optical Fibers," OE/LASE Symposium on "Organic Metal-organic and Polymer Materials for Nonlinear Optical Applications, Los Angeles (1994). **Invited**
30. M. G. Kuzyk, Q. Li, D. J. Welker, P. Young, and J. Zhou, "Applying Third-Order Nonlinear Optical Mechanisms to a New Class of Devices," International Conference on Organic Nonlinear Optics I, Val Thorens, France (1994). **Invited**
31. M. G. Kuzyk, "Third Order Optical Processes in Organic Materials," QELS, Anaheim, May (1994). **Invited**
32. M. G. Kuzyk, T. M. Brown, Q. Li, C. Poga, D. J. Welker, P. Young, S. Zhou, and C. W. Dirk, "Photomechanical Phenomena in Polymer Optical Fibers," Joint ACS/OSA Topical Meeting: Organic Thin Films for Photonic Applications, Washington, DC (1994). Proceedings published in Polymer Preprints. **Invited**
33. M. G. Kuzyk, Q. Li, M. Lobel, D. J. Welker, S. Zhou, and C. W. Dirk, "All-Optical Photomechanical Devices in Polymer Fibers," 4th IKETANI International Conference on Optically Nonlinear Organic Materials and Applications, p. 153, Hawaii (1994). **Invited**
34. M. G. Kuzyk and D. J. Welker, "Mesoscopic Photomechanical Units and Ultrasmart Materials," SPIE Meeting on Smart Structures and Materials, San Diego, SPIE Proc. **2441** (1995). **Invited**
35. M. G. Kuzyk, "The Physics of Novel All-Optical Devices," AAPT Summer Meeting, Spokane (1995).
36. D. J. Welker and M. G. Kuzyk, "All-optical Devices in Polymer Optical Fiber," ICONO'3 Proc. **70** (1995). **Invited**
37. M. G. Kuzyk, S. Vigil, S. Zhou, D. J. Welker, "Ultrafast Multistability in Miniature Photomechanical Vibration Suppressors," SPIE Proc. **2716** (1996). **Invited**
38. D. J. Welker and M. G. Kuzyk, "Smart Mesoscopic Photomechanical Positioner/Actuator, Sensor, and All-Optical Logic Unit," SPIE Proc. **2716** (1996). **Invited**
39. D. J. Welker and M. G. Kuzyk, "All-optical MPUs as Components of the Car of the Future," Proc. Int. Congress on Transportation Electronics, Convergence'96 **493** (1996). **Invited**
40. M. G. Kuzyk, B. K. Canfield, D. W. Garvey, J. A. Tostenrude, S. R. Vigil, J. E. Young, Z. Zhou, and C. W. Dirk, "Polymer Fibers as optical Device Components," page 422 in Sol-Gel and Photonic Devices, M. P. Andrews and S. I. Najafi, eds., SPIE CR **68** (1997). **Invited**
41. M. G. Kuzyk, "Linear and Nonlinear Polymer Optical Fiber Devices," POF '97 Kauai (1997). **Invited**
42. M. G. Kuzyk, D. J. Welker, J. A. Tostenrude, B. K. Canfield, "Electrooptic Fiber Devices," POF '98 (1998). **Invited**
43. M. G. Kuzyk, D. J. Welker, J. A. Tostenrude, B. K. Canfield, "All-optical & Electrooptical Fiber," ICONO' 4 (1998). **Invited**
44. M. G. Kuzyk, "The Physics and Applications of Polymer Optical Fiber," PNACP meeting, Spokane (1999). **Invited**
45. D. W. Garvey and M. G. Kuzyk, Nonlinear Optics at Polymer Optic Fibers," SPIE Proc **3796** (1999) in press. **Invited**
46. D.J. Welker, D.W. Garvey, C.D. Breckon, B. Canfield, and M.G. Kuzyk, "Single-mode Nonlinear Electrooptic Polymer Optical Fiber," POF World '99, 23 (1999). **Invited**
47. D.J. Welker, D.W. Garvey, C.D. Breckon, and M.G. Kuzyk, "Advances in Electrooptic Fiber Devices," ACS OSA Thin Films Meeting, Santa Clara (1999). **Invited**
48. M. G. Kuzyk, "Photomechanical Fibers," Washington Technology Center Symposium on MEMS, Seattle (1999). **Invited**
49. M.G. Kuzyk, "Quantum Limits on Nonlinear Susceptibilities," ICONO'5, Switzerland (2000). **Invited**
50. M.G. Kuzyk, "Physical Limits on Nonlinear Susceptibilities," Proc. SPIE 4106, San Diego (2000). **Invited**
51. M.G. Kuzyk, "Quantum Limits of Nonlinear Susceptibilities, and Beyond," 14th Annual IEEE Lasers and Electro-Optics Society 2001 Annual Meeting, San Diego, CA (2001). **Invited**

52. M.G. Kuzyk and B. F. Howell, "Studies of Amplified Spontaneous Emission in Dye-Doped Polymer Fibers at 650nm," ICONO'6, Tucson, AZ (2001). **Invited**
53. M.G. Kuzyk, "Nonlinear Optics of Dye-Doped Polymers," 25th Asilomar Conference on Polymers, (2002). **Invited**
54. M.G. Kuzyk, "An Overview of Dye-Doped Polymer Optical Fibers: Fabrication, Characterization and Applications," Polymer Optical Fiber 2003, Seattle (2003) **Invited.**
55. M.G. Kuzyk, "Fundamental Limits of the Two-Photon Absorption Cross-Section," The Third International Symposium on Optical Power Limiting, Sedona (2003) **Invited.**
56. M.G. Kuzyk, "[The Sky's NOT the Limit - What Sum Rules Teach us about Nonlinear-Optical Susceptibilities](#)," ICONO'7 and ICOPE, Sorak, Korea (2003) **Invited.**
57. M. G. Kuzyk and P. R. Hoffman, "Low-Cost Fiber-Optic Temperature Sensors," EPRI's First Annual Increased Power Flow (IPF) Conference and Task Force meeting, Boston (2003) **Invited.**
58. Mark G. Kuzyk, "Understanding the Quantum Gap Between Measured Nonlinear Susceptibilities and Theory," 7th Mediterranean Topical Meeting on "Novel Optical Materials and Application" Cetraro, Italy on May 29 – June 4th, (2005) **Invited.**
59. Mark G. Kuzyk, "The Quantum Gap," International Conference on Organic Photonics and Electronics 2005 and 8th International Conference on Organic Nonlinear Optics, Matsushima, Japan (2005) **Invited.**
60. Mark G. Kuzyk, "Nonlinear-Optical and Photomechanical Properties of Polymer Fibers," ICCOPMA, Darwin, Australia (2006) **Invited.**
61. Mark G. Kuzyk, Juefei Zhou, and David S. Watkins, "Using Fundamental Quantum Principles to Design Better Nonlinear-Optical Molecules," ACS/OSA joint meeting on Optical Thin Films. Published in Polymer Preprints **xx**, xxx (2006). **Invited**
62. Juefei Zhou, Javier Pérez-Moreno, Koen Clays, David S. Watkins, Yuxia Zhao, Mark C. Kuzyk, Mark G. Kuzyk "Using numerical optimization techniques to design molecules with record intrinsic hyperpolarizability," 8th Mediterranean Topical Meeting on "Novel Optical Materials and Application" Cetraro, Italy on June 3rd – June 10th, (2007) **Invited.**
63. Koen J. Clays, Javier Perez-Moreno, Mark G. Kuzyk, Yuxia Zhao, "Record high intrinsic hyperpolarizabilities for polymeric electro-optic modulators," SPIE Proc. **6713 (2007)**. **Invited**
64. Mark G. Kuzyk, Edward W. Taylor, Natnael B. Embaye, Ye Zhu, Juefei Zhou, "Hardening of polymer optical materials with laser cycling and gamma-rays," SPIE Proc. **6713 (2007)**. **Invited**
65. Javier Perez-Moreno, Yuxia Zhao, mark G. Kuzyk, Koen Clays, "High "intrinsic" first hyperpolarizability by modulating the conjugation path between donor and acceptor," [LEOS Summer Topical Meetings](#) on Organic Nonlinear Optics, July 23-35, Portland (2007). **Invited**
66. Mark G. Kuzyk, Juefei Zhou, Javier Pérez-Moreno, Shiva K. Ramini, Sheng-Ting Hung, and Koen Clays, "Using Hyper-Rayleigh Scattering and the Dipole-Free Sum-Over States Expression to Predict Two-Photon Absorption Spectra of AF455," SPIE (2008). **Invited**
67. Mark G. Kuzyk, Juefei Zhou, Javier Pérez-Moreno, Shiva K. Ramini, Sheng-Ting Hung, and Koen Clays, "Using the Dipole-Free Sum-Over States Expression to Predict Two-Photon Absorption Spectra from Hyper-Rayleigh Scattering," ICONO'10, Santa Fe (2008). **Invited**
68. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "Transmitting Mechanical Forces on a Beam of Light," ICCOPMA (2008) - Edmonton **Invited**
69. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "A Hierarchical Approach to Making a New Class of Ultra-Smart Morphing Materials," *New Molecular Materials for Advanced Optical Applications in a Changing World*, May 18 & 19, 2009, Brussels, Belgium (2009). **Invited**
70. Mark G. Kuzyk, Shiva K. Ramini, Urszula Szafruga, Rosanne Garcia, Benjamin Anderson, and Logan DesAutels, "The Physics of Self-Healing After Photodegradation in a Dye-Doped Polymer," SPIE, San Diego (2009). **Invited**
71. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "Using liquid crystal elastomers to transmit and receive a force on a beam of light," 9th Mediterranean Topical Meeting on "Novel Optical Materials and Application" Cetraro, NOMA, Italy on June 7rd – June 14th, (2009) **Invited.**

72. Mark G. Kuzyk and David S. Watkins, "Optimizing the nonlinear response of a molecule using external fields and symmetry," SPIE, San Diego (2009). – **invited**.
73. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "Nonlinear-optical and photo-mechanical phenomena in dye-doped polymeric fibers as the basis for making ultrasmart materials," POF 2009, Sydney Australia (2009). – **invited**.
74. Mark G. Kuzyk, Juefei Zhou, Javier Pérez-Moreno, Shiva K. Ramini, Sheng-Ting Hung, and Koen Clays, "Theoretical and Experimental Studies of the Nonlinear-Optical Properties of Octupolar Molecules of D_{3h} Symmetry," ICONO'11, Beijing, China (2009). – **invited**.
75. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, Peter Palffy-Muhoray, and Shiva Ramini, "The future: smart polymeric materials," AMARIS'10, Cachan, France (2010). – **invited**.
76. Mark G. Kuzyk and David Watkins, "Using sum rules to study scaling of the third-order nonlinear-optical response," SPIE conference on Linear and Nonlinear Optics of Organic Materials X, San Diego (2010). – **invited**.
77. Mark G. Kuzyk and Nathan Dawson, "Smart morphing systems based on photomechanical optical devices," SPIE Photonics West, **Organic Photonic Materials and Devices XIII 7935** (2011). **invited**
78. Mark G. Kuzyk, Nathan J. Dawson, Jeremy Neal, Paul Luchette, and Peter Palffy-Muhoray, "Mechanisms of the Photomechanical Effect in Dye-Doped Liquid Crystal Elastomers," 9th Mediterranean Topical Meeting on "Novel Optical Materials and Application" NOMA, Cetraro, Italy, June 5th – June 11th (2011) **Invited**.
79. George Stegeman, Dimitris Papazoglou, Stelios Tzortakis, and Mark Kuzyk, "The Off-resonance and Non-resonant Dispersion of the Nonlinear Index of Linear Symmetric Molecules," Nonlinear Optics: Materials, Fundamentals and Applications (NLO), Kauai, Hawaii, July 17, 2011. in *Nonlinear Optics: Materials, Fundamentals and Applications*, OSA Technical Digest (CD) (Optical Society of America, 2011), **Invited** paper NFB3.
80. Mark G. Kuzyk and Shores Shafei, "The nonlinear-optical response of a quantum system as a function of its energy spectrum," Proc. SPIE **8161**, 81640J (2011) **Invited**.
81. Mark G. Kuzyk, "Smart morphing systems based on photomechanical optical devices, SPIE Photonics West **7935**, San Francisco (2011) **Invited**.
82. Grzegorz Pawlik, Rafal Orlik, Wojciech Radosz, Antoni C. Mitus, and Mark G. Kuzyk, "Towards understanding the photomechanical effect in polymeric fibers: analysis of free volume in a model polymeric matrix," Proc. SPIE **8474** (2012). (invited)
83. Mark G. Kuzyk and Shiva K. Ramini, "Correlated aggregate model of self healing in dye-doped polymers," Proc. SPIE **8519** (2012). (invited)
84. Xianjun Ye and Mark G. Kuzyk, "Azobenzene compound-based photomechanical actuator devices," Proc. SPIE **8519** (2012). (invited)
85. Prabodh Dhakal, Shiva K. Ramini, and Mark G. Kuzyk, "Correlation between molecular structure and self healing in a series of anthraquinone derivatives doped in PMMA polymer," Proc. SPIE **8519** (2012). (invited)
86. Shores Shafei and Mark G. Kuzyk, "Potential energy optimization and Monte Carlo simulations of the first hyperpolarizability: a comparative study," Proc. SPIE **8519** (2012). (invited)
87. Benjamin R. Anderson, Sheng-Ting Hung, and Mark G. Kuzyk, "Measuring electric field dependent photodegradation and recovery of disperse orange 11 dye doped polymer thin films using photoconductivity and digital imaging microscopy," Proc. SPIE **8519** (2012). (invited)
88. Shiva K. Ramini and Mark G. Kuzyk, "Reversible photodegradation through chromophore-polymer interactions in Disperse Orange 11 dye-doped PMMA thin films," Proc. SPIE **8519** (2012). (invited)
89. Javier Pérez-Moreno and Mark G. Kuzyk, "Universal scaling power-laws for the molecular optical response in the nonlinear regime," Proc. SPIE **8519** (2012). (invited)
90. Mark G. Kuzyk, "Searching for new physics in the patterns of the nonlinear-optical response of quantum systems with applications to quantum graphs and 1D potentials," 11th Mediterranean Workshop and Topical Meeting on *Novel Optical Materials and Applications*, Cetraro, Italy (2013). (invited)
91. Richard Lytel, Shores Shafei, and Mark G. Kuzyk, "Topological optimization of nonlinear optical quantum wire networks," SPIE Proc. **8827** (2013). (invited)
92. Mark G. Kuzyk, Elizabeth Bernhardt, Joseph Lanska, Nathan Rasmussen, Julie Kornfield, Zuli Kurji, Ryan Hayward, Adam Hauser, Junhee Na, Ying Zhou, Peter Palffy-Muhoray, Oliver Kress, Fred Minkowski, Misha Pevnyi, Dennis Sullivan, Andres Lozano, "Photomorphon Networks: The Science of Intelligent Shape-Changing

- Structures and Their Applications," MRS Annual Meeting: Symposium XX: Shape Programmable Materials (2014). (invited)
93. Mark G. Kuzyk, Rick Lytel, Shores Shafei, and Sean Mossman, "Sum Rules and Scaling in Novel Quasi-One-Dimensional Nonlinear-Optical Quantum Systems," MRS Annual Meeting: Symposium JJ: Materials and Processes for Nonlinear Optics (2014). (invited)
 94. Mark G. Kuzyk, "Using Photomorphons to make Smart Shape-Shifting materials," Symposium on Applications of Origami, Miami (2014). (invited)
 95. Mark G. Kuzyk, "Using Photomorphons to make Positioners for Brain Stimulations," Symposium on Applications of Origami, Miami (2015). (invited)
 96. Mark G. Kuzyk, Sean Mossman and Rick Lytel, " Hybrid molecule/nanowire systems with a hyperpolarizability that approaches the fundamental limit," SPIE Photonics West, San Francisco (2015). (invited)
 97. Mark Kuzyk, "Fundamental Limits of Figures of Merit," Fundamentals of Nonlinear Optics I, Lehigh University (2015). (invited)
 98. Mark Kuzyk, "Tutorial on Scaling in Nonlinear Optics," Fundamentals of Nonlinear Optics I, Lehigh University (2015). (invited)
 99. Mark Kuzyk, "The Quantum Side of Plasmonics in Nonlinear Optics," OSA Nonlinear Metamaterials Incubator, Washington, DC (2015). (invited)
 100. Mark G. Kuzyk, "Fundamental limits of electro-optic figures of merit," Photonics North, Quebec (2016). (invited)
 101. Mark G. Kuzyk, "Is it Possible to Beat the Limits?" Foundations of Nonlinear Optics, Tufts University (2016). (invited)
 102. Mark G. Kuzyk, "Scaling and Fundamental Limits Unite Theory and Experiment in Nonlinear Optics," Foundations of Nonlinear Optics, Tufts University (2016). (invited tutorial)
 103. Mark Kuzyk, "Harnessing the photomechanical response of dye-doped polymers and elastomers," OSA Incubator on Materials for Optomechanical Actuation, Washington, DC (2017). (invited)
 104. Mark G. Kuzyk, "Size Matters," Foundations of Nonlinear Optics, University of the Bahamas (2017). (invited)
 105. Mark G. Kuzyk, "Mechanisms of the photomechanical response in liquid crystal elastomers and dye-doped polymers," 13th Mediterranean Workshop and Topical Meeting on *Novel Optical Materials and Applications*, Cetraro, Italy (2017). (invited)
 106. Mark G. Kuzyk, "A Grand Tour of Sum Rules, Size, and Limits," Foundations of nonlinear Optics, Skidmore College (2018). (invited)
 107. Mark G. Kuzyk, "Harnessing the photomechanical response of dye-doped polymers and elastomers," 3rd International Conference on Photoalignment and Photopatterning in Soft Materials, PhoSM2018, Tampere, Finland (2018). (invited)
 108. Mark G. Kuzyk, "Photo-Mechanical Devices Made in Polymer Optical Fibers." POF 2018, Seattle (2018). (invited)
 109. Mark G. Kuzyk, "Nonlinear Optics at the Classical/Quantum Divide," Foundations of nonlinear Optics, AFIT, Dayton OH (2019). (invited)
 - 110.

Contributed Professional Papers Presented/ PROCEEDINGS

1. K. Desai, J. E. Sohn, M. G. Kuzyk, and A. F. Garito, "X-ray Photopolymerization of 1,6-BIS(Cinnamoyl)-2,4-Hexadiyne," Conf. Proc. on Thermal Analysis, Williamsburg (1983).
2. K. D. Singer, J. E. Sohn, M. G. Kuzyk, and S. J. Lalama, "Polymers for Integrated Optics," 2nd SPSJ International Pol. Conf., Tokyo (1986).
3. K. D. Singer, M. G. Kuzyk, and J. E. Sohn, "Nonlinear Optics of Orientationally Ordered Materials," International Quantum Electronics Conference, Baltimore (1987).
4. M. G. Kuzyk, K. D. Singer, and J. E. Sohn, "Electrooptic Effect in Doped Poled Polymer Films," Conference on Lasers and Electrooptics, Baltimore (1987).
5. J. E. Sohn, K. D. Singer, M. G. Kuzyk, H. E. Katz, and C. W. Dirk, "Orientationally Ordered Polymer Films for Nonlinear Optics," European Polymer Federation Meeting, Paris (1987).

6. R. D. Small, J. E. Sohn, K. D. Singer, and M. G. Kuzyk, "Organic Materials for NLO," OSA Topical Meeting on Photonic Switching, Lake Tahoe (1987).
7. J. D. LeGrange, L. A. King, M. G. Kuzyk, K. D. Singer, and H. E. Katz, "Second Harmonic Studies of Structural Order in Langmuir-Blodgett Monolayers," Materials Research Society, Boston (1987).
8. C. W. Dirk and M. G. Kuzyk, "Calculation of Second and Third-Order Optical Nonlinearities of Organic Molecules," SPIE, San Diego (1988).
9. W. R. Holland, M. G. Kuzyk, K. D. Singer, and J. E. Sohn, "Nonlinear Optical Polymer Films," Fourteenth European Conference on Optical Communication, Pub. No. 292, p. 300, Brighton, England (1988).
10. H. E. Katz, M. L. Schilling, R. B. Comizzoli, K. D. Singer, J. E. Sohn, M. G. Kuzyk, W. R. Holland, "Nonlinear Optical Properties of Organic Polymers," Specialty Polymer, Queens' College, Cambridge University (1988).
11. M. G. Kuzyk, K. D. Singer, H. E. Zahn, and L. A. King, "Controlling the Second Order Nonlinear Optical Tensor Properties of Poled Films with Stress," Optical Society of America, Proceedings on Nonlinear Optical Properties of Materials, Troy, NY (1988).
12. J. E. Sohn, K. D. Singer, M. G. Kuzyk, W. R. Holland, H. E. Katz, C. W. Dirk, M. L. Shilling, and R. B. Comizzoli, "Orientationally Ordered Nonlinear Optical Polymer Films," NATO Advanced Workshop on "Nonlinear Optical Effects in Organic Polymers," France (1988).
13. C. W. Dirk and M. G. Kuzyk, "Calculation of Nonlinear Optical Susceptibilities: The Missing States Analysis," Gordon Conference on Electron Donor Acceptor Interactions, New Hampshire (1988).
14. M. G. Kuzyk, R. C. Moore, and L. A. King, "Second Harmonic Generation Measurements of the Elastic Constant of Dye-Doped PMMA," 60th Annual Meeting of the society of Rheology, Gainesville, FL (1989).
15. M. G. Kuzyk, R. C. Moore, and L. A. King, "Electric Field-Induced Second Harmonic Generation as a Probe of Molecular Reorientational Mechanisms in Nonlinear Optics," Conference on Quantum Electronics and Laser Science, Baltimore (1989).
16. M. G. Kuzyk and C. W. Dirk, "Quadratic Electrooptic Modulation: A Quick and Simple Method of Measuring Electronic Third-Order Susceptibilities," Conference on Quantum Electronics and Laser Science, Baltimore (1989).
17. C. W. Dirk and M. G. Kuzyk, "Third-Order Nonlinear Optical Molecules: The Two-Level Model," SPIE Proc. **1147**, 18 (1989).
18. M. G. Kuzyk, C. W. Dirk, J. E. Sohn, and R. C. Moore, "Quadratic Electrooptic Modulation of Dye-Doped Polymers: Measurement of Third-Order Electronic Nonlinear Optical Susceptibilities," SPIE Proc. **1147**, 198 (1989).
19. M. G. Kuzyk, R. C. Moore, and L. A. King, "A Nonlinear Optical Determination of the Microscopic Elasticity of a Glassy Polymer," APS March Meeting (1990).
20. K. D. Singer, M. G. Kuzyk, L. A. King, and H. E. Zahn, "A Nonlinear Determination of Microscopic Viscoelastic Flow in a Polymer," APS March Meeting (1990).
21. K. D. Singer and M. G. Kuzyk, "Design Considerations for Doped Polymeric Materials," NATO Workshop, France (1990).
22. C. W. Dirk and M. G. Kuzyk, "Molecular Second and Third Order Optical Nonlinearities," International Symposium on Nonlinear Optical Materials, El Paso (1990).
23. C. W. Dirk, L.-T. Cheng, and M. G. Kuzyk, "A Three Level Model Useful for Exploring Structure/Property Relationships for Molecular Third Order Optical Polarizabilities," Materials Research Society Annual Meeting, Boston (1991).
24. M. P. Andrews, M. G. Kuzyk, and F. Ghebremichael, "Nonlinear Optical Response Enhanced in a Polymer/Metal-Fractal-Cluster Composite," 42nd Annual Canadian Society of Chemical Engineering (CSChE) Conference Section on Advanced Materials and Polymer Engineering, October 18, 1992.
25. C. Poga, M. G. Kuzyk, and C. W. Dirk, "Quadratic Electroabsorption Studies of Molecular Motion in Dye-Doped Polymers," SPIE Symposium on Organic Materials for Nonlinear Optics, San Diego, CA (1992).
26. C. Poga, M. G. Kuzyk, and C. W. Dirk, "Temperature Dependent Quadratic Electroabsorption Spectroscopy Studies of Third-Order Susceptibility Mechanisms in Dye-Doped Polymers," Spring MRS Meeting, San Francisco (1993).
27. F. Ghebremichael, M. G. Kuzyk, and C. W. Dirk, "Low Temperature Second Harmonic Molecular Mobility Studies of Dye-Doped Polymers," Spring MRS Meeting, San Francisco (1993).
28. F. Ghebremichael, M. G. Kuzyk, and C. W. Dirk, "Low-Temperature Second Harmonic Generation Studies of Dye-Doped Polymers," APS March Meeting, Seattle (1993).

29. C. Poga, M. G. Kuzyk, and C. W. Dirk, "Molecular Reorientational Effects in Polymers," APS March Meeting, Seattle (1993).
30. F. Ghebremichael, M. G. Kuzyk, C. W. Dirk, "Second Harmonic Generation Studies of Low Temperature Transitions in Dye-Doped Polymers," CLEO/QELS, Baltimore (1993).
31. M.P Andrews, T. Kanigan, W. Xu, M.G. Kuzyk, "Integrated Optics Waveguide Spectroscopy of Self-Organizing Polymers and Fractal Composites", SPIE Int. Soc. Opt. Eng., **2042**, 366 (1994).
32. C. Poga, M. G. Kuzyk, and C. W. Dirk, "Quadratic Electroabsorption Spectroscopy in Doped Polymers," in Nonlinear Optical Properties of Organic Materials VI, SPIE Proceedings **2025**, 363, San Diego (July 1993).
33. F. Ghebremichael, M. G. Kuzyk, and C.W. Dirk, "Molecular Mobility Studies of Dye-Doped Polymers Below and Above Room Temperature Using Second Harmonic Generation," Nonlinear Optical Properties of Organic Materials VI, SPIE Proceedings **2025**, 410, San Diego (July 1993).
34. M. G. Kuzyk, D. J. Welker, and S. Zhou, "Photomechanical Stabilization and Positioning with Polymer Optical Fibers," SPIE Symposium on Smart Structures and Materials, SPIE Proceedings **2189**, 249, Orlando (1994).
35. S. Zhou and M. G. Kuzyk, "Observation of Fast Photomechanical Effects in a Polymer Optical Fiber," International Conference on Intelligent Materials, Williamsburg, **1375** (1994).
36. D. J. Welker and M. G. Kuzyk, "Photomechanical Stabilization and Semi-Digital Positioning in a Polymer Fiber-Based All-Optical Circuit," Proceedings of the Second International Conference on Intelligent Materials, Williamsburg, **1308** (1994).
37. D. J. Welker and M. G. Kuzyk, "Polymer Fiber Based Photomechanical Stabilization, Discrete Positioning and Continuous Positioning All-Optical Circuit," SPIE Symposium on Optical Properties of Organic Materials VII, **2285**, 376, San Diego (1994).
38. T. Brown, C. Poga, J. Severson, V. Jackson, M. G. Kuzyk, M. P. Andrews, "Fractal Metal Cluster Formation in Polymers and Nonlinear Mechanisms," SPIE Symposium on Optical Properties of Organic Materials VII, **2285**, 236, San Diego (1994).
39. S. Zhou and M. G. Kuzyk, "Fast Electrostrictive Mechanisms in Polymer Optical Fiber," SPIE Symposium on Optical Properties of Organic Materials VII, **2285**, 125, San Diego (1994).
40. C. Poga, M. G. Kuzyk, S. Martinez, and C. W. Dirk, "Third-Order Susceptibility Mechanisms in Dye-Doped Polymers," SPIE Symposium on Optical Properties of Organic Materials VII, **2285**, San Diego (1994).
41. C. W. Dirk, J. Bao, M. G. Kuzyk, and C. Poga, "Soluble Phthalocyanine Silicone Plastics and Elastomers for Nonlinear Optics," SPIE Symposium on Optical Properties of Organic Materials VII, **2285**, 32, San Diego (1994).
42. C. W. Dirk, S. Devanathan, M. Velez, M. G. Kuzyk, and F. Ghebremichael, "Theoretical and Experimental Second-harmonic Generation Studies of the Rotational Response of a Dye Molecule in a Random Co-polymer of Styrene and Methyl Methacrylate," SPIE **2285**, **307**, San Diego (1994).
43. D. J. Welker and M. G. Kuzyk, "Photomechanical Multistability in a Polymer Optical Fiber Fabry-Perot Device," in Nonlinear Optical Properties of Organic Materials VIII, SPIE Proceedings **2527**, 384, San Diego (1995).
44. K. S. Mathis, M. G. Kuzyk, C. W. Dirk, S. Martinez, H. Selnau, Jr., P. Craig, and L. Green, "Excited State Characterization of Squaraine Dye-Doped Polymers," in Nonlinear Optical Properties of Organic Materials VIII, SPIE Proceedings **2527**, 240, San Diego (1995).
45. D. W. Garvey, R. Kruhlak, M. G. Kuzyk, C. W. Dirk, S. Martinez, H. Selnau, Jr., P. Craig, and L. Green, "Characterization of the Switching Properties of a Single-Mode Polymer Optical Fiber," in Nonlinear Optical Properties of Organic Materials VIII, SPIE Proceedings **2527**, 404, San Diego (1995).
46. T. M. Brown, D. Vinson, M. G. Kuzyk, M. P. Andrews, "Fractal Metal Cluster Formation in Polymers," in Nonlinear Optical Properties of Organic Materials VIII, SPIE Proceedings **2527**, 41, San Diego (1995).
47. D. J. Welker and M. G. Kuzyk, "Photomechanical Multistability and Logic in a Polymer Optical Fiber," OSA Tech. Dig. **21**, 313 (1995).
48. D. W. Garvey, M. G. Kuzyk, R. Kruhlak, C. W. Dirk, S. Martinez, H. Selnau, Jr., P. Craig, and L. Green, "All-optical Switching in a Single-Mode Polymer Optical Fiber," OSA Tech. Dig. **21**, 26 (1995).
49. D. W. Garvey, M. G. Kuzyk, C. W. Dirk, S. Martinez, H. Selnau, Jr., P. Craig and L. Green, "Progress in Making an All-optical Switch in Polymer Fibers," ICONO'2 Proc. **185** (1995).
50. D. J. Welker and M. G. Kuzyk, "Vibration Suppression in a Sheet with a Fabry-Perot Photomechanical Device," ICONO'3, Marco Island (1996).
51. Wen Xu, Russell Tooling, Charlotte Smaglinski, M.A. Fardad, Chaoyang Dai, Todd B. Marder, Mark G. Kuzyk, and Mark P. Andrews, "Metal Nanoparticle Field Intensifier Optical Chemical Benches for Linear and Nonlinear Optics," ICONO'3, Marco Island (1996).

52. Y. Baek, G.I. Stegeman, D.W. Garvey and M. G. Kuzyk, "Third Order Nonlinearity Measurements in a Dye Doped Polymer Fiber at 1.32 Micron," ICONO'3, Marco Island (1996).
53. K.S. Mathis, M.G. Kuzyk, C.W. Dirk, S. Martinez, H. Selnau, Jr., P. Craig, and L. Green, "Essential State Analysis of Squaraines Using Quadratic Electroabsorption," ICONO'3, Marco Island (1996).
54. R. Kruhlak, J. E. Young, M. G. Kuzyk, "Loss measurements in squaraine-doped nonlinear polymer optical fibers," Proc. SPIE **3147**, 18 (1997).
55. B. K. Canfield, J. A. Clearman, M. G. Kuzyk, and C. S. Kwiakowski, "Refractive index profiles of polymer optical fibers," Proc. SPIE **3147**, 128 (1997).
56. D. W. Garvey, M. G. Kuzyk, and C. W. Dirk, "Measurement of the real and imaginary parts of gamma for four squaraine dye molecules in a PMMA host," Proc. SPIE **3147** (1997).
57. S. R. Vigil, Z. Zhou, and M. G. Kuzyk, "Intensity-dependent coupling in dual-core nonlinear polymer optical fibers," Proc. SPIE **3147**, 237 (1997).
58. C. S. Kwiakowski, D. J. Welker, and M. G. Kuzyk, "Vibration isolation and detection using a mesoscopic photomechanical unit," J. Acoust. Soc. Am. **100**, 3034 (1997).
59. D. J. Welker, J. Tostenrude, D. W. Garvey, B. K. Canfield, & M. G. Kuzyk, "Single-mode Electrooptic Polymer Optical Fiber," Proc. SPIE **3473**, 52, (1998).
60. R. J. Kruhlak & M. G. Kuzyk, "Loss Spectroscopy Through Side-Illumination Fluorescence (SIF) in Dye-Doped Polymer Optical Fibers," Proc SPIE **3473**, 57, (1998).
61. B. K. Canfield, S. R. Vigil & M. G. Kuzyk, "Refractive and Bandwidth Measurements of Polymer Optical Fibers," Proc SPIE **3473**, 34, (1998).
62. D. M. Sullivan, M. Kuzyk, "Three Dimensional Nonlinear Optical Fiber Simulation," Proc. of the 4th Intern'l Conf. on Millimeter and Submillimeter Waves and Applications, SPIE Proc. **3465**, 134-143 (1998).
63. Ilkan Cokgor, Alexander S. Dvornikov, Ram Piyaket, Sadik C. Esener, Pater M. Rentzepis, Dennis W. Garvey, and Mark G. Kuzyk, "Spyrobenzopyran doped core PMMA fibers," SPIE Photonics West Optoelectronics '99 Symposium (1999).
64. D. M. Sullivan, J. Liu, and M. G. Kuzyk, "Three-Dimensional Optical Fiber Simulation," IEEE Inter. Symp. & USNG/URSI National Radio Meeting, Orlando, FL, July 11-16, (1999).
65. S. R. Vigil and M. G. Kuzyk, Optical Kerr effect measurements of methyl methacrylate/nitrobenzene solutions. In Organic Photonic Materials and Devices, Proc. SPIE . **623** , (1999) (in press).
66. R. J. Kruhlak and M. G. Kuzyk, "Side-Illumination Fluorescence (SIF) Spectroscopy Studies of Aggregation in ISQ Dye-Doped Polymer Optical Fibers," Linear Optics of Waveguides, Sensors, and Fibers, Proc. SPIE **3799** (1999) in press.
67. B. K. Canfield, M. G. Kuzyk, and D. J. Welker, "Nonlinear Characterization of Polymer Electrooptic Fiber," Proc SPIE **3796** (1999) in press.
68. B. K. Canfield and M. G. Kuzyk, "Refractive Index Profiling Methods for Polymer Optical Fiber Preforms and Fibers," Northwest Regional Meeting of the American Physical Society (1999).
69. R. J. Kruhlak, M. C. Repp, and M. G. Kuzyk, "Side-Illumination Fluorescence (SIF) measurements of Dye-Doped Polymer Optical Fibers," Northwest Regional Meeting of the American Physical Society (1999).
70. B.K. Canfield and M.G. Kuzyk, "Refractive Index Profiling Methods for Polymer Optical Fiber Preforms and Fibers," ICONO'4 (1998).
71. B.K. Canfield and M.G. Kuzyk, "Characterization of Polymer Electrooptic Fiber," Opto-Northwest (1999).
72. R.J. Kruhlak and M.G. Kuzyk, "Photosensitivity of Squaraine Dye-doped Polymer Optical Fiber Using Side-illumination Fluorescence (SIF)," Opto-Northwest (1999).
73. B. K. Canfield, R. J. Kruhlak, and M. G. Kuzyk, "Investigation of the Third-Order Optical Susceptibility of Chromophores Through Broadband Electrooptic Spectroscopy," ICONO'5, Davos, Switzerland (2000).
74. R. J. Kruhlak and M. G. Kuzyk, "Determining the nature of Excited States Using an Inhomogeneous-Broadening Analysis of Third-Order Processes," ICONO'5, Davos, Switzerland (2000).
75. M. G. Kuzyk, "Is there a limit to Nonlinear Susceptibilities?" ACS/OSA Thin Films Meeting, Washington D.C. (2000).
76. M. G. Kuzyk, "Fundamental Limits of Susceptibilities," Proc. SPIE **4461**, 15 (2001).
77. B. K. Canfield and M. G. Kuzyk, "Excited State Characterization of Nonlinear Optical Materials through Electrofluorescence," Proc. SPIE **4461**, 117 (2001).
78. R. J. Kruhlak and M. G. Kuzyk, "Co-Polymer and Dye-Doped Polymer Fiber and Fiber Preform Characterization," Proc. SPIE **4461**, 206 (2001).

79. D. Sullivan, J. Young, and M. G. Kuzyk, FDTD simulations of Nonlinear Optical PBG Fibers, 2002 IEEE AP-S International Symposium on Antennas and Propagation, San Antonio, Texas, June 16-21, (2002).
80. S. Bian, W. Zhang, S. I. Kim, N. N. Embaye, G. J. Hanna, J. J. Park, B. K. Canfield, and M. G. Kuzyk, "Optical Phase Conjugation by Resonant Degenerate Four-Wave Mixing in Volume Media of DR1-Doped PMMA," Proc. SPIE **4798**, 44-52 (2002).
81. B. F. Howell and M. G. Kuzyk, "Amplified Spontaneous Emission and Recoverable Photodegradation in a Robust Dye-Doped Polymer," Proc. SPIE **4798**, 60-68 (2002).
82. J. Zhou, D. M. Sullivan, S. Bian, and M. G. Kuzyk, "Efforts Toward Fabricating Micro-Structured Fiber with Enhanced Optical Nonlinearity," Proc. SPIE **4798**, 112-115 (2002).
83. J. J. Park, S. Bian, and M. G. Kuzyk, "Dynamics of Intensity Dependent Refractive Index Using T-Scan," Proc. SPIE **4798**, 116-122 (2002).
84. W. Zhang, S. Bian, S.I. Kim, and M. G. Kuzyk, "Mode-cut optical limiting in polymer fibers with DR1/PMMA cores", Proceeding SPIE **4797**, p. 59-64, the International Symposium on Optical Science and Technology, SPIE's 47th Annual Meeting, Seattle, WA, (2002).
85. Shaoping Bian and Mark G. Kuzyk, "Photorefractive Polymer Optical Fibers," Polymer Optical Fiber 2003, Seattle (2003).
86. Shaoping Bian and Mark G. Kuzyk, "Phase conjugation generation by degenerate four-wave mixing in photosensitive polymer optical fibers," Proc. SPIE **5212**, (2002).
87. Mark G. Kuzyk, "Microscopic nonlinear susceptibilities: the sky is not the limit," Proc. SPIE **5212**, (2002).
88. Shaoping Bian, Weiya Zhang, and Mark G. Kuzyk, "Optical holographic recording by guided waves in photosensitive polymer multimode fibers," Proc. SPIE **5216**, (2002).
89. W. Zhang, S. Bian, and M. G. Kuzyk, "Twisted light in nonlinear optical polymeric materials", American Physical Society Northwest Section Meeting, Moscow, ID, (2004).
90. Mark G. Kuzyk, "Using Sum Rules to Investigate the Character of Nonlinear Susceptibilities," LEOS 2005 Annual Meeting, , Sydney, Australia (2005).
91. Mark G. Kuzyk, Shaoping Bian and Dirk Robinson "Photomechanical Effects due to Photoisomerization in Dye-Doped Polymer," LEOS 2005 Annual Meeting, , Sydney, Australia (2005).
92. David J. Pikas, Mark A. Walker, Christopher D. Brewer, Bala Sankaran, Loon-Seng Tan, Mark G. Kuzyk, Sean M. Kirkpatrick, Peter E. Powers, "Background host effects on the nonlinear photophysical properties of a two-photon absorbing dye," Proc. SPIE **5989**, 199-208 (2005).
93. Javier Perez-Moreno, Inge Asselberghs, Yuxia Zhao, Kai Song, Hachiro Nakanishi, Shuji Okada, Kyoko Nogi, Oh-Kil Kim, Jongtae Je, Janka Matrai, Marc De Maeyer, Mark G. Kuzyk, Koen Clays, "Combined molecular and supramolecular bottom-up engineering for enhanced nonlinear optical response," SPIE **5935**, 84-95 (2005).
94. Mark G. Kuzyk, Kakali Tripathi, Koen Clays, Javier Perez-Moreno, Inge Asselberghs, Yuxia Zhao, Kai Song, Janka Matrai, Marc De Maeyer, Benjamin Coe, Anne Myers Kelley, Hachiro Nakanishi, Oh-Kil Kim, "Why experimental hyperpolarizabilities fall short of the fundamental limits and new approaches for breaking this barrier," SPIE **5935**, 62-66 (2005).
95. Mark G. Kuzyk, "An all-optical polymer fiber cantilever," SPIE **6331**, 63310T (2006).
96. Mark G. Kuzyk, "Quantum calculations of the dispersion of the fundamental limits of nonlinear susceptibilities," SPIE **6331**, 633103 (2006).
97. Mark G. Kuzyk and David S. Watkins, "Using the relationship between geometry and hyperpolarizability as a tool for developing new paradigms for molecular engineering," SPIE **6331**, 633113 (2006).
98. Juefei Zhou, Javier Pérez-Moreno, Koen Clays David Watkins, Yuxia Zhao and Mark G. Kuzyk, "Using optimization techniques and modulation of conjugation to design the ultimate nonlinear-optical molecule," ICONO'9/ICOPE 2006, Brugge, Belgium (2006).
99. Koen J. Clays, Javier Pérez-Moreno, Mark G. Kuzyk, and Yuxia Zhao, "Modulated conjugation for record high intrinsic hyperpolarizabilities," Proc. SPIE **6653** (2007).
100. Juefei Zhou, Urszula B. Szafruga, Javier Pérez-Moreno Koen Clays, David S. Watkins, Yuxia Zhao, and Mark G. Kuzyk, "Using numerical optimization techniques to design molecules with record intrinsic hyperpolarizability," Nonlinear Optics: Materials, Fundamentals and Applications Topical Meeting and Tabletop Exhibit, Kona Hawaii (2007).
101. Ye Zhu, Juefei Zhou, Natnael Embaye, and Mark G. Kuzyk, "Self-healing of polymer lasers and two-photon absorbers," [LEOS Summer Topical Meetings](#) on Organic Nonlinear Optics, July 23-35, Portland (2007).

102. Mark G. Kuzyk, Natnael Embaye, Shiva K. Ramini, Ye Zhu, and Juefei Zhou, "The Physics of Self-Healing After Photodegradation in a Dye-Doped Polymer," SPIE (2008).
103. Mark C. Kuzyk and Mark G. Kuzyk, "Testing Theories of Fundamental Limits of Nonlinear Susceptibilities with Monte Carlo Studies," ICONO 10, Santa Fe, NM (2008).
104. Javier Pérez-Moreno; Koen Clays; Mark G. Kuzyk, "Sum-rules and quantum limits: nonlinear optics from first principles," Proc. SPIE **6999**, 22 (2008).
105. Javier Pérez-Moreno, Koen J. Clays, and Mark G. Kuzyk, "Role of the conjugated spacer in the optimization of second-order nonlinear chromophores," Proc. SPIE **6413** (2009).
106. Javier Pérez-Moreno, Koen J. Clays, and Mark G. Kuzyk, "Sum-Rules: Applications to Nonlinear Optics at the Molecular Level," Advances in Optical Sciences: OSA Optics & Photonics Congress, Honolulu, Hawaii (2009).
107. Nathan J. Westfall, Carl W. Dirk, Mark G. Kuzyk, Shiva Ramini, Eliseo DeLeon, Ben Anderson, "Investigation of Mechanisms of Reversible Photodegradation of 1-Amino-2-Methylantraquinone Doped in PMMA Polymer Using Semi-Empirical Potential Energy Surface Calculations," *Southwest Regional ACS Meeting*, El Paso, TX (2009).
108. Mark G. Kuzyk, "Using Scale Invariance to Identify Universal Properties of Quantum Systems With Exceptionally Large Nonlinear-Optical Response," APS March Meeting, Portland, Oregon (2010).
109. Nathan Dawson, Mark G. Kuzyk, Jeremy Neal, Paul Luchette, and Peter Palfy-Muhoray, "Mechanisms of Photo-Induced Deformations of Liquid Crystal Elastomers," APS March Meeting, Portland, Oregon (2010).
110. Shores Shafei, Mark C. Kuzyk, and Mark G. Kuzyk, "Using Monte Carlo Simulations to Develop an Understanding of the Hyperpolarizability Near the Fundamental Limit," APS March Meeting, Portland, Oregon (2010).
111. Shiva K. Ramini, Eliseo DeLeon, Benjamin Anderson, and Mark G. Kuzyk, "Reversible photodegradation of Amplified Spontaneous Emission of Disperse Orange 11 dye doped in PMMA Polymer," APS March Meeting, Portland, Oregon (2010).
112. Javier Pérez-Moreno, Mark G. Kuzyk, and Koen J. Clays, "Towards a unifying theory for the first-, second- and third-order molecular (non)linear optical response," SPIE Proc. **7722**, Organics Photonics IV, Europe Meeting (2010).
113. Javier Pérez-Moreno, Mark G. Kuzyk, and Koen J. Clays, "Predicting the nonlinear optical response in the resonant region from the linear characterization: a self-consistent theory for the first-, second-, and third-order (non)linear optical response," SPIE Proc. **7774**, Linear and Nonlinear Optics of Organic Materials X (2010).
114. Shores Shafei and Mark G. Kuzyk, "Monte Carlo Studies of Nonlinear Optical Susceptibilities of Classes of Physical Potentials," APS Northwest section, Walla Walla (2010).
115. Shiva K. Ramini, Benjamin Anderson, Prabodh Dhakal, Mark G. Kuzyk, "Self Healing of Laser Dyes When Doped in Polymers ", IONS NA2, Tucson, AZ(2010).
116. N. J. Dawson, M. G. Kuzyk, J. Neal, P. Luchette, and P. Palfy-Muhoray, "Photo-Induced Deformation of Liquid Crystal Elastomers," APS Northwest section, Walla Walla (2010)
117. Benjamin Anderson, Shiva Ramini, Mark Kuzyk, "Imaging studies of photodamage and self healing in Disperse Orange 11 dye-doped PMMA," APS Northwest section, Walla Walla (2010).
118. Antoni C. Mitus, Pawel Wrobel, Grzegorz Pawlik and M. G. Kuzyk, "Monte Carlo simulations of the photomechanical effect in polymeric fibers," SPIE, San Diego (2011).
119. Shores Shafei and Mark G. Kuzyk, "Minimizing the quantum-confinement effects on nonlinear optical properties of quantum wires," SPIE Proc. **8113**, 81130M (2011).
120. Javier Perez-Moreno, Koen Clays, and Mark G. Kuzyk, "Why do we need three levels to understand the molecular optical response?," SPIE Proc. **8113**, 81130L (2011).
121. Shiva K. Ramini, Benjamin Anderson, and Mark G. Kuzyk, "Recent progress in reversible photodegradation of Disperse Orange 11 when doped in PMMA," SPIE Proc. **8190**, 8190P (2011).
122. Shiva K. Ramini, Benjamin Anderson, and Mark G. Kuzyk, "Imaging studies of photodamage and recovery of anthraquinone derivatives doped into PMMA," SPIE Proc. **8190**, 8190N (2011).
123. Javier Perez-Moreno, Koen Clays and Mark G. Kuzyk, "Adding one more level to get a closer view of the molecular optical response," ICONO'12 and ICOPE'11, Dublin, Ireland (2011).
124. Shores Shafei and Mark G. Kuzyk, "From Quantum Wires to Quantum Loops: Enhancement of Nonlinear Optical Properties," Frontiers in Optics, San Jose, CA (2011).
125. Benjamin R. Anderson, Elizabeth Bernhardt, and Mark G. Kuzyk, "Studies of mechanisms of decay and recovery in organic dye-doped polymers using spatially-resolved white light interferometry" SPIE **8474** (2012).

126. Mark G. Kuzyk, David S. Watkins, Nathan J. Dawson, Benjamin R. Anderson, and Jennifer L. Schei, "From universal properties to cascading: using sum rules for developing broad principles and understanding phenomena" SPIE **8474** (2012).
127. Nathan J. Dawson, Mark G. Kuzyk, Jeremy R. Neal, Paul Luchette, and Peter Palffy-Muhoray, "Integration of liquid crystal elastomer photomechanical optical devices," SPIE **8475** (2012).
128. Shores Shafei, Rick Lytel, and Mark G. Kuzyk, "Using geometry to enhance the nonlinear response of quantum confined systems," SPIE **8474** (2012).
129. Richard Lytel, Shores Shafei, and Mark G. Kuzyk, "Nonlinear optics of quantum graphs," SPIE **8474** (2012).
130. Sheng-Ting Hung, Shiva K. Ramini, David G. Wyrick, Koen Clays, and Mark G. Kuzyk, "The role of the polymer host on reversible photodegradation in Disperse Orange 11 dye," SPIE **8474** (2012). (poster)
131. Benjamin R. Anderson, and Mark G. Kuzyk, "Electric field dependent decay and recovery of anthraquinones doped into PMMA thin films: beyond 100% recovery?," SPIE **8530** (2012).
132. Mark G. Kuzyk and Shiva K. Ramini, "The role of polymer-mediated dopant correlations in damage moderation and self healing," SPIE **8530** (2012).
133. Sean Mossman and Mark G. Kuzyk, "Optimizing hyperpolarizability through the configuration space of energy spectrum and transition strength spanned by power law potentials," SPIE Proc. **8827** (2013).
134. Shores Shafei, Richard Lytel, and Mark G. Kuzyk, " From fundamental limits to quantum networks: a path from science to applications," SPIE Proc. **8827** (2013).
135. Joseph Lanska and Mark Kuzyk, "Fabrication and Modeling of Composite Fiber Bragg Grating Device Networks in Photomechanical Polymer Optical Fibers," MRS Annual Meeting: Symposium XX: Shape Programmable Materials (poster) (2014).
136. Sheng-Ting Hung, Koen Clays, and Mark. G. Kuzyk, "Experimental Investigation of Reversible Photodegradation of Disperse Orange," Symposium B, Multifunctional Polymeric and Hybrid Materials, Fall MRS meeting, Boston (2014).
137. Ying Zhou, Adam Hauser, Nathan Rasmussen, Mark G. Kuzyk, and Ryan Hayward, "Photo-actuating waveguiding fibers based on light responsive hydrogels," APS March meeting, San Antonio, Texas (2015).
138. Sheng-Ting Hung, Kyle Schademan, Matthew D. McCluskey, Koen Clays, and Mark G. Kuzyk, " Mechanism for reversible photodegradation of 1-substituted aminoanthraquinones doped in poly(methyl methacrylate)," 249th ACS National Meeting & Exposition in Denver, CO, March 22 – 26 (2015).
139. Dennis Sullivan , Sean Mossman , Mark Kuzyk, " Time-Domain Simulations of the Hyperpolarizability," APS Northwest Meeting, Pullman, WA (2015).
140. Mark G. Kuzyk, Elizabeth Bernhardt, Nathan Rasmussen, Joseph Lanska, Misha Pevnyi, Fred Minkowski and Peter Palffy-Muhoray "Photorheometric studies of the mechanisms of the photomechanical response in liquid crystal elastomers and dye-doped polymers," 12th Mediterranean Workshop and Topical Meeting "Novel Optical Materials and Applications" Cetraro, Italy (2015).
141. Zuleikha Kurji, Julia A. Kornfield and Mark G. Kuzyk, "Model photo-responsive elastomers based on the self-assembly of side group liquid crystal triblock copolymers," SPIE **9564** (2015).
142. Richard Lytel, Sean M. Mossman, and Mark G. Kuzyk, "Design rules for quasi-linear nonlinear optical structures," SPIE **9564** (2015).
143. Joseph T. Lanska, Mark G. Kuzyk, and Dennis M. Sullivan, "Fabrication and modeling of fiber Bragg grating device networks in photomechanical polymer optical fibers," SPIE **9564** (2015).
144. Elizabeth A. Bernhardt, Joseph T. Lanska, Nathan F. Rasmussen, Chad M. Garrison, Mark G. Kuzyk, Mykhailo Y. Pevnyi, Fred Minkowski, Peter Palffy-Muhoray, Zuleikha Kurji, Julia A. Kornfield, " Characterization of photomechanical elastomers for device applications," SPIE **9564** (2015).
145. Rick Lytel, Sean M. Mossman, and Mark G. Kuzyk, "Design Rules for Quasi-One Dimensional Nonlinear Optical Materials," Symposium EP -- Materials and Processes for Nonlinear Optics, MRS spring Meeting (2016)
146. Ying Zhou, Adam Hauser, Nakul Bende, Mark G. Kuzyk and Ryan Hayward, "Waveguiding Actuators Based on Photothermally Responsive Hydrogels," APS March Meeting, Baltimore (2016).
147. Mark G. Kuzyk, "Designing New Plasmonic Nonlinear-Optical Materials Using Scaling of the Fundamental Limits as a Guide," Photonics North (2016).
148. Jennifer Houle, Dennis Sullivan, Ethan Crowell, Sean Mossman, and Mark G. Kuzyk, "Three Dimensional Time Domain Simulation of the Quantum Magnetic Susceptibility," IEEE Workshop on Microelectronics and Electron Devices, 27-31 (2019).

COLLOQUIA

9/88 Lockheed, Palo Alto, CA.
1/89 Temple University, Dept. of Physics, Philadelphia, PA.
4/89 Sandia National Laboratories, Albuquerque, NM.
10/89 Hitachi, Iburaki, Japan.
10/89 Fijitsu, Atsugi, Japan.
10/89 NTT, Iburaki, Japan.
10/89 Tokyo University of Agr. and Tech., Tokyo, Japan.
10/89 Riken Institute of Physical Sciences, Tokyo, Japan.
1/90 Purdue University, Department of Physics, Calumet, IN.
2/90 Case Western Reserve Univ., Dept. of Physics, Cleveland, OH.
2/90 California State Univ., Dept. of Physics, Long Beach, CA.
2/90 Washington State Univ., Dept. of Physics, Pullman, WA.
2/90 University of Florida, Dept. of Physics, Gainesville, FL.
2/90 Clark University, Dept. of Physics, Worcester, MA.
2/90 Univ. of Central Florida, Dept. of Physics, Orlando, FL.
3/90 Swarthmore College, Dept. of Physics, Swarthmore, PA.
3/90 Texas Christian University, Dept. of Physics, Fort Worth, TX.
3/90 Hoechst-Celanese, Summit, NJ.
1/91 Hercules Research Laboratories, Wilmington, DE.
1/91 University of Idaho, Department of Physics, Moscow, ID.
7/91 California Institute of Technology, Pasadena, CA.
6/92 Tokyo University of Agriculture and Technology, Tokyo, Japan.
6/92 Hitachi, Iburaki, Japan.
6/92 Hoechst-Japan, Tokyo, Japan.
10/93 Allied Signal, Summit, NJ.
1/94 CNET (French Telecom Laboratories) Bagneux, France.
1/94 Institut D'optique Théorique et Appliquée, Orsay, France.
1/94 CEA, DEIN/SPE, CE Saclay, France.
2/94 CREOL, Orlando, FL.
4/94 University of Nebraska, Lincoln, NE.
10/95 Washington State Univ., Dept. of Physics, Pullman, WA.
6/96 Allied Signal, Summit, NJ.
10/98 Dept. of Physics, Trinity College, Univ. of Dublin
10/98 Kwangju Inst. of Science & Technology
11/99 Case Western Reserve Univ., Dept. of Physics, Cleveland, OH
11/00 Wright Patterson Air Force Base, Dayton, OH
02/01 Walla Walla College, WA, Physics and Engineering
03/01 Montana State University, Dept. of Physics and Dept. of Chemistry, Bozeman, MT
4/01 Washington State Univ., Dept. of Chemistry, Pullman, WA.
10/01 Washington State Univ., Dept. of Physics, Pullman, WA.
11/15/04 University of Idaho, Department of Physics, Moscow, Id.
6/22/06 University of Leuven, Department of Chemistry, Leuven, Belgium
7/27/07 Wright Patterson Air Force Labs, Dayton, OH
9/20/07 Lehigh University, Department of Physics, Bethlehem, PA
10/13/08 Oregon State University, Department of Physics, Corvallis, OR
6/16/09 University of Leuven, INPAC Lectures on Trends in Nanosciences, Leuven, Belgium
6/14/09 Case Western Reserve University, Department of Physics, Cleveland, OH
6/15/09 Kent state University, Department of Physics, Kent, OH
1/13/11 Case Western Reserve University, Department of Physics, Cleveland, OH
2/23/11 Wright Patterson Air Force Base, Dayton Ohio
5/30/11 Sapienza Universita di Roma, Rome, Italy

5/25/12 Istituto Italiano di Tecnologia, Center for Nanoscience and Technology, Milan, Italy
5/29/12 University of Florence, Istituto dei Sistemi Complessi ISC, Florence, Italy
10/10/17 University of South Florida, Dept. of Physics, Tampa Bay, FL
10/11/17 New University of Florida, Division of Natural Sciences, Sarasota, FL
10/30/17 University of Idaho, Department of Physics, Moscow, ID
11/28/17 Washington State University, Department of Physics, Pullman, WA
10/2/19 New York University, Abu Dhabi Campus, Abu Dhabi UAE.
3/23/21 Colgate University, Hamilton, NY.
3/29/21 Skidmore College, Saratoga Springs, NY

PROFESSIONAL SERVICE

Washington State

Washington Technology Center Photonics Advisory Committee Meeting, 2000-

Optical Society of America

Optical Material Studies Group, Advisor, 2015-

Educational

Science by Mail Program, Boston Science Museum, 1991-94.

Demonstrations: Reached over 2,000 high school and elementary school students, 1977-1993.

NSF Young Scholars Program—Faculty Mentor, 1991.

Science Fair Judge: Franklin Elementary, Jefferson Elementary, 1992, 1993, 1994.

Lincoln Middle School Mentor Program, 1993-94.

Dr. Universe Advisory Board, 2001-

Short Courses

"Polymers as Nonlinear Optical Materials," APS March Meeting, Seattle (1993).

"Nonlinear Optics – from molecules to useful materials," Molecular Nano- and Bio-photonics Summer School, Erasmus Mundus Master Course, Porquerolles, France (June 19-27, 2008).

Conference Organization

Conference Organizer:

- "Progress in Nonlinear Optics: Organic and Polymeric Materials," Pullman, Summer (1992).
1. "International Conference on Organic Nonlinear Optics I," Val Thorens, France (January 1994).
 2. "Fourth IKETANI Conference: The International Conference on Optically Nonlinear Organic Materials and Applications," Hawaii (May 1994).
 3. "International Conference on Organic Nonlinear Optics II," Japan (1995).
 4. "International Conference on Organic Nonlinear Optics III," Florida (1996).
 5. Conference Chair, Symposium on Organic Nonlinear Optics, SPIE, "ICONO IV," Japan (1998).
 6. "International Conference on Organic Nonlinear Optics, IV," Japan (1998).
 7. "International Conference on Organic Nonlinear Optics, V," Switzerland (2000).
 8. Conference Co-Chair, Symposium on Linear Optical Properties of Waveguides and Fibers Denver (1999)
 9. "International Conference on Organic Nonlinear Optics, VI," Tuscon, AZ (2001).
 10. "International Conference on Organic Nonlinear Optics, VII," Mt. Sorak, Korea (2003).
 11. "International Conference on Organic Nonlinear Optics, VIII," Japan (2005).
 12. "International Conference on Organic Nonlinear Optics, IX," Brugge, Belgium (2006).

13. "International Conference on Organic Nonlinear Optics, X," Santa Fe, NM (2008).
14. "International Conference on Organic Nonlinear Optics, XI," Beijing, China (2009).
15. "International Conference on Organic Nonlinear Optics, XII," Dublin, Ireland (2011).
16. "International Conference on Organic Nonlinear Optics, XIII," Brazil (2017).
17. Symposium on Sum Rules and Scaling in Nonlinear Optics, Pullman (2014).
18. Foundations of Nonlinear Optics, Lehigh University (2015).
19. Foundations of Nonlinear Optics, Tufts University (2016).
20. Foundations of Nonlinear Optics, University of the Bahamas (2017).
21. Foundations of Nonlinear Optics, Skidmore College (2018).
22. Foundations of Nonlinear Optics, Air Force Institute of Technology (2019).
- 23.

Conference Co-Chair, Symposium on Organic Nonlinear Optics: SPIE

- San Diego (1992)
- San Diego (1993)
- San Diego (1994)
- San Diego (1995)
- Denver (1996)
- San Diego (1997)
- San Diego (1998)
- Denver (1999)
- San Diego (2000)
- San Diego (2001)
- Seattle (2002)
- San Diego (2003)
- Denver (2004)
- San Diego (2005)
- San Diego (2006)
- San Diego (2013)
- San Diego (2014)
- San Diego (2015)

Conference Co-Chair, Symposium on Linear Optical Properties of Waveguides and Fibers: SPIE

- Denver (1999)
- San Diego (2000)

Conference Co-Chair, Symposium on Nonlinear Optics: SPIE, Opto-Northwest

- Seattle (1999)

Session Chair:

- Materials Research Society Fall Meeting, Boston (1990)
- SPIE, San Diego (1992)
- Progress in NLO (1992)
- SPIE, San Diego (1993)
- ICONO'1, Val Thorens, France (1994)
- IKATANI, Hawaii (1994)
- ICONO'2, Val Thorens, France (1994)
- OSA Annual Meeting, Portland, OR (1995)
- ICONO'3, Marco Island, FL (1996)
- OSA Annual Meeting, Orlando, FL (1997)
- Moderator, Washington Technology Center Workshop on New Technologies, Seattle (2000)
- ICONO'5, Davos, Switzerland (2000)
- 14th Annual IEEE Lasers and Electro-Optics Society 2001 Annual Meeting, in San Diego, CA (2001)

APS NW Meeting, Moscow, ID (2004).
SPIE San Diego (2006).
ICONO'9, Brugge, Belgium (2006).
SPIE San Diego Linear and Nonlinear Optics of Organic Materials VIII (2008)
SPIE San Diego Nano- and Macro- Photonics for Space Environments II (2008)
SPIE San Diego Nano- and Macro- Photonics for Space Environments III (2009)
SPIE San Diego Nano- and Macro- Photonics for Space Environments IV (2010)
ICONO12/ICOPE2011 Dublin (2011)
SPIE San Diego, Optical Processes in Organic Materials and Nanostructures (2012)
NOMA, Cetraro, Novel Optical Materials and Applications, Italy (2013).
SPIE, San Fransisco (2015)
NOMA, Cetraro, Novel Optical Materials and Applications, Italy (2015).
SPIE, San Diego (2015)
APS Northwest, Pullman, WA (2015)
Foundations of Nonlinear Optics, Lehigh University (2015).
Foundations of Nonlinear Optics, Tufts University (2016).
Foundations of Nonlinear Optics, University of the Bahamas (2017).
Foundations of Nonlinear Optics, Skidmore College (2018).
Foundations of Nonlinear Optics, Air Force Institute of Technology (2019).

Program Committee:

ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Washington, D.C. (8/94).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Portland, OR (9/95).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Orlando, FL (8/96).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Long Beach, CA (9/97).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Boston, MA (9/98).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Santa Clara, CA (9/99).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, Washington, D.C. (8/00).
ACS/OSA joint meeting on Polymeric Thin Films for Nonlinear Optics, (8/01).
Conference on Molecular Optics and Electronics, Alicante, Spain (2003).
IEEE-LEOS annual meeting, Puerto Rico (2004).
IEEE-LEOS annual meeting, Sydney, Australia (2005).
IEEE-LEOS annual meeting, (2006).
SPIE San Diego (2006).
ICCOOPMA Darwin, Australia (2006)
SPIE San Diego, Organic NLO (2007)
ICCOOPMA London, England (2007)
SPIE San Diego (2007)
ICCOOPMA Edmonton, Alberta, Canada (2008)
SPIE San Diego, Linear and Nonlinear Optics of Organic Materials VIII (2008)
SPIE San Diego Nano-and Macrophotonics for Space Environments II Conference (2008)
SPIE San Diego, Linear and Nonlinear Optics of Organic Materials IX (2009)
SPIE San Diego Nano-and Macrophotonics for Space Environments III Conference (2009)
SPIE San Diego, Linear and Nonlinear Optics of Organic Materials IX (2010)
SPIE San Diego Nano-and Macrophotonics for Space Environments III Conference (2010)
ICCOOPMA Edmonton, Budapest, Hungary (2010)
SPIE San Diego, Linear and Nonlinear Optics of Organic Materials IX (2011)
SPIE San Diego Nano-and Macrophotonics for Space Environments V Conference (2011)
SPIE San Diego, Optical Processes in Organic Materials and Nanostructures (2012)
SPIE San Diego Nano-and Macrophotonics for Space Environments VI Conference (2012)
SPIE San Diego, Optical Processes in Organic Materials and Nanostructures (2013)

SPIE San Diego Nano-and Macrophotonics for Space Environments VI Conference (2013)
SPIE San Diego, Optical Processes in Organic Materials and Nanostructures (2014)
SPIE San Diego Nano-and Macrophotonics for Space Environments VI Conference (2014)
SPIE San Diego Light Manipulating Organic Materials and Devices II Conference (2015)
Foundations of Nonlinear Optics I, Lehigh University (2015)
Foundations of Nonlinear Optics, Tufts University (2016)
SPIE San Diego Light Manipulating Organic Materials and Devices III Conference (2016)
SPIE San Diego Light Manipulating Organic Materials and Devices IV Conference (2017)

Editor

Applied Sciences, Optics and Lasers, Editorial Board (2018-)
Topical Editor of *Journal of the Optical Society of America B* (1996-2001).
Special issue of *Nonlinear Optics* **6** (1993).
Special issue of *Journal of the Optical Society of America B* (1997).
Advisory Committee, Marcel Dekker (1998-)
Journal of Nonlinear Optical Physics and Materials, Member of Editorial Board 2004-
Nonlinear Optics, Quantum Optics, North American Regional Editor, 2010-2017
Nonlinear Optics, Quantum Optics, co- Editor in chief, 2018-
SPIE Newsroom, Editor 2012-
Versita, Editorial Advisory Board 2012-
Associate Editor, *PLOS ONE* 2014-2015

Referee

Reviewer for: Physical Review/Physical Review Letters; Journal of the Optical Society of America B, Optical Physics; Optics Letters; Macromolecules; Material Research Society; Nature; ACS Symposium Series; Chemical Review, Journal of Physical Chemistry; Journal of the American Chemical Society; SPIE Proceedings; Applied Physics Letters; Journal of Applied Physics; Nonlinear Optics; Chemistry of Materials; Air Force Office of Scientific Research; Journal of Polymer Science; National Research Council, Commission on Physical Sciences, Mathematics and Resources; Petroleum Research Fund; National Science Foundation; Army Research Office; Marcel Dekker; Solid State Communications; Photonics Technology Letters; Journal of Lightwave Technology; Hong Kong Science Foundation; Optics Communications, Institute of Physics, Research Corporation, Freeman Publishers, and too many more journals to list.

Panel

NSF Panel (SBIR, 9/30/92, Washington, D.C.)
NSF Panel (SBIR, 9/29/93, Washington, D.C.)
NSF Panel (Engineering Research Centers, 6/12 - 6/13, 1997, Arlington, VA)
NSF Panel (Foundations Program, 6/5-6/6, 1998, Arlington, VA)
NSF Panel (MRI Equipment, 6/5-6/6, 1999, Arlington, VA)
NSF Panel (EECS Directorate, 6/5-6/6, 2000, Arlington, VA)
WTC Panel on Photonics (11/14/00, Seattle)
NSF Panel(EECS Directorate, 6/12-6/13, 2004, Arlington, VA)
NSF Panel(EECS Directorate, 6, 2008, Arlington, VA)
NSF Panel(EECS Directorate, 6, 2011, Arlington, VA)
Finland Academy of Sciences, March 25, 2013, Helsinki, Finland

Other

External Honors Examiner, Swarthmore College, Swarthmore, PA (1990).
External Examiner, Wong Siu Wing, M.S. Thesis, The Chinese University of Hong Kong (1996).
Consultant: Hoechst-Celanese Corporation, 1991-93.

Consultant: SEL Laboratories, 1999-

Consultant: EPRI Inc., 1999-

Hosted AT&T Bell Labs Representative for Women and Minority Program (1991).

Hosted AT&T Bell Labs Representative for Women and Minority Program (1992).

Advisor for student chapter of the Optical Society of America 2010-

Advisor for student chapter of SPIE The Photonics Society 2011-

Teaching Experience

Classes taught: all Calculus and Non-calculus based Introductory Physics sequence; Modern Physics;

Thermodynamics; Graduate Classical Mechanics; Graduate Statistical Mechanics; Graduate Thermodynamics;

Junior-level E&M I and II, Junior-level Classical Mechanics; Optoelectronics Labs I and II; Nonlinear Optics;

Graduate Quantum Mechanics I, II and III

Graduate Students Mentored

Graduated over 25 Masters Students and 20 PhDs

Continuous Funding History

Over \$6 Million at WSU. Agencies include: AFOSR, Allied Signal, ARO, Boston Optical Fiber, EPRI, Hoechst-Celanese, NSF, Petroleum Research Fund, Wright Patterson Air Force Labs, Spectralux and WTC.

Most recent grant: \$2M: M. G. Kuzyk PI, " Photomorphon networks: Intelligent shape changing structures," National Science Foundation, July 2013 - July 2020