TIMOTHY M. SWAGER

PERSONAL: Born July 1, 1961 in Sheridan, Montana
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PROFESSIONAL POSITIONS:

Massachusetts Institute of Technology

John D. MacArthur Professor of Chemistry	July 1, 2005-Present
Director of the Deshpande Center for Technological Innovation	May 1, 2014-Present
Head of The Department of Chemistry	July 1, 2005-June 30, 2010
Associate Director Institute for Soldier Nanotechnologies	June 1, 2002-June 30, 2005
Professor of Chemistry	August 1,1996-July 1, 2005

University of Pennsylvania

Professor of Chemistry	July 1, 1996-July 31, 1996
Assistant Professor of Chemistry	July 1, 1990-June 30, 1996

Massachusetts Institute of Technology

Postdoctoral Fellow, Advisor: Mark S. Wrighton	August 1988-July 1990

EDUCATION:

Ph.D., Chemistry, *California Institute of Technology*	May 1988
Research Advisor: Robert H. Grubbs	
B.S., Chemistry, With Highest Honors, *Montana State University*	June 1983

PRINCIPAL RESEARCH INTERESTS:

Colloid Science, Electronic Materials, Chemical Sensors, Supramolecular Science, Polymer Science, Liquid Crystals, Synthetic Conductors, Molecular Recognition, Molecular Electronics, Photonics,

AWARDS AND FELLOWSHIPS:

2016 Pauling Medal, 2016 Gustavus John Esselen Award for Chemistry in the Public Interest, Humboldt Senior Research Award 2014, Council for Chemical Research-Diversity Award 2014, Fellow of the American Chemical Society 2013, Award for Creative Invention (ACS) 2013, Royal Society of Chemistry (UK) Centenary Prize 2012, Fellow of the Division of Polymer Chemistry (ACS) 2009, John Scott Award 2008, Elected to the National Academy of Sciences 2008, Honorary Doctorate of Science, Montana State University 2008, Lemelson-MIT Award for Invention and Innovation 2007, Elected to the American Academy of Arts and Sciences 2006, Christopher Columbus Foundation Homeland Security Award 2005, The Carl S. Marvel Creative Polymer Chemistry Award (ACS-Polymer Div) 2005, Clare Hall Visiting Fellow (U. Cambridge, England) 2005, Visiting Professor (Université Bordeaux) 2003, Vladimir Karapetoff Award (MIT) 2000, Cope Scholar Award (ACS) 2000, Union Carbide Innovation Recognition Award 1997-8, Philadelphia Section Award (ACS) 1996, Camille Dreyfus Teacher-Scholar 1995-1997, Alfred P. Sloan Research Fellow 1994-1996, DuPont Young Faculty Award 1993-1996, NSF-Young Investigator 1992-1997, Office of Naval Research Young Investigator 1992-1995, Lawton Chiles Postdoctoral Fellowship in Biotechnology (NIH) 1989, Herbert Newby McCoy Award For Outstanding Graduate Research (California Institute of Technology) 1988, Advanced Technologies Graduate Fellow (Aerojet General, General Motors, TRW) 1988, IBM Graduate Fellow 1984-1987, Most Outstanding Senior Chemistry Major (American Institute of Chemists) 1983, Merck Index Undergraduate Chemistry Award 1983

OTHER PROFESSIONAL ACTIVITIES:

Service to the Federal Government: Top Secret Clearance, National Academies Board on Chemical Sciences and Technology 2012-Present (Co-Chair 2012-2015), TSA Blue Ribbon Panel, Project Newton 2009, Naval Studies Board 2009-2014, National Research Council Science & Technology Committee for Countering Terrorism 2002, Member of JIEDDO Standing Committee 2006-2007, Defense Science Board Task Force on Chemical Warfare Defense 2001-2002, National Science Foundation (Organizer: Materials Chemistry Workshop 1996, Review of Materials Chemistry 1997, US-UK Bilateral Workshop 2004-2005,

UK-US Conference on Chemical and Biological Sensors and Detectors 2007). Service on Numerous Other Panels for NIH, NSF, DoD, US Senate Commerce Committee.

Scientific Advisory Boards: E-ink, Cambridge MA, 1999-2002; Polaroid Corp., Cambridge MA, 1999-2002; Nomadics Inc., Stillwater OK and Cambridge MA, 2000-2005; ICx Technologies Science & Technology Council, Washington DC 2006-2010; Coatue Corp., Cambridge MA, 2001-2003; Mitsubishi Chemical Company, Tokyo 2002, Collegium Pharmaceutical Inc., Hingham, MA, 2001-4, Plextronics Inc. Pittsburgh PA, 2006-2014, Nano-C Inc. Westwood, MA 2006-

Scientific Founder: Iptyx Corp. (2003-2009), Cambridge MA (High Performance Polymers, Acquired by ICx Technologies in 2009); DyNuPol Inc., (2009-) Newton MA (Agents for Dynamic Nuclear Polarization Enhancement); PolyJoule, (2011-) Cambridge MA (Energy Storage Devices), C_2 Sense LLC, Newton MA (Gas Sensors).

Editorial Advisory Boards: Chemistry of Materials 1997-2002; Accounts of Chemical Research 1998-2000, 2002-2014; J. of Polymer Science 1999-; J. Am. Chem. Soc. 2000-2002; Supramolecular Chemistry 2001-2006; Advanced Synthesis & Catalysis 2001-2010; J. Supramolecular Chemistry 2001-2006; Associate Editor of Synfacts, 2005-, Chemistry Letters 2010-, Associate Editor of Macromolecules 2010-

PUBLICATIONS

1. Cardellina, J. H. and Swager, T. M. "Native American Food and Medicinal Plants. Part 5. Isolation of the Lipid Altering Visnagin From *Musineon divaricatum,*" *J. Nat. Prod.* **1984**, 47(6), 1060.
2. Swager, T. M. and Cardellina, J. H. "Native American Food and Medicinal Plants. Part 4. Coumarins From *Musineon divaricatum,*" *Phytochemistry* **1985**, 24(4), 805-813.
3. Swager, T. M. and Grubbs, R. H. "Synthesis and Properties of a Novel Cross-Conjugated Conductive Polymer Precursor: Poly(3,4-diisopropylidenecyclobutene)," *J. Am. Chem. Soc.* **1987**, 109, 894-896.
4. Swager, T. M., Dougherty, D. A. and Grubbs, R. H. "Strained Rings as a Source of Unsaturation: Polybenzvalene, a New Polyacetylene Precursor," *J. Am. Chem. Soc.* **1988**, 110, 2973-2974.
5. Swager, T. M. and Grubbs, R. H. "New Morphologies of Polyacetylene From the Precursor Polymer Polybenzvalene," *J. Am. Chem. Soc.* **1989**, 111, 4413-4422.
6. Swager, T. M. and Grubbs, R. H. "The Synthesis of Low Crystallinity Polyacetylene From The Precursor Polymer Polybenzvalene," *Synthetic Metals* **1989**, 28, D57-D62.
7. Kim, S. S., Cebe, P., and Swager, T. M. "Electron Spin Resonance Optical Spectroscopic Studies of The Conducting Polymer Precursor: Poly(3,4-diisopropylidene cyclobutene)," *J. Poly. Sci. B: Poly. Phys. Ed.* **1989**, 27, 443-463.
8. Swager, T. M., Rock, M. M. and Grubbs, R. H. "Polyquinone Bisketals: Precursors to New Conductive Polymers," *New Polymeric Materials* **1990**, 2, 1-10.
9. Serrette, A. G.; Carroll, P. J.; Swager, T. M. "Tuning the Intermolecular Dative Bonds Between Metallomesogens: Formation of a New Kind of Liquid Crystalline Polymer with a Metal-Oxo Linear Chain Structure" *J. Am. Chem. Soc.* **1992**, 114, 1887-8.
10. Lai, C.K.; Serrette, A.; Swager, T. M. "Discotic Bimetallomesogens: Building Blocks for the Formation of New Columnar Arrangements of Transition Metals" *J. Am. Chem. Soc.* **1992,** 114, 7948-7949.
11. Xu, B., Swager, T. M. "Rigid Bowlic Liquid Crystals Based on Tungsten-Oxo Calix[4]arenes: Host-Guest Effects and Head-to-Tail Organization" *J. Am. Chem. Soc.* **1993**, 115, 1159-1160.

12. Zheng, H.; Carroll, P. J.; Swager, T. M. "The Development of Polar Discotic Metallomesogens: Vanadyl 1,3-Diketonate Complexes" *Liquid Crystals*, **1993**, 14, 1421-9.
13. Serrette, A. G.; Swager, T. M. "Controlling Intermolecular Associations with Molecular Superstructure: Polar Discotic Linear Chain Phases" *J. Am. Chem. Soc.* **1993**, 115, 8879-8880.
14. Marsella, M. J.; Swager T. M. "Designing Conducting Polymer-Based Sensors: Selective Ionochromic Response in Crown Ether Containing Polythiophenes" *J. Am. Chem. Soc.* **1993**, 115, 12214-5.
15. Zheng, H.; Swager, T. M. "Octahedral Metallomesogens: Liquid Crystallinity in Low Aspect Ratio Materials" *J. Am. Chem. Soc.* **1994**, 116, 761-2.
16. Zheng, H.; Lai, C. K.; Swager, T. M. "Transition Metals in Highly Correlated Discotic Phases: Designing Metallomesogens With Selected Intermolecular Organizations" *Chem. Mater.* **1994**, 6, 101-103.
17. Zhou, Q.; Carroll, P. J.; Swager, T. M. "Diacetylene Macrocycles Derived From 1,2-Diethynylbenzene Derivatives: Structure and Reactivity of the Strained Cyclic Dimer" *J. Org. Chem.* **1994**, 59, 1294-1301.
18. Goldfinger, M. B.; Swager, T. M. "Fused Polycyclic Aromatics via Electrophile-Induced Cyclization Reactions: Application to the Synthesis of Graphite Ribbons" *J. Am. Chem. Soc.* **1994**, 116, 7895-6.
19. Serrette, A. G.; Lai, C. K.; Swager, T. M. "Complementary Shapes in Discotic Liquid Crystals: Structural Control in Homo- and Heteronuclear Bimetallic Assemblies" *Chem. Mater.* **1994**, 6, 2252-2268.
20. Serrette, A. G.; Swager, T. M. "Polar Superstructures Stabilized by Metal-Oxo Polymers: Columnar Liquid Crystals Based on Tapered Molybdenum-Dioxo Complexes" *Angew. Chem., Int. Ed. Engl.* **1994**, 33, 2342-5.
21. Marsella, M. J.; Carroll, P. J.; Swager, T. M. "Conducting Pseudopolyrotaxanes: A Chemoresistive Response Via Molecular Recognition" *J. Am. Chem. Soc.* **1994**, 116, 9347-8.
22. Swager, T. M.; Marsella, M. J. "Molecular Recognition and Chemoresistive Materials" *Adv. Mater.* **1994**, 6, 595-7.
23. Swager, T. M.; Marsella, M. J.; Zhou,Q.; Goldfinger, M. B. "Metal Catalyzed Coupling Reactions in the Synthesis of New Conducting Polymers" *J. Macromol. Sci., Pure and Appl. Chem.* **1994**, A31, 1893-1902.
24. Ofer, D., Swager, T. M., Wrighton, M. S. "Solid State Ordering and Potential Dependence of Conductivity of Poly(2,5-dialkoxy-p-Phenyleneethynylene)" *Chem. Mater.* **1995**, 7, 418-25.
25. Marsella, M. J.; Fu, D.; Swager, T. M. "Synthesis of Regioregular Poly(Methyl Pyridinium Vinylene): An Isoelectronic Analog to Poly(Phenylene Vinylene)" *Adv. Mater.* **1995**, 7, 145-147.
26. Zhu, S.; Swager, T. M. "Lyotropic Mesomorphism in Oxo-Vanadium Complexes" *Adv. Mater.* **1995**, 7, 280-283.
27. Xu, B.; Swager, T. M. "Host-Guest Mesomorphism: Cooperative Stabilization of a Bowlic Columnar Phase" *J. Am. Chem. Soc.* **1995**, 117, 5011-12.
28. Swager, T. M.; Gil, C. J.; Wrighton, M. S. "Fluorescence Studies of Poly(p-phenyleneethynylenes)s: The Effect of Anthracene Substitution" *J. Phys. Chem.* **1995**, 99, 4886-4893.
29. Zhou, Q.; Swager, T. M. "Methodology for Enhancing the Sensitivity of Fluorescent Chemosensors: Energy Migration in Conjugated Polymers" *J. Am. Chem. Soc.* **1995**, 117, 7017-7018.

30. Swager, T. M.; Zheng, H. "Liquid Crystalline Behavior in Octahedral Metal Complexes" *Mol. Cryst. Liq. Cryst.* **1995**, 260, 301-306.
31. Marsella, M. J.; Carroll, P. J.; Swager, T. M. "Design of Chemoresistive Sensory Materials: Polythiophene-Based Pseudopolyrotaxanes" *J. Am. Chem. Soc.* **1995**, 117, 9832-9841.
32. Marsella, M. J.; Newland, R. J.; Carroll, P. J.; Swager, T. M. "Ionoresistivity as a Highly Sensitive Sensory Probe: Investigations of Polythiophenes Functionalized with Calix[4]arene-Based Ion Receptors" *J. Am. Chem. Soc.* **1995**, 117, 9842-9848.
33. Zhou, Q.; Swager, T. M. "Probing Delocalization Across Alkyne Containing Linkages: Synthesis and Cyclic Voltammetry of Bridged Phenylene Diamines" *J. Org. Chem.* **1995**, 60, 7096-7100.
34. Swager, T. M.; Xu, B. "Liquid Crystalline Calixarenes" *J. Inclus. Phen.* **1994**, 19, 389-398.
35. Zheng, H.; Lai, C. K.; Swager, T. M. "Controlling Intermolecular Interactions Between Metallomesogens: Sidechain Effects in Discotic Copper, Palladium, and Vanadyl Bis(β-Diketonates)" *Chem. Mater.* **1995**, 7, 2067-2077.
36. Tian, J.; Wu, C-C.; Thompson, M. E.; Sturm, J. C.; Register, R. A.; Marsella, M. J.; Swager, T. M. "Electroluminescent Properties of Self-Assembled Polymer Thin Films" *Adv. Mater.* **1995**, 7, 395-8.
37. Zhou, Q.; Swager, T. M. "Fluorescent Chemosensors Based on Energy Migration in Conjugated Polymers: The Molecular Wire Approach to Increased Sensitivity" *J. Am. Chem. Soc.* **1995**, 117, 12593-12602.
38. Fu, D.; Xu, B.; Swager, T. M. "3-Methylcalix[4]arene: A New Versatile Precursor to Inherently Chiral Calix[4]arenes" J. Org. Chem. **1996**, 61, 802-4.
39. Zhu, S. S.; Swager, T. M. "Design of Conducting Redox Polymers: A Polythiophene-$Ru(bipy)_3^{n+}$ Hybrid Material" *Adv. Mater.* **1996**, 8, 497-500.
40. Zheng, H.; Xu, B.; Swager, T. M. "Stabilization of Non-Discoid Columnar Liquid Crystals: Studies of Unsymmetrical Copper(bis-β-diketonates)" *Chem. Mater.* **1996**, 8, 907-911.
41. Xu, B.; Swager, T. M. "Chiral Metallocalix[4]arenes: Resolution via Diastereomeric Tungsten (VI) Alkoxides" *Angew. Chem. Int. Ed. Engl.* **1996**, 35, 2094-97.
42. Zhu, S. S.; Carroll, P. J.; Swager, T. M. "Conducting Polymetallorotaxanes: A Supramolecular Approach to Transition Metal Ion Sensors" *J. Am. Chem. Soc.* **1996**, 118, 8713-4.
43. Blatchford, J. W.; Jessen, S. W.; Lin, L. -B.; Lih, J. J.; Gustafson, T. L.; Epstein, A. J.; Marsella, M. J.; Fu, D.; Swager, T. M.; MacDiarmid, A. G.; Yamaguchi, S., Hamaguchi, H. "Exciton Dynamics in Poly(p-pyridyl vinylene)" *Phys. Rev. Lett.* **1996**, 76, 1513-1516.
44. Gebler, D. D.; Wang, Y. Z.; Blatchford, J. W.; Jessen, S. W.; Lin, L. -B.; Gustafson, T. L.; Wang, H. L.; Swager, T. M.; MacDiarmid, A. G.; Epstein, A. J. "Blue Electroluminescent Devices Based on Soluble Poly(p-pyridine)" *J. Appl. Phys.* **1995**, 78 4264-6.
45. Epstein, A. J.; Blatchford, J. W.; Wang, Y. Z.; Jessen, S. W.; Gebler, D. D.; Lin, L. B.; Gustafson, T. L.; Wang, H. -L.; Park, Y. W.; Swager, T. M.; MacDiarmid, A. G. "Poly(p-pyridine)- and Poly(p-pyridyl vinylene) -Based Polymers: Their Photophysics and Application to SCALE Devices" *Synth. Met.* **1996**, 78, 253-61.
46. Cotts, P. M.; Swager, T. M.; Zhou, Q. "Equilibrium Flexibility of a Rigid Linear Conjugated Polymer" *Macromolecules* **1996**, 29, 7323-7328.
47. Knawby, D. M.; Swager, T. M. "Liquid Crystalline Heterocyclic Phthalocyanine Analogues Based on Thiophene" *Chem. Mater.* **1997**, 9, 535-538.
48. Blatchford, J. W.; Gustafson, T. L.; Epstein, A. J.; Vanden Bout, D. A.; Kerimo J.; Higgins, D. A.; Barbara, P. F.; Fu, D.-K.; Swager, T. M.; MacDiarmid, A. G. "Spatially and Temporally

Resolved Emission From Aggregates in Conjugated Polymers" *Phys.Rev. B* **1996**, *54*, 3683-3686.
49. Blatchford , J. W.; Jessen, S. W.; Lin, L.-B.; Gustafson, T. L.; Fu, D. -K.; Wang, H. -L. Swager, T. M.; MacDiarmid, A. G.; Epstein, A. J. "Photoluminescence in Pyridine-based Polymers: Role of Aggregates" *Phys. Rev. B* **1996**, 54, 9180-9189.
50. Goldfinger, M. B.; Crawford, K. B.; Swager, T. M. "Directed Electrophilic Cyclizations: Efficient Methodology for the Synthesis of Fused Polycyclic Aromatics" *J. Am. Chem. Soc.* **1997**, 119, 4578-4593.
51. Vanden Bout, D. A.; Yip, W. T.; Hu, D.; Fu, D.-K.; Swager, T. M.; Barbara, P. F. "Discrete Intensity Jumps and Intramolecular Electronic Energy Transfer in the Spectroscopy of Single Conjugated Polymer Molecules" *Science* **1997,** 277, 1074-1077.
52. Wang, Y. Z; Gebler, D. D.; Spry, D. J.; Fu, D.-K.; Swager, T. M.; MacDiarmid, A. G. Epstein, A. J. "Novel Light-Emitting Devices Based on Pyridine-Containing Conjugated Polymers" *IEEE Trans. on Electronic Devices* Vol. 44 (8) **1997**, 1263.
53. Hasharoni, M.; Keshavarz-K. M.; Sastre, A.; González, C.; Gellavia-Lund, C.; Greenwald, Y.; Swager, T. M.; Wudl, F.; Heeger, A. J. " Near IR Photoluminescence in Mixed Films of Conjugated Polymers and Fullerenes" *J. Chem. Phys.* **1997**, *107*, 2308-2312.
54. Wang, Y. Z.; Gebler, D. D.; Fu, D. -K.; Swager, T. M.; Epstein, A. J. "Color Variable Bipolar/AC Light-Emitting Devices Based on Conjugated Polymers" *Appl. Phys. Lett.* **1997**, *70*, 3215-3217.
55. Fu, D.-K.; Xu, B.; Swager, T. M. "Alternating Poly(Pyridyl Vinylene Phenylene Vinylene)s: Synthesis and Solid State Organizations" *Tetrahedron* **1997**, *53*, 15487-15494.
56. Swager, T. M. "The Molecular Wire Approach to Sensory Signal Amplification" *Acc. Chem. Res.* **1998**, 31, 201-207.
57. Zhu, S. S.; Swager, T. M. "Conducting Polymetallorotaxanes: Metal Ion Mediated Enhancements in Conductivity and Charge Localization" *J. Am. Chem. Soc.* **1997**, 119, 12568-12577.
58. Gebler, D. D.; Wang, Y. Z.; Blatchford, J. W.; Jessen, S. W.; Fu, D. _K.; Swager, T. M.; MacDiarmid, A. G.; Epstein, A. J. "Exciplex Emission in Bilayer Polymer Light-Emitting Devices" *Appl. Phys. Lett.* **1997**, 70, 1644-1646.
59. Jessen, S.W.; Blatchford, J.W.; Lin, L.-B.; Gustafson, T.L.; Partee, J.: Shinar, J.; Fu, D.-K.; Marsella, M. J.; Swager, T.M.; MacDiarmid, A.G.; Epstein, A.J. "Absorption and Luminescence of Pyridine-Based Polymers" *Synth. Met.* **1997**, 84, 501-506.
60. Wang, Y.Z.; Gebler, D.D.; Fu, D.K.; Swager, T.M.; MacDiarmid, A.G.; Epstein, A.J. "Light-Emitting Devices Based on Pyridine-Containing Conjugated Polymers" *Synth. Met.* **1997**, 85, 1179-1182.
61. Gebler, D.D.; Wang, Y.Z.; Ferguson, J.B.; Jessen, S.W.; Blatchford, J.W.; MacDiarmid, A.G.; Swager, T.M.; Fu, D.K.; Epstein, A.J. "Exciplex Emission in Heterojunctions of Poly(pyridyl vinylene phenylenevinylene)s and Poly(vinyl carbazole)" *Synth. Met.* **1997**, 85, 1205-1208.
62. Trzaska, S. T.; Swager, T. M. "Columnar Mesophases from Non-Discoid Metallomesogens: Rhodium and Iridium Dicarbonyl Diketonates" *Chem. Mater.* **1998**, *10*, 438-443.
63. Goldfinger, M. B.; Crawford, K. B.; Swager, T. M. "Synthesis of Ethynyl Substituted Quinquephenyls and Conversion to Extended Fused Ring Structures" *J. Org. Chem.* **1998**, *63*, 1676-1686.
64. Crawford, K. B.; Goldfinger, M. B.; Swager, T. M. "Na^+ Specific Emission Changes in an Ionophoric Conjugated Polymer" *J. Am. Chem. Soc.* **1998**, 120, 5187-5192.

65. Yang, J.-S.; Swager, T. M. "Porous Shape Persistent Fluorescent Polymer Films: An Approach to TNT Sensory Materials " *J. Am. Chem. Soc.* **1998**, 120, 5321-5322.
66. Gebler, D.D.; Wang, Y. Z.; Fu, D.-K.; Swager, T. M.; Epstein, A. J. "Exciplex Emission From Bilayers of Poly(vinyl carbazole) and Pyridine Based Conjugated Copolymers" *J. Chem. Phys.* **1998**, 108, 7842-8.
67. Kingsborough, K. P; Swager, T. M. "Electroactivity Enhancement by Redox Matching in Cobalt Salen-Based Conducting Polymers" *Adv. Mater.* **1998**, 14, 1100-1104.
68. Baxter. D. V.; Chisholm, M. H.; Lynn, M. A.; Putilina, Elena, F.; Trzaska, S. T.; Swager, T. M. "Studies of Thermotropic Properties and the Mesophase of Mixtures of *n*-Alkanoates and Perfluoro-*n*-alkanoates of Dimolybdenum (MM)" *Chem. Mater.* **1998**, 10, 1758-63.
69. Kingsborough, R. P.; Swager T. M. "Transition Metals in Polymeric Conjugated Organic Frameworks" *Progress in Inorganic Chemistry* **1999**, Vol. 48, 123-231, Karlin, K. D. Ed. John Wiley and Sons.
70. Xu, B.; Miao, Y.-J.; Swager, T. M. "Palladium Couplings on a Metallocalix[4]arene: An Efficient Synthesis of New Functionalized Cavities" *J. Org. Chem.* **1998**, 63, 8561-4.
71. Yang, Y-S.; Swager, T. M. "Fluorescent Porous Polymer Films as TNT Chemosensors: Electronic and Structural Effects" *J. Am. Chem. Soc.* **1998**, 120, 11864-11873.
72. Trzaska, S. T.; Zheng, H.; Swager, T. M. "Eight Vertex Metallomesogens: Zirconium Tetrakis-β-diketonate Liquid Crystals" *Chem. Mater.* **1999**, 11, 130-4.
73. Levitsky, I. A.; Kim, J.; Swager, T. M. "Energy Migration in a Poly(phenylene ethynylene): Determination of Interpolymer Transport in Anisotropic Langmuir-Blodgett Films" *J. Am. Chem. Soc.* **1999**, 121, 1466-1472.
74. Kishikawa, K.; Harris, M. C.; Swager, T. M. "Nematic Liquid Crystals with Bent-Rod Shapes: Mesomorphic Thiophenes with Lateral Dipole Moments" *Chem. Mater.* **1999**, 11, 867-871.
75. Kim, J.; McHugh, S.; Swager, T. M. "Nanoscale Fibrils and Grids: Aggregated Structures From Rigid-Rod Conjugated Polymers" *Macromolecules* **1999**, 32, 1500 -1507.
76. Trzaska, S. T.; Hsu, H. –F.; Swager, T. M. "Cooperative Chirality in Columnar Liquid Crystals: Studies of Fluxional Octahedral Metallomesogens" *J. Am. Chem. Soc.* **1999**, 121, 4518-9.
77. Zhu, S. S.; Kingsborough, R. P.; Swager, T. M. "Conducting Redox Polymers: Investigations of Polythiophene Ru(byp)$_3$ Hybrid Materials" *J. Mater. Chem.* **1999**, 9, 2123-2134.
78. Wang, Y. Z.; Sun, R. G.; Wang, D. K.; Swager, T. M.; Epstein, A. J. "Polarity- and Voltage-Controlled Color-Variable Light-Emitting Devices Based on Conjugated Polymers" *Appl. Phys. Lett.* **1999**, 74, 2593-5.
79. Tovar, J.D.; Swager, T. M. "Pyrylium Salts *via* Electrophilic Cyclization: Applications for Novel 3-Arylisoquinoline Syntheses" *J. Org. Chem.* **1999**, 64, 6499-6504.
80. Kingsborough, R. P.; Swager, T. M. "Polythiophene Hybrids of Transition-Metal Bis(salicylideninine)s: Correlation Between Structure and Electronic Properties" *J. Am. Chem. Soc.* **1999**, 121, 8825-8834.
81. Swager, T. M. "Design and Synthesis of Complex Conjugated Polymers" Chapter 2 in *Organized Molecular Assemblies in the Solid State,* Whitesell, J. K. Ed., **1999**, John Wiley and Sons Ltd., New York.
82. Gibson, H. W.; Dotson, D. L.; Marand, H.; Swager, T. M. "Synthesis and Characterization of Liquid Crystalline Triaryloxy-s-Triazines" *Mol. Cryst. Liq. Cryst. Sci. Technol., Sect. A* **1999**, 326, 113-138.

83. Wang, Y. Z.; Sun, R. G.; Meghdadi, F.; Leising, G.; Swager, T. M.; Epstein, A. J. "Color Variable Multilayer Light Emitting Devices Based on Conjugated Polymers and Oligomers" *Synth. Met.* **1999**, 102, 889-892.
84. Kilian, D.; Knawby, D.; Athanassopoulou, M.A.; Trzaska, S.T.; Swager, T.M.; Wróbel, S.; Haase, W. "Columnar Phases of Achiral Vanadyl Liquid Crystalline Complexes" *Liq. Cryst.* **2000**, 27, 509-521.
85. Buey, J.; Swager, T. M. "Three-Strand Conducting Ladder Polymers: Two-Step Electropolymerization of Metallorotaxanes" *Angew. Chem.* **2000**, *39*, 608-612.
86. Levitsky, I. A.; Kishikawa, K.; Eichhorn, S. H.; Swager, T. M. "Exciton Coupling and Dipolar Correlations in a Columnar Liquid Crystal: Photophysics of a Bent-Rod Hexacatenar Mesogen" *J. Am. Chem. Soc.* **2000**, 122, 2474-79.
87. Kingsborough, R. P.; Swager, T. M. "Electrocatalytic Conducting Polymers: Oxygen Reduction by a Polythiophene-Cobalt Salen Hybrid" *Chem. Mater.* **2000**, *12*, 872-874.
88. Williams, V.; Swager, T. M. "Iptycene-Containing Poly(aryleneethynylene)s" *Macromolecules* **2000**, 33, 4069-4073.
89. McQuade, D. T.; Kim, J.; Swager, T. M. "Two-Dimensional Conjugated Polymer Assemblies: Interchain Spacing for Control of Photophysics" *J. Am. Chem. Soc.* **2000**, 122, 5885-5886.
90. Kingsborough, R. P.; Swager, T. M. "Highly Conductive Macrocycle-Linked Metallophthalocyanine Polymers" *Angew. Chem.* **2000**, 39, 2897-9.
91. McQuade, D. T.; Pullen, A. E.; Swager, T. M. "Conjugated Polymer-Based Sensory Materials" *Chem. Rev.* **2000**, 100, 2537-2574.
92. Deans, R.; Kim, J.; Machacek, M.; Swager, T. M. "A Poly(*p*-phenyleneethynylene) with a Highly Emissive Aggregated Phase" *J. Am. Chem. Soc.* **2000**, 122, 8565-8566.
93. Simone, D. L.; Swager, T. M. "A Conducting Poly(cyclophane) and its Poly([2]-catenane)" *J. Am. Chem. Soc.* **2000**, 122, 9300-9301.
94. Kim, J.; McQuade, D. T.; McHugh, S.; Swager, T. M. "Ion-Specific Aggregation in Conjugated Polymers: Highly Sensitive and Selective Fluorescent Ion Chemosensors" *Angew. Chem. Int. Ed. Engl.* **2000**, 39, 3868-3872.
95. Williams, V.; Swager, T. M. "An Improved Synthesis of Poly(*p*-phenylenebutadiynylene)s" *J. Polymer Science: A Polymer Chemistry* **2000**, 38, 4669-4676.
96. Wosnick, J. H.; Swager, T. M. "Molecular Photonic and Electronic Circuitry for Ultrasensitive Chemical Sensors" *Curr. Opinion Chem. Bio.* **2000**, 4, 711-720.
97. McQuade, D. T.; Hegedus, A. H.; Swager, T. M. "Signal Amplification of a "Turn-on" Sensor: Harvesting the Light Captured by a Conjugated Polymer" *J. Am. Chem Soc.* **2000**, 122, 12389-12390.
98. Gorecka, E.; Nakata, M.; Mieczkowski, J.; Takanishi, Y.; Ishikawa, K.; Watanabe, J.; Takezoe, H.; Eichhorn, S. H.; Swager, T. M. "Induced Antiferroelectric Smectic-C*A Phase by Doping Ferroelectric-C* Phase with Bent-Shaped Molecules" *Phys. Rev. Lett.* **2000**, 85, 2526-2529.
99. Pullen, A. E.; Swager, T. M. "Regiospecific Copolyanilines from Substituted Oligoanilines: Electrochemical Comparisons with Random Copolyanilines" *Macromolecules* **2001**, 34, 812-816.
100. Long, T. M.; Swager, T. M. "Minimization of Free Volume: Alignment of Triptycenes in Liquid Crystals and Stretched Polymers" *Adv. Mater.* **2001**, 13, 601-604.

101. Gimenez, R.; Swager, T. M. "Dinuclear Pincer-Palladium(+2) Complexes and Their Use as Homogeneous or Heterogeneous Catalyst for the Aldol Reaction of Methyl Isocyanoacetate" *J. Mol. Catal. A. Chem.* **2001**, 166, 265-273.
102. Levitsky, I. A.; Kim, J.; Swager, T. M. "Mass and Energy Transport in Conjugated Polymer Langmuir-Blodgett Films: Conductivity, Fluorescence, and UV-Vis Studies" *Macromolecules* **2001**, 34, 2315-2319.
103. Edrington, A. C.; Urbas, A. M.; DeRege, P.; Chen, C. X., Swager, T. M.; Hadjichristidis, N.; Xenidou, M.; Fetters, L. J.; Joannopoulos, J. D.; Fink, Y.; Thomas, E. L "Polymer-Based Photonic Crystals" *Adv. Mater.* **2001**, 13, 421-425.
104. Kim, J.; Swager, T. M. "Control of Conformation and Interpolymer Effects in Conjugated Polymers" *Nature* **2001**, *411*, 1030-1034.
105. Takeuchi, M.; Shioya, T.; Swager, T. M. "Allosteric Fluoride Anion Recognition by a Doubly-strapped Porphyrin" *Angew. Chem.* **2001**, 40, 3372-3376.
106. Vigalok, A.; Zhu, Z.; Swager, T. M. "Conducting Polymers Incorporating Tungsten-Capped Calixarenes" *J. Am. Chem. Soc.* **2001**, 123, 7917-7918.
107. MacLachlan, M. J.; Rose, A.; Swager, T.M. "A Rotaxane Exciplex" *J. Am. Chem. Soc.* **2001**, 123, 9180-9181.
108. Zhu, Z.; Swager, T. M. "Conjugated Polymers Containing 2,3-Dialkoxybenzene and Iptycene Building Blocks" *Org. Lett.* **2001**, *22*, 3471-3474.
109. Rose, A.; Lugmair, C. G.; Swager, T. M. "Excited State Lifetime Modulation in Triphenylene-Based Conjugated Polymers" *J. Am. Chem. Soc.* **2001**, 123, 11298-11299.
110. Kim, J.; McQuade, D. T.; Rose, A.; Zhu, Z.; Swager, T. M. "Directing Energy Transfer Within Conjugated Polymer Thin Films" *J. Am. Chem. Soc.* **2001**, 123, 11488-11489.
111. Yamaguchi, S.; Swager, T. M. "Oxidative Cyclization of Bis(biaryl)acetylenes: Synthesis and Photophysics of Dibenzo[*g,p*]-chrysene-Based Fluorescent Polymers"*J. Am. Chem. Soc.* **2001**, 123, 12087-12088.
112. Tovar, J. D.; Swager, T. M. "Poly(naphthodithiophene)s: Robust, Conductive Electrochromics *via* Tandem Cyclization-Polymerizations" *Adv. Mater.* **2001**, 13, 1775.
113. Cumming, J. C.; Aker, C.; Fisher, M.; Fox, M.; la Grone, M. J.; Reust, D.; Rockley, M. G.; Swager, T. M.; Towers, E.; Williams, V. "Using Novel Fluorescent Polymers as Sensory Materials for Above-Ground Sensing of Chemical Signature Compounds Emanating from Buried Landmines" *IEEE Transactions on Geoscience and Remote Sensing* **2001**, 39 (6), 1119-1128.
114. Vigalok, A.; Swager, T. M. "Conducting Polymers of Tungsten(VI)-Oxo Calixarene: Intercalation of Neutral Organic Guests" *Adv. Mater.* **2002**, *14*, 368-371.
115. Tovar, J. D.; Swager, T. M. "Exploiting the Versatility of Organometallic Cross-Coupling Reactions for Entry into Extended Aromatic Systems" *J. Organomet. Chem.* **2002**, *653*, 215-222.
116. Long, T. M.; Swager, T. M. "Using "Internal Free Volume" to Increase Chromophore Alignment" *J. Am. Chem. Soc.* **2002**, *14*, 3826-3827.
117. Haase, W.; Kilian, D.; Athanassopoulou, M. A.; Knawby, D.; Swager, T. M.; Wrobel, S. "Enhanced Conductivity and Dielectric Absorption in Discotic Liquid Crystalline Columnar Phases of a Vanadyl Complex" *Liq. Cryst.* **2002**, 29, 133-139.
118. Kim, J.; Levitsky, I. A.; McQuade, D. T.; Swager, T. M. "Structural Control in Thin-layers of Poly(*p*-phenyleneethynylene)s: Photophysical Studies of Langmuir and Langmuir-Blodgett Films" *J. Am. Chem. Soc.* **2002**, *124*, 7710-7718.

119. Shioya, T.; Swager, T. M. "A Reversible Resistivity-Based Nitric Oxide Sensor" *Chemical Commun*. **2002**, 1364-1365.
120. Tovar, J. D.; Rose, A.; Swager, T. M. "Functionalizable Polycyclic Aromatics Through Oxidative Cyclization of Pendant Thiophenes" *J. Am. Chem. Soc*. **2002**, *124*, 7762-7769.
121. Long, T. M.; Swager, T. M. "Triptycene-Containing Bis(phenylethynyl)benzene Nematic Liquid Crystals" *J. Mater. Chem*. **2002**, *12*, 3407 - 3412
122. Zhu, Z.; Swager, T. M. "Conjugated Polymer Liquid Crystal Solutions: Control of Conformation and Alignment" *J. Am. Chem. Soc*. **2002**, *124*, 9670-9671.
123. Moon, J.-H.; Swager, T. M. "Poly(*p*-phenylene ethynylene) Brushes" *Macromolecules* **2002**, *35*, 6086-6089.
124. Eichhorn, S. H.; Paraskos, A. J.; Kishikawa, K.; Swager, T. M. "The Interplay of Bent-Shape, Lateral Dipole, and Chirality in Thiophene-Based Di-, Tri-, and Tetracatenar Liquid Crystals" *J. Am. Chem. Soc*. **2002**, 124, 12742-12751.
125. Paraskos, A. J.; Swager, T. M. "Effects of Desymmetrization on Thiophene-Based Bent-Rod Mesogens" *Chem. Mater*. **2002** *14*, 4543-4549.
126. Zahn, S.; Swager, T. M. "Three Dimensional Electronic Delocalization in Chiral Conjugated Polymers" *Angew. Chem. Int. Ed. Engl*. **2002**, *41*, 4225-4230.
127. Swager, T. M.; Wosnick, J. H. "Self-amplifying Semiconducting Polymers for Chemical Sensors"*Mater. Res. Soc. Bull*. **2002**, 27 (6), 446-450.
128. Kuroda, K.; Swager, T. M. "Synthesis of a Nonionic Water Soluble Semiconductive Polymer" *Chemical Commun*. **2003**, 26-27.
129. Yu, H.; Xu, B.; Swager, T. M. "A Proton-Doped Calix[4]arene-Based Conducting Polymer" *J. Am. Chem. Soc*. **2003**, *125*, 1142–1143.
130. Zhang, S.-W.; Swager, T. M. "Fluorescent Detection of Chemical Warfare Agents: Functional Group Specific Ratiometric Chemosensors" *J. Am. Chem. Soc*. **2003**, *125*, 3420-3421.
131. Fasolka, M. J.; Goldner, L. S.; Hwang, J. Urbas, A. M.; DeRege, P.; Swager, T. M.; Thomas, E. L. "Measuring Local Optical Properties: Near-Field Polarimetry of Photonic Block Copolymer Morphology" *Phys. Rev. Lett*. **2003**, 90, 016107-1
132. Lee, D.; Swager, T. M. "Defining Space Around Conducting Polymers: Reversible Protonic Doping of an Canopied Polypyrrole" *J. Am. Chem. Soc*. **2003**, 125, 6870-6871
133. Araoka, F.; Shin, K. C.; Takanishi, Y.; Ishikawa, K.; Takezoe, H.; Zhu, Z.; Swager, T. M. "How Doping a Cholesteric Liquid Crystal with Polymeric Dye Improves an Order Parameter and Makes Possible Low Threshold Lasing" *J. Appl. Phys*. **2003**, 94, 279-283
134. Breen, C. A.; Deng, T.; Breiner, T.; Thomas, E. L.; Swager, T. M. "Polarized Photoluminescence from Poly(*p*-phenylene-ethynylene) via a Block Copolymer Nanotemplate " *J. Am. Chem. Soc*. **2003**, *125*, 9942-9943.
135. Long, T. M.; Swager, T. M. "Molecular Design of Free Volume as a Route to Low-k Dielectric Materials" *J. Am. Chem. Soc*. **2003**, *125*, 14113-14119.
136. Kim, T.-H.; Swager, T. M. "A Fluorescent Self-Amplifying Wavelength Responsive Sensory Polymer for Fluoride Ion" *Angew. Chem. Int. Ed*. **2003**, *42*, 4803-4806.
137. Tovar, J. D.; Swager, T. M. " Cofacially Constrained Organic Semiconductors" *J. Poly. Sci*. A, Polymer Chemistry **2003**, 41, 3693-3702.
138. Kim, Y. -M.; Zhu, Z.; Swager, T. M. "Hyperconjugative and Inductive Perturbations in Poly(phenylene vinylenes)" *J. Am. Chem. Soc*. **2004**, 126, 452-453.
139. Kuroda, K.; Swager, T. M. "A Fluorescent Semiconducting Polymer Conjugate of Poly(*N*-isopropylacrylamide) for Thermal Precipitation Assays" *Macromolecules* **2004**, *37*, 716-724.

140. Shin K. C.; Araoka, F; Park, B.; Takanishi, Y.; Ishikawa, K.; Zhu, Z. G.; Swager, T. M.; Takezoe, H. "Advantages of Highly Ordered Polymer-Dyes for Lasing in Chiral Nematic Liquid Crystals" *Jap. J. Appl. Phys. Part 1*, **2004**, 43, 631-636.
141. Lee, D.; Swager, T. M. "Defining Space around Conjugated Polymers: New Vistas in Self-Amplifying Sensory Materials" *Synlett* **2004**, 149-154.
142. Amara, J. P.; Swager, T. M. :Incorporation of Internal Free Volume: Synthesis and Characterization of Iptycene-Elaborated Poly(butadiene)s" *Macromolecules* **2004**, *37*, 3068-3070.
143. Villazor, K. R.; Swager, T. M. "Chiral Supramolecular Materials from Columnar Liquid Crystals" *Mol. Cryst. Liq. Cryst.* **2004**, *410*, 775-781.
144. Paraskos, A. J.; Nishiyama, Y.; Swager, T. M. "Synthesis and Characterization of Novel Triphenylene-Dione Half-Disc Mesogens" *Mol. Cryst. Liq. Cryst.* **2004**, *411*, 1405-1417.
145. Song, M. H.; Shin, K.-C.; Park, B.; Takanishi, Y.; Ishakawa, K.; Watanabe, J.; Nishimurab, S.; Toyooka, T.; Zhu, Z.; Swager, T. M.; Takezoe, H. "Polarization Characteristics of Phase Retardation Defect Mode Lasing in Polymeric Cholesteric Liquid Crystals" *Sci. & Tech. Adv. Mater.* **2004**, 5, 437-441.
146. Gutman, L.; Cao, J. S.; Swager, T. M. "Phase and Orientational Ordering of Low Molecular Weight Rod Molecules in a Quenched Liquid Crystalline Polymer Matrix with Mobile Side Chains" *J. Chem. Phys.* **2004**, *120*, 11316-11326.
147. Gutman, L.; Cao, J. S.; Swager, T. M., Thomas, E. L. "Orientational Ordering of Short LC Rods in an Anisotropic Liquid Crystalline Polymer Glass" *Chem. Phys. Lett.* **2004**, *389*, 198-203.
148. Song, M. H.; Park, B.; Shin, K.-C.; Ohta, T.; Tsunoda, Y.; Hoshi, H.; Takanishi, Y.; Ishikawa, K., Watanae, J.; Nishimura, S.; Toyooka, T., Zhu, A.; Swager, T. M.; Takezoe, H. "Effect of Phase Retardation of Defect Mode Lasing in Polymeric Cholesteric Liquid Crystals" *Adv. Mater.* **2004**, *16*, 779-783.
149. Yu, H.-h.; Pullen, A. E.; Büschel, M. G.; Swager, T. M. "Charge Specific Interactions in Segmented Conducting Polymers: A New Approach to Selective Ionoresistive Responses" *Angew. Chem. Int. Ed. Engl.* **2004**, 43, 3700–3703.
150. Kwan, P. H.; MacLachlan, M. J.; Swager, T. M. "Rotaxanated Semiconducting Sensory Polymers" *J. Am. Chem. Soc.* **2004**, *126*, 8638-8639.
151. Hu, K.-N.; Yu, H.-h.; Swager, T. M.; Griffin, R. G. "Dynamic Nuclear Polarization with Biradicals" *J. Am. Chem. Soc.* **2004**, 126, 10844-10845.
152. Nadeau, J. M.; Swager, T. M. "New β-Linked Pyrrole Monomers: Approaches to Highly Stable and Conductive Electrochromic Polymers" *Tetrahedron* **2004**, *60*, 7141-7146.
153. Disney, M. D.; Zheng, J.; Swager, T. M. Seeberger, P. H. "Visual Detection of Bacteria with Carbohydrate-Containing Fluorescent Polymers" *J. Am. Chem. Soc.* **2004**, *126*, 13343-13346.
154. Zheng, J.; Swager, T. M. "Energy Transfer from Biotinylated Poly(*p*-phenylene ethynylene): New Insights for Amplified Fluorescence-Based Biosensors" *Chem. Commun.*, **2004**, 2798–2799.
155. Yu, H.-h.; Swager, T. M. "Molecular Actuators – Designing Actuating Materials at the Molecular Level" *IEEE J. of Oceanic Engr.* **2004**, *29*(3), 692-695.
156. Wosnick, J. H.; Swager, T. M. "Enhanced Fluorescence Quenching in Receptor-Containing Conjugated Polymers: A Calix[4]arene-Containing Poly(phenylene ethynylene)" *Chem. Comm.* **2004**, 2744-2745.

157. Holliday, B. J., Swager, T. M. "Highly Conductive Metallopolymers: The Role of Redox Matching" *Chem. Comm.* **2005**, 23-36.
158. Kim, Y. -M.; Swager, T. M. "Ultra-photostable n-type PPV" *Chem. Comm.* **2005,** 372-374.
159. Thomas, S. W.; Swager, T. M. "Synthesis and Optical Properties of Simple Amine-Containing Conjugated Polymers" *Macromolecules* **2005**, *38*, 2716 -2721.
160. Rose, A.; Zhu, Z.; Madigan, C.; Swager, T. M.; Bulovic, V. "Sensitivity Gains in Chemosensing by Lasing Action in Organic Polymers" *Nature,* **2005**, *434*, 876-879.
161. Wosnick, J. H.; Mello C. M.; Swager, T. M. "Synthesis and Application of Poly(phenylene ethynylene)s for Bioconjugation: A Conjugated Polymer-Based Fluorogenic Probe for Proteases" *J. Am. Chem. Soc.* **2005**, 127, 3400-3405.
162. Kwan, P. H.; Swager, T. M. "Intramolecular Photoinduced Charge Transfer in Rotaxanes" *J. Am. Chem. Soc.* **2005**, *127*, 5902-5909.
163. Satrijo, A.; Swager, T. M. "Facile Control of Chiral Packing in Poly(*p*-phenylenevinylene) Spin-Cast Films" *Macromolecules* **2005,** *38,* 4054-4057.
164. Song, C.; Swager, T. M. "Highly Conductive Poly(Phenylene Thienylene)s: *Meta*-Phenylene Linkages Aren't Always Bad" " *Macromolecules* **2005**, *38,* 4569-4576.
165. Zheng, J.; Swager, T. M. "Poly(arylene ethynylene)s in Chemosensing and Biosensing" *Adv. Polym. Sci.* **2005**, *177*, 151–179.
166. Breen, C. A.; Tischler, Y.; Bulovic, V.; Swager, T. M. "Highly Efficient Blue Electroluminescence from Poly(phenylene-ethynylene) via Energy Transfer from a Hole Transport Matrix" *Adv. Mater.* **2005**, *17*, 1981-1985.
167. Thomas, S. W.; Yagi, S.; Swager, T. M. "Towards Chemosensing Phosphorescent Conjugated Polymers: Cyclometalated Platinum(II) Poly(Phenylene)s" *J. Mater. Chem.* J. **2005**, *15*, 2829-2835.
168. Gutman, L.; Cao, J. S.; Swager, T. M.; Thomas, E. L. "Phase and Orientational Ordering of A-B-A Tri-Block Co-Polymers Guest in a Quenched Host of Low Molecular Weight Rod Molecules" *Chem. Phys. Lett.* **2005**, *408*, 139-144.
169. Nesterov, E. E.; Zhu, Z.; Swager, T. M. "Conjugation Enhancement of Intramolecular Exciton Migration in Poly(p-phenylene-ethynylene)s" *J. Am. Chem. Soc.* **2005**, *127*, 10083-10088.
170. Deng, T.; Breen, C. A.; Breiner, T.; Swager, T. M.; Thomas, E. L.; "A Block Copolymer Nanotemplate for Mechanically Tunable Polarized Emission from a Conjugated Polymer" *Polymer* **2005**, *46*, 10113-10118.
171. Nesterov, E. E.; Skoch, J.; Hyman, B. T.; Klunk, W. E.; Bacskai, B. J.; Swager, T. M. "*In Vivo* Optical Imaging of Amyloid Aggregates in Brain: Design of Fluorescent Markers"*Angew. Chem. Int. Ed.* **2005,** *44*, 5452-5456.
172. Breen, C. A.; Rifai, S.; Bulovic, V.; Swager, T. M. "Blue Electroluminescence from Oxadiazole Grafted Poly(Phenylene Ethynylene)" *Nanoletters* **2005**, *5*, 1597-1601.
173. Lee, D.; Swager, T. M. "Toward Isolated Molecular Wires: A pH-Responsive Canopied Polypyrrole" *Chem. Mater.* **2005**, *17*, 4622-4629.
174. Kim, Y. –M.; Whitten, J. E.; Swager, T. M. "High Ionization Potential Conjugated Polymers" *J. Am. Chem. Soc.* **2005**, *127*, 12122-12130.
175. Wosnick, J. H.; Liao, J. H.; Swager, T. M. "Layer-by-layer Poly(phenylene ethynylene) Films on Silica Microspheres for Enhanced Sensory Amplification" *Macromolecules* **2005**, 38, 9287-929.

176. Thomas, S. W. III; Amara, J. P.; Swager, T. M. "Amplifying Fluorescent Polymer Sensors for the Explosives Taggant 2,3-Dimethyl-2,3-dinitrobutane (DMNB)" *Chem. Comm.* **2005**, 4572 – 4574.
177. Kwan, P. H.; Swager, T. M. "Insulated Conducting Polymers: Manipulating Charge Transport Using Supramolecular Complexes" *Chem. Comm.* **2005**, 5211-5213.
178. Kim, Y. –M.; Bouffard, J.; Kooi, S. E.; Swager, T. M. "Highly Emissive Conjugated Polymer Excimers" *J. Am. Chem. Soc.* **2005**, *127*, 13726 - 13731.
179. Zhao, D.; Swager, T. M. "Conjugated Polymers Containing Large Soluble Diethynyl Iptycenes" *Organic Letters* **2005**, *7*, 4357-4360.
180. Amara, J. P.; Swager, T. M. "Synthesis and Properties of Poly(phenylene ethynylene)s with Pendant Hexafluoroisopropanol Groups" *Macromolecules* **2005**, *38,* 9091-9094.
181. Zhao, D.; Swager, T. M. "Sensory Responses in Solution vs. Solid State: A Fluorescence Quenching Study of Poly(iptycenebutadiynylene)s" *Macromolecules* **2005**, *38*, 9377-9384.
182. Xiang, Z. M.; Nesterov, E. E.; Skoch, J.; Lin, T.; Hyman, B. T.; Swager, T. M.: Bacskai, B. J.; Reeves S. A. "Detection of Myelination using a Novel Histological Probe" *J. Histochemistry and Cytochemistry*, **2005**, *53*, 1511-1516.
183. Thomas, S. W.; Long, T. M.; Pate, B. D.; Kline, S. R.; Thomas, E. L.; Swager, T. M. "Perpendicular Organization of Macromolecules: Synthesis and Alignment Studies of a Soluble Poly(iptycene)" *J. Am. Chem. Soc.* **2005**, 127, 17976-17977.
184. Chen, Z.; Müller, P.; Swager, T. M. "Syntheses of Soluble, π-Stacking Tetracene Derivatives" *Org. Lett.* **2006**, *8*, 273-276.
185. Rifai, S.; Swager, T. M. "Facile *in situ* Silver Nanoparticle Formation in Insulating Porous Polymer Matrices" *Chem. Mater.* **2006**, *18*, 21-25.
186. Thomas, S. W.; Swager, T. M. "Trace Hydrazine Detection With Fluorescent Conjugated Polymers: A Turn-On Sensory Mechanism" *Adv. Mater.* **2006**, *18*, 1047-1050.
187. Tsui, N. T.; Paraskos, A. J.; Torun, L. Swager, T. M.; Thomas, E. L. "Minimization of Internal Molecular Free Volume: A Novel Mechanism for the Simultaneous Enhancement of Polymer Stiffness, Strength and Ductility" *Macromolecules* **2006**, *39*, 3350-3358.
188. Bailey, G. C.; Swager, T. M. "Masked Michael Acceptors in Poly(phenyleneethynylene)s for Facile Conjugation" *Macromolecules* **2006**, *39*, 2815-2818.
189. Chen, Z.; Amara, J. P.; Thomas, S. W.; Swager, T. M. "Synthesis of a Novel Poly(iptycene) Ladder Polymer" *Macromolecules* **2006**, *39*, 3202 - 3209.
190. Yang, Y.; Swager, T. M. "Main-Chain Calixarene Polymers: Conformational Effects on Polymerization" *Macromolecules* **2006**, *39*, 2013-2015.
191. Reczek, J. J.; Villazor, K. R.; Lynch, V.; Swager, T. M.; Iverson, B. L. "Tunable Columnar Mesophases Utilizing C_2 Symmetric Aromatic Donor-Acceptor Complexes" *J. Am. Chem. Soc.* **2006**, *128*, 7995-8002.
192. Byrne, P. D.; Lee, D.; Müller, P.; Swager, T. M. "Conducting Polymers Containing Cyclobutadiene Co Cyclopentadiene Complexes" *Syn. Metals* **2006**, *156*, 784-791.
193. Choi, H-G.; Amara, J. P.; Swager, T. M.; Jensen, K. F. "Synthesis and Characterization of Poly(isobenzofuran) Films by Chemical Vapor Deposition" *Macromolecules* **2006**, *39*, 4400-4410.
194. Satrijo, A.; Meskers, S. C. J.; Swager, T. M. "Probing a Conjugated Polymer's Transfer of Organization-Dependent Properties from Solutions to Films" *J. Am. Chem. Soc.* **2006**, *128*, 9030-9031.

195. Zheng, J.; Swager, T. M. "Probing Biological Recognition Using Conjugated Polymers at the Air-Water Interface" *Macromolecules*, **2006**, *39*, 6781-6783.
196. Kim, Y. -M.; Swager, T. M. "Sensory Polymers for Electron-Rich Analytes of Biological Interest" *Macromolecules* **2006**, *39,* 5177-5179.
197. Song, C.; Hu, K-N.; Swager, T. M.; Griffin, R. G. "TOTAPOL—A Biradical Polarizing Agent for Dynamic Nuclear Polarization in Aqueous Media" *J. Am. Chem. Soc.* **2006**, *128*, 11385-11390.
198. Byrne, P. D.; Müller, P.; Swager, T. M. "Conducting Metallopolymers Based on Azaferrocene" *Langmuir* **2006**, *22*, 10596-10604.
199. Amara, J. P.; Swager, T. M. "Conjugated Polymers with Geminal Trifluoromethyl Substituents Derived from Hexafluoroacetone" *Macromolecules* **2006,** *39,* 5753-5759.
200. Joly, G. D.; Geiger, L.; Kooi, S. E.; Swager, T. M. "Highly Effective Water-Soluble Fluorescence Quenchers of Conjugated Polymer Thin Films in Aqueous Environments" *Macromolecules* **2006,** *39,* 7175-7177.
201. Holliday, B. J.; Stanford, T. B.; Swager, T. M. "Chemoresistive Gas-Phase Nitric Oxide Sensing with Cobalt-Containing Conducting Metallopolymers" *Chem. Mater.* **2006**, *18*, 5649-5651.
202. Sugiyasu, K.; Song, C.; Swager, T. M. "Aromaticity in Tropone-Containing Polythiophene" *Macromolecules* **2006**, *39,* 5598-5600.
203. McNeil, A. J.; Müller, P.; Whitten, J. E.; Swager, T. M. "Conjugated Polymers in an Arene Sandwich" *J. Am. Chem. Soc.* **2006**, *128*, 12426-12427.
204. Choi, H. -G.; Amara, J. P.; Martin, T. P.; Gleason, K. K.; Swager, T. M.; Jensen K. F. "Structure and Morphology of Poly(isobenzofuran) Films Grown by Hot-Filament Chemical Vapor Deposition" *Chem. Mater.* **2006**, *18*, 6339-6344.
205. Thomas, S. W.; Venkatesan, K.; Müller, P.; Swager, T. M. "Dark-Field Oxidative Addition-Based Chemosensing – New Bis-cyclometalated Pt(II) Complexes and Phosphorescent Detection of Cyanogen Halides" *J. Am. Chem. Soc.* **2006**, *128*, 16641-16648.
206. Hoogboom, J.; Swager, T. M. "Increased Alignment of Electronic Polymers in Liquid Crystals via Hydrogen Bonding Extension" *J. Am. Chem. Soc.* **2006**, *128*, 15058-15059.
207. Ishow, E.; Bouffard, J.; Kim, Y. -M.; Swager, T. M. "Anthryl-Based Poly(Phenylene Ethynylene)s: Tuning Optical Properties with Diels-Alder Reactions" *Macromolecules* **2006**, *39*, 7854-7858.
208. Liao, J. H.; Swager, T. M. "Quantification of Amplified Quenching of Conjugated Polymer Microsphere Systems" *Langmuir* **2007**, *23*, 112-115.
209. Ohira, A.; Swager, T. M. "Ordering of Poly(*p*-Phenylene-Ethynylene)s in Liquid Crystals" *Macromolecules* **2007**, 40, 19-25.
210. Tsui, N. T.; Torun, L.; Pate, B. D.; Paraskos, A.; Swager, T. M.; Thomas, E. L. "Molecular Barbed Wire: Threading and Interlocking for the Mechanical Reinforcement of Polymers" *Adv. Funct. Mater.* **2007**, *17*, 1595-1602.
211. Chen, Z.; Swager, T. M. "Synthesis and Characterization of Fluorescent Acenequinones as Dyes for Guest-Host Liquid Crystal Displays" O*rg. Lett.* **2007**, *9*, 997-1000.
212. Choi, H.-G.; Amara, J. P.; Swager, T. M.; Jensen, K. F. "Directed Growth of Poly(isobenzofuran) Films by Chemical Vapor Deposition on Patterned Self-Assembled Monolayers as Templates" *Langmuir* **2007**, *23*, 2483-2491.
213. Thomas, S. W.; Joly, G. D.; Swager, T. M. "Chemical Sensors Based on Amplifying Fluorescent Conjugated Polymers" *Chem. Rev.* **2007**, *107*, 1339-1386.

214. Andrew, T. L.; Swager, T. M. "A Fluorescence Turn-on Mechanism to Detect the High Explosives RDX and PETN" *J. Am. Chem. Soc.* **2007**, *129*, 7254-7255.
215. Zhang, W.; Swager, T. M. "Functionalization of Single-Walled Carbon Nanotubes and Fullerenes via a Dimethyl Acetylenedicarboxylate-4-Dimethylaminopyridine Zwitterion Approach" *J. Am. Chem. Soc.* **2007**, *129*, 7714-7715.
216. Yang, Y.; Swager, T. M. "Main-Chain Calix[4]arene Elastomers by Ring-Opening Metathesis Polymerization" *Macromolecules* **2007**, *40*, 7437-7440.
217. Taylor, M. S.; Swager, T. M. "Triptycenediols by Rhodium-Catalyzed [2+2+2] Cycloaddition" *Org. Lett.* **2007**, *9*, 3695-3697.
218. Kouwer, P. H. J.; Swager, T. M. "Synthesis and Mesomorphic Properties of Rigid-Core Ionic Liquid Crystals" *J. Am. Chem. Soc.* **2007**, *129*, 14042-14052.
219. Taylor, M. S.; Swager, T. M. "Poly(anthrylenebutadiynylene)s: Precursor-Based Synthesis and Bandgap Tuning" *Angew. Chem. Int. Ed.* **2007**, *46*, 8480-8483.
220. Sugiyasu, K.; Swager, T. M. "Conducting Polymer-Based Chemical Sensors: Transduction Mechanisms" *Bull. Chem. Soc. Japan* **2007**, *80*, 2074-2083.
221. Rose, A.; Tovar, J. D.; Yamaguchi, S.; Nesterov, E. E.; Zhu Z.; Swager, T. M. "Energy Migration in Conjugated Polymers: The Role of Molecular Structure," *Phil. Trans. Royal Society A: Mathematical, Physical and Engineering Sciences* **2007**, *365*, 1589-1606.
222. Satrijo, A.; Kooi, S. E.; Swager T. M. "Enhanced Luminescence from Emissive Defects in Aggregated Conjugated Polymers" *Macromolecules* **2007**, *40*, 8833-9941.
223. Bouffard, J.; Eaton, R. F.; Müller, P.; Swager, T. M. "Iptycene-Derived Pyridazines and Phthalazines" *J. Org. Chem.* **2007**, *72*, 10166-10180.
224. Satrijo, A.; Swager T. M. "Anthryl-Doped Conjugated Polyelectrolytes as Sensors for Nonquenching Multicationic Analytes" *J. Am. Chem. Soc.* **2007**, *129*, 16020-16028.
225. Kagawa, K.; Qian, P.; Tanaka, A.; Swager, T. M. "Templated Polypyrrole Electro-Polymerization: Self-Assembled Bundles of Bilayer Membranes of Amphiphiles and Their Actuation Behavior" *Synth. Metals* **2007**, *157*, 733-738.
226. Venkatesan, K.; Kouwer, P. H. J.; Yagi, S.; Müller, P.; Swager, T. M. "Columnar Mesophases from Half-Discoid Platinum Cyclometalated Metallomesogens" *J. Mater. Chem.* **2008**, *18*, 400-407.
227. Narayanan, A.; Varnavski, O. P.; Swager, T. M.; Goodson, T. "Multiphoton Fluorescence Quenching of Conjugated Polymers for TNT Detection" *Phys. Chem. C Lett.* **2008**, *112*, 881-884.
228. Bouffard, J.; Kim, Y.-M.; Swager, T. M.; Weissleder, R.; Hilderbrand, S. A. "A Highly Selective Fluorescent Probe for Thiol Bioimaging" *Organic Letters* **2008**, *10,* 37-40.
229. Hu, K-H.; Song, C.; Yu, H-h.; Swager, T. M.; Griffin R. G "High-frequency Dynamic Nuclear Polarization Using Biradicals: A Multifrequency EPR Lineshape Analysis" *J. Chem. Phys.* **2008**, *128*, article # 052302.
230. Wang, F.; Gu, H.; Swager, T. M. "Carbon Nanotube/Polythiophene Chemiresistive Sensors for Chemical Warfare Agents" *J. Am. Chem. Soc.* **2008**, *130*, 5392-5393.
231. Raymond, S. B.; Skoch, J.; Hills, I. D.; Nesterov, E. E.; Swager, T. M.; Bacskai, B. J. "Smart Optical Probes for Near-Infrared Imaging of Alzheimer's Disease Pathology" *European J. of Nuclear Medicine and Molecular Imaging* **2008**, *35*, 1032.
232. Meek, S. T.; Nesterov, E. E.; Swager, T. M. "Near-Infrared Fluorophores Containing Benzo[c]heterocycle Subunits" *Org. Lett.* **2008**, *10*, 2991-2993.

233. Kang, H.-a.; Swager, T. M. "Conductive Block Copolymers Integrated into Polynorbornene-Derived Scaffolds" *Macromolecules* **2008**, *41*, 5540-5547.
234. Bouffard, J.; Swager, T. M. "Fluorescent Conjugated Polymers that Incorporate Substituted 2,1,3-Benzooxadiazole and 2,1,3-Benzothiadiazole Units" *Macromolecules* **2008**, *41*, 5559-5562.
235. Gu, H.; Swager, T. M. "Fabrication of Free-standing, Conductive and Transparent Carbon Nanotube Films" *Advanced Materials* **2008**, *20*, 4433-4437.
236. Chen, Z.; Bouffard, J.; Kooi, S. E.; Swager, T. M. "Highly Emissive Iptycene-Fluorene Conjugated Copolymers: Synthesis and Photophysical Properties" *Macromolecules* **2008**, *41*, 6672-6676.
237. Song, C.; Swager, T. M. "π-Dimer Formation as the Driving Force for Calix[4]arene-based Molecular Actuators" *Organic Letters* **2008**, *10*, 3575-3578.
238. Wang, F.; Yang, Y.; Swager, T. M. "Molecular Recognition for High Selectivity in Carbon Nanotube/Polythiophene Chemiresistors" *Angew. Chem. Int. Ed.,* **2008**, *47*, 8394-8396.
239. Swager, T. M. "Iptycenes in the Design of High Performance Polymers" *Acc. Chem. Res.* **2008**, *41*, 1181-1189.
240. Bouffard, J.; Swager, T. M. "Self-Assembly of Amphiphilic Poly(phenylene ethynylene)s in Water - Potassium Dodecanoate - Decanol Lyotropic Liquid Crystals" *Chem. Comm.* **2008**, 5387-5389.
241. Tsui, N. T.; Yang, Y.; Mulliken, A. D.; Torun, L; Boyce, M. C.; Swager, T. M.; Thomas, E. L. "Enhancement to the Rate-Dependent Mechanical Behavior of Polycarbonate by Incorporation of Triptycenes" *Polymer* **2008**, *21*, 4703-4712.
242. Chen, Z.; Swager, T. M. "Synthesis and Characterization of Poly(2,6-triptycene)" *Macromolecules* **2008**, *41*, 6880-6885.
243. Takita, R.; Song, C.; Swager, T. M. "π-Dimer Formation in an Oligothiophene Tweezer Molecule" *Organic Lett.* **2008**, *10*, 5003-5005.
244. Andrew, T. L.; Swager, T. M. "Reduced Photobleaching of Conjugated Polymer Films Through Small Molecule Additives" *Macromolecules* **2008**, *41*, 8306-8308.
245. Alcazar, D.; Wang, F.; Swager, T. M.; Thomas, E. L. "Gel Processing for Highly Oriented Conjugated Polymer Films" *Macromolecules* **2008**, *41*, 9863-9868.
246. Chan, J. M. W.; Swager, T. M. "Synthesis of Arylethynylated Cyclohexa-m-Phenylenes via Sixfold Suzuki Coupling" Tetrahedron Lett. **2008**, 49, 4912-4914.
247. Moslin, R. M.; Andrew, T. L.; Swager, T. M. "Anionic Oxidative Polymerization: The Synthesis of Poly(phenylenedicyanovinylene) (PPCN2V)" *J. Am. Chem. Soc.* **2009**, *131*, 20-21.
248. Moslin, R. M., Espino, C. G.; Swager, T. M. "Synthesis of Conjugated Polymers Containing cis-Phenylenevinylenes by Titanium Mediated Reductions" *Macromolecules* **2009**, *42*, 452-454.
249. Song, C.; Swager, T. M. "Conducting Polymers Containing *peri*-Xanthenoxanthenes via Oxidative Cyclization of Binaphthols" *Macromolecules* **2009**, *42*, 1472-1475.
250. Chan, J. M. W.; Tischler, J. R.; Kooi, S. E.; Bulovic, V.; Swager, T. M. "Synthesis of J-Aggregating Dibenz[a,j]anthracene-Based Macrocycles" *J. Am. Chem. Soc.* **2009**, *131*, 5659-5666.
251. Dane, E. L.; Griffin, R. G.; Swager T. M. "Synthesis of a BDPA-TEMPO Biradical" *Org. Lett.* **2009**, *11*, 1871-1874.
252. Zhang, W.; Sprafke, J. K.; Ma, M.; Tsui, E. Y.; Sydlik, S. A.; Rutledge, G. C.; Swager, T. M. "Modular Functionalization of Carbon Nanotubes and Fullerenes" *J. Am. Chem. Soc.* **2009**, *131*, 8446–8454.

253. Zhang, W.; Shaikh, A. U.; Tsui, E. Y.; Swager, T. M. "Cobalt Porphyrin Functionalized Carbon Nanotubes for Oxygen Reduction" *Chem. Mater.* **2009**, *21*, 3234–3241.
254. Izuhara, D.; Swager, T. M. "Electroactive Block Copolymer Brushes on Multi-Walled Carbon Nanotubes" *Macromolecules* **2009**, *42*, 5416–5418.
255. Izuhara, D.; Swager, T. M. "Poly(Pyridinium Phenylene)s: Water Soluble N-Type Polymers" *J. Am. Chem. Soc.*, **2009**, *131*, 17724–17725.
256. Lobez, J. M.; Swager, T. M. "Radiation Detection: Resistivity Responses in Functional Poly (Olefin Sulfone)/Carbon Nanotube Composites" *Angew. Chem. Int. Ed.* **2010**, *49*, 95-98.
257. Song, C.; Swager, T. M. "Reactive Conducting Thiepin Polymers" *J. Org. Chem.* **2010**, *75*, 999-1005.
258. Wheeler, S. E.; McNeil, A. J.; Mueller, P.; Swager, T. M.; Houk, K. N. "Cycloadditions that Quantify Substituent Effects in Aryl-Aryl Interactions" *J. Am. Chem. Soc.* **2010**, *132,* 3304-3311.
259. Chan, J. M. W.; Kooi, S. E.; Swager, T. M. "Synthesis of Stair-stepped Polymers Containing Dibenz[*a*,*h*]anthracene Subunits" *Macromolecules* **2010**, *43*, 2789-2793.
260. VanVeller, B.; Miki, K.; Swager, T. M. "Rigid Hydrophilic Structures for Improved Properties of Conjugated Polymers in Water" *Org. Lett.* **2010**, *12*, 1292-1295.
261. Dane, E. L.; Swager, T. M. "Synthesis of a Water-soluble 1,3-*bis*(diphenylene)-2-phenylallyl (BDPA) Radical" *J. Org. Chem.* **2010**, *75*, 3533-3536.
262. Weizmann, Y.; Lim, J.; Chenoweth, D. M.; Swager, T. M. "Regiospecific Synthesis of Au-Nanorod/SWCNT/Au-Nanorod Heterojunctions" *Nano Lett.* **2010**, *10*, 2466-2469.
263. Lohr, A.; Swager, T. M. "Stabilization of the Nematic Mesophase by a Homogeneously Dissolved Conjugated Polymer" *J. Mater. Chem.* **2010**, *20*, 8107-8111.
264. Dane, E. L.; King, S. B.; Swager, T. M. "Conjugated Polymers that Respond to Oxidation with Increased Emission" *J. Am. Chem. Soc.* **2010**, *132*, 7758-7768.
265. Song, C.; Walker, D. B.; Swager, T. M. "Conducting Thiophene-Annulated Azepine Polymers" *Macromolecules*, **2010**, *43*, 5233–5237.
266. Levine, M.; Song, I.; Andrew, T. L.; Kooi, S. E.; Swager, T. M. "Photoluminescent Non-Förster Energy Transfer from Poly(phenyleneethynylene)s to a Series of Fluorophores" *J. Poly. Sci. A, Polymer Chem.* **2010**, *48*, 3382-3391.
267. VanVeller, B.; Swager, T. M. "Biocompatible Post-Polymerization Functionalization of a Water Soluble Poly(*p*-Phenylene Ethynylene)" *Chem. Commun.* **2010**, *46*, 5761-5763.
268. Lim, J.; Swager, T. M. "Fluorous Biphase Synthesis of a Poly(*p*-phenyleneethynylene) and its Fluorescent Aqueous Fluorous Phase Emulsion" *Angew. Chem. Int. Ed.* **2010**, *49*, 7486 –7488.
269. Albert-Seifried, S.; Finlayson, C. E.; Laquai, F.; Friend, R. H.; Swager, T. M.; Kouwer, P. H. J.; Jurícek, M.; Kitto, H. J.; Valster, S.; Nolte, R. J. M.; Rowan, A. E. "Multichromophoric Phthalocyanine–(Perylenediimide)$_8$ Molecules: A Photophysical Study" *Chem. Eur. J.* **2010**, 16, 10021–10029.
270. Esser, B.; Swager, T. M. "Detection of Ethylene Gas by Fluorescence Turn-On of a Conjugated Polymer" *Angew. Chem. Int. Ed.* **2010**, *49*, 8872-8875.
271. Dane, E. L.; Swager, T. M. "Carbanionic Route to Electroactive Carbon-Centered Anion and Radical Oligomers" *Org. Lett.* **2010**, *12*, 4324-4327.
272. Weizmann, Y.; Chenoweth, D. M.; Swager, T. M. "Addressable Terminally-Linked DNA-CNT Nanowires" *J. Am. Chem. Soc.* **2010**, *132*, 14009–14011.
273. Lobez, J. M.; Swager, T. M. "Disassembly of Elastomers: Poly (olefin sulfone) – Silicones with Switchable Mechanical Properties" *Macromolecules* **2010**, *43*, 10422–10426.

274. Andrew, T. L.; Cox, J. R.; Swager, T. M. "Synthesis, Reactivity and Electronic Properties of 6,6-Dicyanofulvenes" *Org. Letters* **2010**, *12*, 5302-5305.
275. Andrew, T. L. VanVeller, Swager, T. M. "The Synthesis of Azaperylene-9,10-dicarboximides" *Synlett* **2010**, 3045-3048.
276. Schnorr, J. M.; Swager, T. M. "Emerging Applications of Carbon Nanotubes" *Chem. Mater.* **2011**, *23*, 646–657.
277. Sydlik, S. A.; Chen, Z.; Swager, T. M. "Triptycene Polyimides: Soluble Polymers with High Thermal Stability and Low Refractive Indices" *Macromolecules*, **2011**, *44*, 976-980.
278. Izuhara, D.; Swager, T. M. "Bispyridinium-Phenylene-Based Copolymers: Low Band Gap n-Type Alternating Copolymers" *J. Mater. Chem.* **2011**, *21*, 3579-3584.
279. Weizmann, Y.; Chenoweth, D. M.; Swager, T. M. "DNA-CNT Nanowire Networks for DNA Detection" *J. Am. Chem. Soc.* **2011**, *133*, 3238–3241.
280. Schnorr, J. M.; Swager, T. M. "Wiring-up Catalytically Active Metals in Solution with Sulfonated Carbon Nanotubes" *J. Mater. Chem.* **2011**, *21*, 4768 – 4770.
281. Andrew, T. L.; Swager, T. M. "Thermally-Polymerized Rylene Nanoparticles" *Macromolecules* **2011**, *44*, 2276–2281.
282. Izuhara, D.; Swager, T. M. "Poly(3-Hexylthiophene)-*block*-Poly(Pyridinium Phenylene)s: Block Polymers of P- and N-Type Semiconductors" *Macromolecules* **2011**, *44*, 2678–2684.
283. Andrew, T. L.; Swager, T. M. "Selective Detection of Explosives Via Photolytic Cleavage of Nitroesters and Nitramines" *J. Org. Chem.* **2011**, *76*, 2976–2993.
284. Andrew, T. L.; Swager, T. M. "Structure-Property Relationships for Exciton Transfer in Conjugated Polymers" *J. Poly. Sci. B: Poly. Phys.* **2011**, *49*, 476-498.
285. Ramírez-Monroy, A.; Swager, T. M. "Metal Chelates Based on Isoxazoline[60]Fullerenes" *Organometallics* **2011**, *30*, 2464–2467.
286. Rotschild, C.; Tomes, M.; Mendoza, H.; Andrew, T. L.; Swager, T. M.; Carmon, T.; Baldo, M. A. "Cascaded Energy Transfer for Efficient Broad-Band Pumping of High-Quality, Micro-Lasers" *Adv. Mater.* **2011**, *23,* 3057–3060.
287. Parkhurst, R. R.; Swager, T. M. "Synthesis of 3,4-Bis(benzylidene)cyclobutenes" *Synlett* **2011**, 1519-1522.
288. Wang, F.; Swager, T. M. "Diverse Chemiresistors Based Upon Covalently Modified Multi-Walled Carbon Nanotubes" *J. Am. Chem. Soc.* **2011**, *133*, 11181–11193.
289. Collins, W. R.; Schmois, E.; Swager, T. M. "Graphene Oxide as an Electrophile for Carbon Nucleophiles" *Chem. Commun.* **2011**, *47*, 8790-8792.
290. Liu, S.; Müller, P. Takase, M. K.; Swager, T. M. ""Click" Synthesis of Heteroleptic Tris-cyclometalated Iridium(III) Complexes: Cu(I) Triazolide Intermediates as Transmetalating Reagents" *Inorganic Chemistry* **2011**, *50*, 7598–7609.
291. Collins, W. R.; Lewandowski, W.; Schmois, E.; Walish, J., Swager, T. M. "Claisen Rearrangement of Graphite Oxide: A Route to Covalently Functionalized Graphenes" *Angew. Chem. Int. Ed. Engl.* **2011**, *50*, 8848-8852.
292. Cox, J. R.; Müller, P.; Swager, T. M. "Interrupted Energy Transfer: Highly Selective Detection of Cyclic Ketones in the Vapor Phase" *J. Am. Chem. Soc.* **2011**, *133*, 12910–12913.
293. Swager, T. M. "Functional Graphene: Top-Down Chemistry of the π-Surface" *ACS Macro Letters* **2012**, *1*, 3-5.
294. VanVeller, B.; Robinson, D.; Swager, T. M. "Trypticene Diols: A Strategy for Planar π-Systems Demonstrated by the Catalytic Conversion of a PPE into a PPV" *Angew. Chem. Int. Ed.* **2012**, *51*, 1182-1186.

295. Dane, E. L.; Rizzato, E.; Stocker, P.; Corzilius, B.; Maly, T.; Smith, A. A., Griffin, R. G.; Ouari, O.; Tordo, P.; Swager, T. M. "Rigid Orthogonal bis-TEMPO Biradicals with Improved Solubility for Dynamic Nuclear Polarization" *J. Org. Chem.* **2012**, *77*, 1789-1797.
296. Lobez, J. M.; Andrew, T. L.; Bulovic, V.; Swager, T. M. "Side-Chain Functionalized Polythiophene Additives for Improved Efficiency in Bulk Heterojunction Solar Cells" *ACS Nano*, **2012**, *6*, 3044-3056.
297. Cox, J. R.; Igarashi, T.; Kang, H.; Swager, T. M. "Norbornadiene Endcapping of Cross-Coupling Polymerizations: A Facile Route to Triblock Polymers" *ACS Macro Letters*, **2012**, *1*, 334-337.
298. Kiessewetter, M. K.; Corzilius, B.; Smith, A. A.; Griffin, R. G.; Swager, T. M. "Dynamic Nuclear Polarization with a Water-soluble Rigid Biradical" *J. Am. Chem. Soc.* **2012**, *134*, 4537-4540.
299. Dionisio, M.; Schnorr, J. M.; Michaelis, V. K.; Griffin, R. G.; Swager, T. M. Dalcanale, R. "Cavitand-Functionalized SWCNTs for N-methylammonium Detection" *J. Am. Chem. Soc.* **2012**, *134*, 6540-6543.
300. Cordovilla, C.; Swager, T. M. "Strain Release in Organic Photonic Nanoparticles for Protease Sensing" *J. Am. Chem. Soc.* **2012**, *134*, 6932–6935.
301. Esser, B.; Schnorr, J. M.; Swager, T. M. "Selective Detection of Ethylene Gas Using Carbon Nanotube based Devices: Utility in Determination of Fruit Ripeness" *Angew. Chem. Int. Ed.* **2012**, *51*, 5752-5756.
302. VanVeller, B.; Schipper, D. J.; Swager, T. M. "Polycyclic Aromatic Triptycenes: Oxygen Substitution Cyclization Strategies" *J. Am. Chem. Soc.* **2012**, *134,* 7282–7285.
303. Takeda, Y.; Andrew, T. L; Lobez, J. M.; Mork, A. J.; Swager, T. M. "An Air-stable Low Bandgap n-Type Organic Polymer Semiconductor Exhibiting Selective Solubility in Fluorous Solvents" *Angew. Chem. Int. Ed.* **2012**, *51*, 9042–9046.
304. Haze, O.; Corzilius, B.; Smith, A. A.; Griffin, R. G.; Swager, T. M. "Water–Soluble Narrow Line Radicals for Dynamic Nuclear Polarization" *J. Am. Chem. Soc.* **2012**, *134* 14287-14290.
305. Parkhurst, R. R.; Swager, T. M. "Synthesis and Optical Properties of Phenylene-Containing Oligo-acenes (POAs)" *J. Am. Chem. Soc.* **2012**, *134*, 15351-15356.
306. Batson, J. M.; Swager, T. M. "Poly(para-arylene)s via [2+2+2]" *ACS Macro Lett.* **2012**, *1*, 1121-1123
307. Mirica, K. A.; Weis, J. G., Schnorr, J. M.; Esser, B.; Swager T. M. "Mechanical Drawing of Gas Sensors on Paper" *Angew. Chem. Int. Ed.* **2012**, *51*, 10740-10745.
308. Zhong, Y. L.; Swager, T. M. "Enhanced Electrochemical Expansion of Graphite" *J. Am. Chem. Soc.* **2012,** *134*, 17896-17899.
309. Bonillo, B.; Swager, T. M. "Chain-Growth Polymerization of 2-Chlorothiophenes Promoted by Lewis Acids" *J. Am. Chem. Soc.* **2012**, *134*, 18916-18919.
310. Cox, J. R.; Simpson, J. H.; Swager, T. M. "Photoalignment Layers for Liquid Crystals from the Di-π-Methane Rearrangement" *J. Am. Chem. Soc.* **2013**, *135*, 640-643.
311. Sydlik, S. A.; Swager, T. M. "Functional Graphenic Materials via a Johnson-Claisen Rearrangement" *Adv. Mater.* **2013**, *23*, 1873-1882.
312. Gupta, M. L.; Sydlik, S. A.; Schnorr, J. M.; Woo, D. J.; Osswald, S.; Swager, T. M.; Raghavan, D. "The Effect of Mixing Methods on the Dispersion of Carbon Nanotubes During the Solvent-Free Processing of Multi-Walled Carbon Nanotube/Epoxy Composites" *J. Poly. Sci., B Poly. Phys.* **2013**, *51*, 410-420.

313. Michaelis, V. K.; Smith, A. A.; Corzilius, B.; Haze, O.; Swager, T. M.; Griffin, R. G. "High-Field ^{13}C DNP with a Radical Mixture" *J. Am. Chem. Soc.* **2013**, *135*, 2935-2938.
314. Han, G. D.; Collins, W. R.; Andrew, T. L.; Bulović, B.; Swager, T. M. "Cyclobutene–C_{60} Adducts: N-Type Materials for Organic Photovoltaic Cells with High V_{OC}" *Adv. Funct. Mater.* **2013**, *23*, 3061-3069.
315. Sydlik, S. A.; Delgado, P. A.; Inomata, S.; VanVeller, B.; Yang, Y.; Swager, T. M.; Wagener, K. B. "Triptycene-Containing Polyetherolefins via Acyclic Diene Metathesis Polymerization" *J. Poly. Sci., A. Polymer Chemistry* **2013**, *51*, 1695–1706.
316. Ong, T.-C.; Mak-Jurkauskas, M. L.; Walish, J. J.; Michaelis, V. K.; Corzilius, B.; Smith, A. A.; Clausen, A. M.; Cheetham, J. C.; Swager, T. M.; Griffin, R. G. "Solvent-Free Dynamic Nuclear Polarization of Amorphous and Crystalline Ortho-Terphenyl" *J. Phys. Chem. C* **2013**, *117*, 3040-3046.
317. Ni, Q. Z.; Daviso, E.; Can, T. V.; Markhasin, E.; Jawla, S. K.; Swager, T. M.; Temkin, R. J.; Herzfeld, J. Griffin, R. G. "High Frequency Dynamic Nuclear Polarization" *Acc. Chem. Res.* **2013**, *46*, 1933-1941.
318. Schnorr, J. M.; van der Zwaag, D.; Walish, J. J.; Weizmann, Y.; Swager, T. M. "Sensory Arrays of Covalently Functionalized Single-Walled Carbon Nanotubes for Explosive Detection" *Adv. Funct. Mater.* **2013**, *23*, 5285-5291.
319. Sydlik, S. A.; Lee, J.-H., Walish, J. J.; Thomas, E. L.; Swager, T. M. "Epoxy Functionalized Multi-walled Carbon Nanotubes for Enhanced Adhesives" *Carbon*, **2013**, *59*, 109-120.
320. Den Boer, D.; Krikorian, M.; Esser, B.; Swager, T. M. "STM Study of Gold(I) Pyrazolates: Distinct Morphologies, Layer Evolution, and Cooperative Dynamics" *J. Phys. Chem. C.* **2013,** *117*, 8290–8298.
321. de Oliveria, H. P.; Sydlik, S. A.; Swager, T. M. "Supercapacitors from Free-Standing Polypyrrole/Graphene Nanocomposites" *J. Phys. Chem. C*, **2013**, *117*, 10270–10276.
322. Calisi, N.; Giuliani, A.; Alderighi, M.; Schnorr, J. M.; Swager, T. M.; Di Francesco, F.; Pucci, A. "Factors Affecting the Dispersion of MWCNTs in SEBS Copolymer" *European Poly. J.* **2013**, *49*, 1471-1478.
323. Frazier, K. M.; Swager, T. M. "Robust Cyclohexanone Selective Chemiresistors based on Single-Walled Carbon Nanotubes" *Anal. Chem.* **2013**, *85*, 7154–7158.
324. Rochat, S.; Swager, T. M. "Conjugated Amplifying Polymers for Optical Sensing Applications" *ACS Adv. Mat. & Interfaces* **2013**, *5*, 4488-4502.
325. Mirica, K. A.; Azzarelli, J. M.; Weis, J. G.; Schnorr, J. M., Swager, T. M. "Rapid Prototyping of Carbon-Based Chemiresistive Gas Sensors on Paper" *Proc. Natl. Acad. Sci.* **2013**, *110*, E3265-E3270.
326. Ahmed, E.; Morton, S. W.; Hammond, P. T.; Swager, T. M. "Fluorescent Multiblock Conjugated Polymer Nanoparticles for *in Vivo* Tumor Targeting" *Adv. Mater.* **2013**, *25*, 4504-4510.
327. Frantz, D. K.; Walish, J. J.; Swager, T. M. "Synthesis and Properties of the 5,10,15-Trimesityltruxen-5-yl Radical" *Org. Lett.* **2013**, *15*, 4782–4785.
328. Neal, K. L.; Shakerdge, N. B.; Hou, S. S.; Klunk, W. E.; Mathis, C. A.; Nesterov, E. E.; Swager, T. M.; McLean, P. J.; Bacskai, B. J. "Development and Screening of Contrast Agents for In Vivo Imaging of Parkinson's Disease" *Mol. Imag. & Bio.* **2013**, *15*, 585-595.
329. Batson, J.; Swager, T. M. "Towards a Perylene-containing Nanohoop" *Synlett.* **2013** *24*, 2545-2549.

330. Rochat, S.; Swager, T. M. "Water-Soluble Cationic Conjugated Polymers: Response to Electron-Rich Bioanalytes" *J. Am. Chem. Soc.* **2013**, *135*, 17703-17706.
331. Zhao, Y.; Swager, T. M. "Detection and Differentiation of Neutral Organic Compounds by ^{19}F NMR with a Tungsten Calix[4]arene Imido Complex" *J. Am. Chem. Soc.* **2013**, *135*, 18770-18773.
332. Simocko, C.; Yang, Y.; Swager, T. M.; Wagener, K. B. "Metathesis Step-Growth Polymerizations in Ionic Liquid" *ACS Macro Letters*, **2013**, *2*, 1061-1064.
333. Smith, A. A.; Corzilius, B.; Haze, O.; Swager, T. M.; Griffin, R. G. "Observation of Strongly Forbidden Solid Effect Dynamic Nuclear Polarization Transitions via Electron-Electron Double Resonance Detected NMR" *J. Chem. Phys.* **2013**, *139*, 214201.
334. Saetia, K.; Schnorr, J. M.; Mannarino, M. M.; Kim, S. Y.; Rutledge, G. C.; Swager, T. M.; Hammond, P. T. "Spray Layer-by-Layer Carbon Nanotube/Electrospun Fiber Electrodes for Flexible Chemiresistive Sensor Applications" *Adv. Funct. Mater.* **2014**, *24*, 492-502.
335. Goods, J. B.; Sydlik, S. A.; Walish, J. J.; Swager, T. M. "Phosphate Functionalized Graphene with Tunable Mechanical Properties" *Adv. Mater.* **2014**, *26*, 718-723.
336. Yost, S. R.; Lee, J.; Wilson, M. W. B.; Wu, T.; McMahon, D. P.; Parkhurst, R. R.; Thompson, N. J.; Congreve, D. N.; Rao, A.; Johnson, K.; Sfeir, M. Y.; Bawendi, M. G.; Swager, T. M.; Friend, R. H.; Baldo, M. A.; Van Voorhis, T. "A Transferable Model For Singlet Fission Kinetics" *Nature Chem.* **2014**, *6*, 492-497.
337. den Boer, D.; Han, G. D.; Swager, T. M. "Templating Fullerenes by Domain Boundaries of a Nanoporous Network" *Langmuir*, **2014**, *30*, 762–767.
338. Michaelis, V. K.; Ong, T.-C.; Kiesewetter, M. K.; Frantz, D. K., Walish, J. J.; Ravera, E.; Luchinat, C.; Swager, T. M.; Griffin, R. G. "Topical Developments in High-Field Dynamic Nuclear Polarization" *Israel J. Chem.* **2014**, *54*, 207 – 221.
339. Kiesewetter, M. K.; Michaelis, V.; Walish, J. J.; Griffin, R. G.; Swager, T. M. "High Field Dynamic Nuclear Polarization NMR with Surfactant Sheltered Biradicals" *J. Phys. Chem. B*, **2014**, *118*, 1825–1830.
340. Krikorian, M.; Liu, S.; Swager, T. M. "Mechanochromism and Columnar Liquid Crystallinity in Cationic Pt Complexes" *J. Am. Chem. Soc.* **2014**, *136*, 2952–2955.
341. Ravnsbaek, J. B.; Swager, T. M. "Mechanochemical Synthesis of Poly(phenylene vinylenes)" *ACS MacroLett.* **2014**, *3*, 305-309.
342. Azzarelli, J. M.; Goods, J. B.; Swager, T. M. "Study of Two Papyrus Fragments with Fourier Transform Infrared Microspectroscopy" *Harvard Theological Rev.* **2014**, *107*, 165-165.
343. Schipper, D. J.; Moh, L. C. H.; Müller, P.; Swager, T. M. "Dithiolodithiole: A New Building Block for Conjugated Materials" *Angew. Chem. Int. Ed.* **2014**, 53, 5847-5851.
344. Zhao, Y.; Markopoulos, G.; Swager, T. M. "^{19}F NMR Fingerprints: Identification of Neutral Organic Compounds in a Molecular Container" *J. Am. Chem. Soc.* **2014**, *136*, 10683-10690.
345. Forrest, W. P.; Weis, J. G.; John, J. M.; Axtell, J. C.; Simpson, J. H.; Swager, T. M.; Schrock, R. R. "Stereospecific Ring-Opening Metathesis Polymerization of Norbornadienes Employing Tungsten Oxo Alkylidene Initiators" *J. Am. Chem. Soc.* **2014**, *136,* 10910-10913.
346. den Boer, D.; Weis, J. G.; Zuniga, C. A.; Sydlik, S. A., Swager, T. M. "Apparent Roughness as Indicator of (Local) Deoxygenation of Graphene Oxide" *Chem. Mater.* **2014**, *26*, 4849-4855.
347. Frazier, K. M., Mirica, K. A.; Walish, J. J.; Swager, T. M. "Drawing Sensors on Chips: Deposition of Carbon-Based Materials on Diverse Surfaces by Mechanical Abrasion" *Lab on a Chip* **2014**, *14*, 4059 – 4066.

348. Rochat, S.; Swager, T. M. "Fluorescence Sensing of Amine Vapors using a Cationic Conjugated Polymer Combined with Various Anions" *Angew. Chem. Int. Ed.* **2014**, *53*, 9792-9796.
349. Can, T. V.; Caporini, M. A.; Mentink-Vigier, F.; Corzilius, B; Walish, J. J.; Rosay, M.; Maas, W. E.; Baldus, M.; Vega, S.; Swager, T. M.; Griffin, R. R. "Overhauser Effects in Insulating Solids" *J. Chem. Phys.* **2014**, *141*, 064202.
350. Sletten, E. M.; Swager, T. M. "Fluorofluorophores: Fluorescent Fluorous Chemical Tools Spanning the Visible Spectrum" *J. Am. Chem. Soc.* **2014**, *136,* 13574–13577.
351. Azzarelli, J. M., Mirica, K. A., Ravnsbæk, J. B.; Swager, T. M. "Wireless Gas Detection with a Smartphone via RF Communication" *Proc. Nat. Acad. Sci.* **2014**, *111*, 18162-18166.
352. Koo, B.; Sletten, E. M.; Swager, T. M. "Functionalized Poly(3-hexylthiophene)s via Lithium-Bromine Exchange" *Macromolecules*, **2015**, *48*, 229-235.
353. Weis, J. G.; Swager, T. M. "Thiophene-fused Tropones as Chemical Warfare Agent-Responsive Building Blocks" *ACS Macro Lett.*, **2015**, *4*, 138-142.
354. Zarzar, L. D.; Sresht, V.; Sletten, E. M.; Kalow, J. A.; Blankschtein, D.; Swager, T. M. "Dynamically Reconfigurable Complex Emulsions via Tunable Interfacial Tensions" *Nature*, **2015**, *518*, 520-524.
355. Campbell, M. G.; Sheberla, D.; Liu, S. F.; Swager, T. M.; Dincă, M. "Chemiresistive Sensing with Cu_3(hexaiminotriphenylene)$_2$, an Electrically Conductive 2D Metal–Organic Framework" *Angew. Chem. Int. Ed.* **2015**, *54*, 4349-4352.
356. Zhao, Y.; Swager, T. M. "Simultaneous Chirality Sensing of Multiple Amines by ^{19}F NMR" *J. Am. Chem. Soc.* **2015**, *137*, 3221-3224.
357. Liu, S. F.; Moh, L. C. H.; Swager, T. M. "Single-Walled Carbon Nanotube-Metalloporphyrin Chemiresistive Gas Sensor Arrays for Volatile Organic Compounds" *Chem. of Mater.* **2015**, *27,* 3560-3563.
358. Liu, S. F.; Petty, A. R.; Sazama, G. T.; Swager, T. M. "Single-walled Carbon Nanotube-Metalloporphyrin Composites for the Chemiresistive Detection of Amines and Meat Spoilage" *Angew. Chem. Int. Ed.* **2015**, *54*, 6554-6557.
359. Zhao, Y.; Swager, T. M. "Functionalized Metallated Cavitands via Imidation and Late-Stage Elaboration" Euro. J. Org. Chem. **2015**, 4593–4597.
360. Biver, T.; Criscitiello, F.; Di Francesco, F.; Minichino, M.; Swager, T.; Pucci, A. "MWCNT/Perylene Bisimide Water Dispersions for Miniaturized Temperature Sensors**"** *RSC Adv.,* **2015**, *5*, 65023**–**65029.
361. Van Can, T.; Walish, J. J.; Swager, T. M.; Griffin, R. G. "Time Domain DNP with the NOVEL Sequence" *J. Chem. Phys.* **2015**, *143*, 054201.
362. Kawazumi, K.; Wu. T.; Chae, H. S.; Van Voorhis, T.; Baldo M. A.; Swager, T. M. "Thermally Activated Delayed Fluorescence Materials Based on Homo-conjugation Effect of Donor-acceptor Triptycenes" *J. Am. Chem. Soc.* **2015** *137*, 11908–11911.
363. Niroui, F.; Wang, A. I.; Sletten, E. M.; Yablonovitch, E.; Swager, T. M.; Lang, J. H.; Bulović, V. "Design for Tunneling Nanoelectromechanical Switches Based on Molecular Thin-Films", *ACS Nano* **2015**, *9*, 7886–7894
364. Campbell, M. G.; Liu, S. F; Swager, T. M.; Dincă, M. "Chemiresistive Sensor Arrays from Conductive 2D Metal–Organic Frameworks" *J. Am. Chem. Soc.* **2015** *137*, 13780-13783.
365. Kalow, J. A.; Swager, T. M. "Synthesis of Miktoarm Branched Conjugated Copolymers by ROMPing In and Out" *ACS MarcoLett* **2015**, *4*, 1229-1233.

366. Belger, C.; Weis, J. G.; Ahmed, E.; Swager, T. M. "Colorimetric Stimuli-Responsive Hydrogel Polymers for the Detection of Nerve Agents" *Macromolecules* **2015**, *48*, 7990-7994.
367. Gutierrez, G. D.; Coropceanu, I.; Bawendi, M. G.; Swager, T. M. "A Low Reabsorbing Luminescent Solar Concentrator Employing π-Conjugated Polymers" *Adv. Mater.* **2015**, *28*, 497-501.
368. Zhao, Y.; Chen, L.; Swager, T. M. "Simultaneous Identification of Neutral and Anionic Species in Complex Mixtures without Separation" *Angew. Chem. Int. Ed.* **2016**, *55,* 917-921.
369. Han, G. D.; Maurano, A.; Weis, J. G.; Bulović, V.; Swager, T. M. "V_{OC} Enhancement in Polymer Solar Cells with Isobenzofulvene–C_{60} Adducts" *Organic Electro.* **2016**, *31*, 48-55.
370. Fennell, J. F.; Liu, S. F.; Azzarelli, J. M.; Weis, J. G.; Rochat, S.; Mirica, K. A.; Ravnsbæk J. B.; Swager, T. M. "Nanowire Chemical/Biological Sensors: Status and a Roadmap for the Future" *Angew. Chem. Int. Ed.* **2016**, *55*, 1266-1281.
371. Bertani, F.; Riboni, N.; Bianchi, F.; Brancatelli, G.; Sterner, E. S.; Pinalli, R.; Geremia, S.; Swager, T. M.; Dalcanale, E. "Roofed Triptycene Quinoxaline Cavitands as Superior SPME Coatings for Supramolecular Detection of BTEX in Air" *Chem. Euro. J.* **2016**, *22*, 3312-3319.
372. Im, J.; Sterner, E. S.; Swager, T. M. "Integrated Cellulose Concentrator/SWCNT Gas Sensors for Benzene, Toluene, and Xylenes" *Sensors* **2016**, *16*, 183.
373. Zuniga, C. A.; Goods, J. B.; Cox, J. R.; Swager, T. M. "Long-Term High Temperature Stability of Functionalized Graphene Oxide Nanoplatelets in Arab-D and API Brine" *ACS Appl. Mater. Interfaces*, **2016**, *8*, 1780–1785.
374. Weis, J. G.; Ravnsbæk, J. B.; Mirica, K. A.; Swager. T. M. "Employing Halogen Bonding Interactions in Chemiresistive Gas Sensors" *ACS Sensors* **2016**, *1*, 115-119.
375. Liu, S. F.; Lin, S.; Swager, T. M. "An Organocobalt-Carbon Nanotube Chemiresistive Carbon Monoxide Detector" *ACS Sensors* **2016**, *1*, 354-357.
376. Chang, S.; Han, G. D.; Weis, J. G.; Park, H.; Hentz, O.; Zhao, Z.; Swager, T. M.; Gradečak, S. "Transition Metal-Oxide Free Perovskite Solar Cells Enabled by a New Organic Charge Transport Layer" *ACS Appl. Mater. Interfaces*, **2016**, *8*, 8511–8519.
377. Willis-Fox, N.; Belger, C.; Swager, T. M. "Threading the Needle: Poly-*pseudo*-rotaxanes with Enhanced Fluorescence and Size-Exclusion based Sensing" *Chem. Mater.* 2016, *28*, 2685-2691.
378. Sletten, E. M.; Swager, T. M. "Readily Accessible Multifunctional Fluorous Emulsions" *Chem. Sci.* 2016, 7, 5091-5097.
379. Ishihara, S.; Azzarelli, J. M.; Swager T. M. "Ultratrace Detection of Toxic Chemicals: Triggered Disassembly of Supramolecular Nanotube Wrappers" *J. Am. Chem. Soc.* **2016**, *138*, 8221-8227.
380. Gutierrez, G. D.; Sazama, G. T.; Wu, T.; Baldo, M. A.; Swager, T. M. "Red Phosphorescence from Benzo[2,1,3]thiadiazoles at Room Temperature" *J. Org. Chem.* **2016**, *81*, 4789-4796.
381. Koo, B.; Swager, T. M. "Highly Emissive Excimers by 2D Compression of Conjugated Polymers" *ACS Macro Lett.* **2016**, *5*, 889-893.
382. Yoon, B.; Liu, S. F.; Swager, T. M. "Surface-Anchored Poly(4-vinylpyridine)–Single-Walled Carbon Nanotube–Metal Composites for Gas Detection" *Chem. Mater.*, **2016**, *28*, 5916-5924.
383. Krikorian, M.; Voll, C.-C. A.; Yoon, M.; Venkatesan, K.; Kouwer, P. H. J.; Swager, T. M. "Smectic A Mesophases from Luminescent Sandic Platinum(II) Mesogens" *Liquid Crystals* **2016**, in press
384. Zhu, R.; Azzarelli, J. M.; Swager, T. M. "Wireless Hazard Badges for Nerve Agent Simulants" *Angew. Chem. Int. Ed.* **2016**, *55*, 9662–9666.

385. He, M.; Swager, T. M. "Covalent Functionalization of Carbon Nanomaterials with Iodonium Salts" Under Review
386. Zhao, Y., Rocha, S. V.; Swager, T. M. "Mechanochemical Synthesis of Extended Iptycenes" Under Review
387. Nagelberg, S.; Zarzar, L. D.; Nicholas, D.; Subramanian, K.; Kalow, K. A.; Sresht, V.; Blankschtein, D.; Barbastathis, G. Kreysing, M.; Swager, T. M.; Kolle, M. "Reconfigurable and Responsive Droplet-based Compound Micro-Lenses" Under Review
388. Zarzar, L. D.; Kalow, J. A.; He. X.; Walish, J. J.; Swager, T. M. "Optical Visualization and Quantification of Enzyme Activity using Dynamic Droplet Lenses" Under Review
389. Ong, W. J.; Bertani, F.; Dalcanale, E.; Swager, T. M. "Redox Switchable Thianthrene-Cavitands"

Proceedings
>70 additional manuscripts have been published in proceedings volumes.

BOOK CHAPTERS
Swager, T. M.; Xu, B. "Liquid Crystalline Calixarenes" pages 389-398. in *Calixarenes 50th Anniversary: Commemorative Issue* Vicens, J.; Asfari, Z.; Harrowfield, J. M. (Eds.) Kluwer Academic Publishers, Holland, 1994

Kuroda, K.; Swager, T. M. "Self-Amplifying Sensory Materials: Energy Migration in Polymer Semiconductors" pages 127-134 in *Mission and Challenges of Polymer Science and Technology*, Horie, K.; Abe, A. (Eds.), Wiley-VCH: Weinheim, 2003

Swager, T. M. "Polymer Electronics for Explosives Detection" pages 29-38 in *Electronic Noses and Sensors for the Detection of Explosives,* Gardner J.; Yinon, J., (Eds.) NATO Science Series II: Mathematics, Physics and Chemistry, 2004

Tovar, J. D.; Swager, T. M. "Synthesis of Tunable Electrochromic and Fluorescent Polymers" Chapter 28**,** pp 368-376 in *Chromogenic Phenomena in Polymers,* Jenekhe, S. A.; Kiserow, D. J. (Eds.) *ACS Symposium Series*, Volume 888, 2004

Swager, T. M. "Semiconducting Poly(arylene ethylene)s" pages 233-258 in *Acetylene Chemistry: Chemistry, Biology, and Materials Science,* Diederich, F.; Stang, P. J.; Tykwinski, R. R. (Eds.) Wiley-VCH 2005

Swager, T. M. "Realizing the Ultimate Amplification in Conducting Polymer Sensors: Isolated Nanoscopic Pathways" pages 29-44 in *Redox Systems Under Nano-Space Control*, Hirao, T. (Ed.) Springer-Verlag Berlin Heidelberg 2006

Ho, J.; Rose, A.; Swager, T.; Bulovic, V. "Solid-State Chemosensitive Organic Devices for Vapor-Phase Detection" Chapter 5, pages 141-180 in *Organic Semiconductors in Sensor Applications*, Bernards, D. A.; Owens, R.; Malliaras, G. G. Springer-Verlag Berlin Heidelberg 2007

Thomas, S. W., III; Swager, T. M. "Detection of Explosives Using Amplified Fluorescent

Polymers" pages 203-220 in *Detection of Illicit Chemicals and Explosives*; Oxley, J. C.; Marshall, M., (Eds.) Elsevier: New York, 2008.

VanVeller, B.; Swager, T. M. "Poly(aryleneethynylene)s" pages 175–200 in *Design and Synthesis of Conjugated Polymers*, M. Leclerc, J. Morin (Eds.) Wiley-VCH: Weinheim, 2010.

Andrew, T. L.; Swager, T. M. "Exciton Transport through Conjugated Molecular Wires" Chapter 10, pages 273-310 in *Charge and Exciton Transport through Molecular Wires* Siebbeles, L. D. A.; Grozema, F. C. (Eds.) Wiley-VCH: Weinheim 2010

Levine, M.; Swager, T. M. "Conjugated Polymer Sensors: Design, Principles, and Biological Applications" Chapter 4, Pages 81-133, in *Functional Supramolecular Architectures: for Organic Electronics and Nanotechnology* Vol. 1 Samori, P.; Cacialli, F. (Eds.) Wiley-VCH: Weinheim 2010

PATENTS

1. Grubbs, R. H. and Swager, T. M.; "Ring-Opening Polymerization of 3,4-Dimethylene Cyclobutene Derivatives," U.S. patent 4645814.
2. Grubbs, R. H., Dougherty, D. A., Swager, T. M., and Ginsburg, E. J.; "Synthesis of Polyacetylene From High Energy Polymer Formed by Ring-Opening Metathesis Polymerization," U.S. Patent 5,026,783 (10/24/88)
3. Swager, T. M.; Xu, B. "Calixarene-Based Transition Metal Complexes and Photonic Devices Comprising the Same" U.S. Patent 5,453,220 (1/29/93)
4. Swager, T. M.; Marsella, M. J. "Derivatized Polythiophenes and Devices Comprising Same" U.S. Patent 5,519,147 (2/23/95)
5. Epstein, A. J.; Wang, Y.; Gebler, D. D.; Swager, T. M. "Electroluminescence in Light Emitting Polymers Featuring Deaggregated Polymers" U.S. Patent. 6,623,870 (7/29/97)
6. Epstein, A. J.; Wang, Y.; Gebler, D. D.; Swager, T. M. "Electroluminescence in Light Emitting Polymers Featuring Deaggregated Polymers" U.S. Patent. 6,962,757 (9/27/03)
7. Swager, T. M.; Kingsborough, R. P.; Zhu, S. "Conducting Polymer Hybrid Materials and Sensors" U.S. Patent 6,323,309 (12/01/98)
8. Swager, T. M. et al "Stable Chemically Sensitive Fluorescent Polymer Films" U.S. Patent. 60/084.247 (5/5/98), European Patent 99921696.3: Application No. 10/324,064 (12/18/02)
9. Swager, T. M. "Insulated Nanoscopic Pathways, Compositions, and Devices of the Same" U.S. Patent 7,186,355 (2/4/01)
10. Swager, T. M.; Long, T. M., Zhu; Z. "Polymers with High Internal Free Volume" U.S. Patent 6,783,814 (9/21/01)
11. Swager, T. M.; Long, T. M., Zhu; Z. "Polymers with High Internal Free Volume" U.S. Patent 7,494,698 (1/26/04)
12. Variy; R. V.; Heffernan; M.; Buchwald, S. L.; *Swager, T. M.* "Stereoisomers of p-Hydroxy-Milnacipran, and Methods of use Thereof" U.S. Patent 7,038,085 (10/22/03)
13. Swager, T. M.; Yang, J.-S.; Williams, V.; Miao, Y.-J.; Lugmair, C. G.; Levitsky, I. A.; Kim, J.; Deans, R. "Emissive Polymers and Devices Incorporating These Polymers" US Patent 7,208,122 (4/24/07)

14. Swager, T. M.; Yang, J.-S.; Williams, V.; Miao, Y.-J.; Lugmair, C. G.; Levitsky, I. A.; Kim, J.; Deans, R. "Emissive Polymers and Devices Incorporating These Polymers" US Patent 7,662,309 (10/17/05)
15. Swager, T. M.; Yang, J.-S.; Williams, V.; Miao, Y.-J.; Lugmair, C. G.; Levitsky, I. A.; Kim, J.; Deans, R. "Emissive Polymers and Devices Incorporating These Polymers" US Patent 7,393,503 (10/17/05)
16. Madden, J. D.; Pullen, A. E.; Yu, H.-H.; Hunter, I. A.; Anquetil, P.; Madden, P.; Swager, T. M. "Molecular Actuators and Methods of Use Thereof" U.S. Patent 7,138,075 (11/21/06)
17. Anquetil, P.; Hunter, I. A.; Madden, J. D; Madden, P.; Pullen, A. E.; Swager, T. M.; Yu, H.-H.; Xu, B. "Molecular Actuators and Methods of Use Thereof" U.S. Patent 7,658,868 (11/21/06)
18. Swager, T. M.; Zahn, S. "Emissive, High Charge Transporting Polymers" US Patent 7,041,910 (7/15/03)
19. Swager, T. M. "Reversible Resititivity-Based Sensors" US Patent 7,291,503 (11/6/07)
20. Buchwald, S. L.; Swager, T. M.; Variy, R. V. "Methods for the Synthesis of Milnacipran and Congeners Thereof" US Patent 7,309,799 (04/01/05)
21. Hirsh, J.; Kibanov, A. M.; Swager, T. M.; Buchwald, S. L.; Lo, W. Y.; Fleming, A. B.; Variy, R. V. "Abuse-Deterrent Pharmaceutical Compositions of Opiods and Other Drugs" US Patent 7,399,488 (7/15/2008)
22. Swager, T. M.; Zhang, S. –W. "Fluorescent Sensors for Detection of Chemical Warfare Agents and Fluoride Ion" US Patent 8,367,001 (04/12/2004)
23. Swager, T. M.; Kim, Y.-M. "Fluorescent, Semi-Conductive Polymers and Devices Comprising Them" US Patent 7,700,366 (12/06/04)
24. Rose, A.; Swager, T. M.; Zhu, Z.; Bulovic, B.; Madigan, C. F. "Organic Materials Able to Detect Analytes" US Patent 7,759,127 (12/06/04)
25. Swager, T. M.; Seeberger, P. H.; Zheng, J.; Disney M. D. "Polymers for Analyte Detection" US Patent 8,617,819 (9/17/04)
26. Swager, T. M.; Bouffard, J. "High Internal Free Volume Compositions for Low-k Dielectric and Other Applications" US Patent 7,671,166 (1/20/06)
27. Swager, T. M.; Thomas, S. W. "Detection of Explosives, Toxins, and Other Compositions" US Patent Application 60/835,828 (08/04/06)
28. Swager, T. M.; Amara, J. P. "Polymer Synthetic Technique" US Patent 8,283,423 (09/29/06)
29. Swager, T. M.; Liao, J. H. "Emissive Compositions with Internal Standard and Related Techniques" US Patent No. 8,802,447 (10/05/06)
30. Swager, T. M.; Andrew, T. L.; Thomas, S. W., Bouffard, J. "Determination of Explosives Including RDX" US Patent 7,666,684 (10/16/06)
31. Swager, T. M.; Hoogboom, J. "Compositions Including Polymers Aligned via Interchain Interactions" US Patent 9,376,623 (11/01/06)
32. Swager, T. M. "Devices and Methods Involving Polymers Aligned via Interchain Interactions" US Patent Application 11/641,127 (12/18/06)
33. Swager, T. M.; Thomas, S. W.; Venkatesan, K. "Sensor of Species Including Explosives and Chemical Warfare Agents" US Patent Application 11/588,881 (10/27/06)
34. Tsui, N. T.; Thomas, E. L.; Swager, T. M. "Protective Polymeric Materials And Related Devices" US Patent 8,273,848(03/08/07)
35. Swager, T. M.; Zhang, W. "Functionalization of Nanoscale Articles including Nanotubes and Fullerenes" US Patent 8,212,132 (03/07/07)

36. Deans, R.; Rose, A.; Bardon, K. M.; Hancock, H. F.; Swager, T. M. "Detection of Explosives and Other Species" US Patent 7,799,573 (4/5/07)
37. Griffin, R. R.; Hu, K.-N.; Swager, T. M.; Song, C.; Dane, E. "Biradical Polarization Agents for Dynamic Nuclear Polarization" US Patent 7,985,594 (5/10/2007).
38. Swager, T. M.; Thomas, S. W. "Luminescent Detection of Hydrazine and Hydrazine Derivatives" US Patent 8,158,437 (8/2/2007)
39. Swager, T. M.; Wang, F. "Devices and Methods for the Determination of Species Including Chemical Warfare Agents" (3/4/2009) U.S. Pat. 8,951,473
40. Swager, T. M.; Wang, F. "Stable CNT Dispersions and Their Use to Produce Sensors with High Sensitivity and Selectivity" (3/4/2009) U.S. Pat. 9,267,908
41. Swager, T. M.; Schnorr, J. "High Charge Density Structures, Including Carbon-Based Nanostructures and Applications Thereof" (12/11/2009) U.S. Pat. 8,735,313
42. Swager, T. M.; Schnorr, J. "High Charge Density Structures, Including Carbon-Based Nanostructures and Applications Thereof" (12/11/2009) U.S. Pat. 9,114,377
43. Swager, T. M.; Lobez, J. M. "Method and Apparatus for Determining Radiation" U.S. Patent 8,187,887 (10/6/2009)
44. Swager, T. M.; Gu, H. "Field Emission Devices Including Nanotubes or Other Nanoscale Articles" (5/29/2009) US Patent 8,456,073
45. Swager, T. M.; Lobez, J. M.; Wang, F.; Andrew, T. l. "Compositions, Methods, and Systems Comprising Poly(thiophenes)" (9/29/2011) U.S. Pat. 8,847,068
46. Swager, T.M.; Lim, J.; Takeda, Y. "Compositions, Methods, and Systems Comprising Fluorous-Soluble Polymers" US Patent 9,156,938
47. Swager, T. M.; Weizmann, Y.; Chenoweth, D. M. "Nanostructured Analyte Detector" (11/04/2009) U.S. Pat. Apl. Serial No.: 61/258,150
48. Swager, T. M., Izuhara, D. "Charged Polymers and Their Uses in Electronic Devices" (11/18/2010) U.S. Provisional Application No. 61/415,271
49. Swager, T. M., Izuhara, D. "Charged Polymers and Their Uses in Electronic Devices" U.S. Patent 8,318,894 (2/23/2011)
50. Swager, T. M.; Collins, W. R.; Lewandowski, W.; Schmois, E.; Walish, J. J.; Sydlik, S. A. "Compositions Comprising and Methods for Forming Functionalized Carbon-Based Nanostructures" (11/03/2011) U.S. Patent Application No.; 13/288,734
51. Swager, T. M.; Goods, J. B.; Collins, W. R.; Lewandowski, W.; Schmois, E.; Walish, J. J.; Sydlik, S. A. "Compositions Comprising and Methods for Forming Functionalized Carbon-Based Nanostructures" (11/03/2011) U.S. Patent 8,476,510 (7/2/2013)
52. Swager, T. M.; Griffin, R. R.; Haze, O.; Corzilius, B.; Smith, A. A.: "Radical Polarizing Agents for Dynamic Nuclear Polarization" (03/15/2012) U.S. Patent 8,715,621 (5/6/2014)
53. Swager, T. M.; Esser, B.; Schnorr, J. M. "Ethylene Sensor" (03/15/2013) U.S. Patent Application No.: 61/614,834
54. Swager, T. M.; Mirica, K.; Azzarelli, J. M.; Schnorr, J. M.; Esser, B.; Weis, J. G. "Methods for Deposition of Materials Including Mechanical Abrasion" (04/13/2013) U.S. Patent Application No.: 61/621,116.
55. Swager, T. M.; Cox, J. R. "Photoalignment of Materials including Liquid Crystals" (06/04/2012) U.S. Provisional Application No.: 61/655,032
56. Swager, T. M.; Zhong, Y. L. "Methods Involving Graphene and Functionalized Graphene" (10/17/2012) US. Provisional Application No.: 61/715,055

57. Swager, T. M.; Bulovic, V.; Han, G. D., Andrew, T. L. "Functionalized Nanostructures and Related Devices" (10/17/2012) U.S. Provisional Application No.: 61/715,026
58. Swager, T. M.; Azzarelli, J. M.; White, K. R. "Selective Detection of Alkenes or Alkynes" (4/6/2013) U. S Provisional Application No.: 61/809,362
59. Swager, T. M.; Im, J. "Filter Materials Including Functionalized Cellulose" (9/6/2013) U. S Provisional Application No.: 61/874,615
60. Swager, T. M.; Im, J.: Petty, A., Schmadicke, C.; Schnorr, J. M. "Devices and Methods Including a Preconcentrator Material for the Detection of Analytes" (9/6/2013) U. S Patent No.: 14,916,839
61. Swager, T. M.; Azzarelli, J. M.; Ravnsbaek, J. B.; Mirica, K. "Chemical and Physical Sensing with a Reader and RFID Tags" (10/30/2013) U. S Application No.: 61/897,613
62. Swager, T. M.; Liu, S. F.; Petty A. R.; Sazama, G. T.; Schnorr, J. M. "Gas Sensors Based Upon Metal Macrocycle-Carbon Composites" (3/3/2014) U. S Provisional Application No.:
63. Swager, T. M., Frazier, K. M., Mirica, K. A.; Walish, J. J. "Methods And Devices For Deposition Of Materials On Patterned Substrates" (8/20/2014) U. S. Provisional Application No.: 62/039787
64. Swager, T. M.; Zarzar, L. D.; Sresht, V.; Sletten, E. M.; Kalow, J. A.; Blankschtein, D. "Compositions and Methods for Arranging Colloid Phases" (10/31/2014) U. S. Provisional Application No.: 62/073,915
65. Swager, T. M.; Zarzar, L. D.; Sresht, V.; Sletten, E. M.; Kalow, J. A.; Blankschtein, D "Compositions and Methods for Forming Emulsions" (10/31/2014) U. S. Provisional Application No.: 62/073,896
66. Swager, T. M.; Gutierrez, G. D. "Compositions, Articles, and Methods for Down-Converting Light and Other Applications" (11/26/2014) U. S. Provisional Application No.: 62/084,918
67. Swager, T. M.; Liu, S. F.; Sazama, G. T. "Detection of Amines" (4/2/2015) U. S. Provisional Application No.: 62/142,435
68. Swager, T. M;. Zuniga, C. A.; Goods, J. B.; Cox, J. R. "Compositions of and Methods For Making Stable Carbonaceous Nanomaterials" (6/1/2015) U. S. Provisional Application No.: 62/169,398
69. Swager, T. M.; Yoon, B.; Liu, S. F. "A Polymer/Single-Walled Carbon Nanotube Composite for Gas Detection" U. S. Provisional Application No.: 62/3331,944.
70. Swager, T. M.; Zhao, Y.; Rocha, S. V. "Mechanochemical Synthesis of Iptycenes" (8/26/2016) U. S. Provisional Application No.: 15/249,061

INVITED LECTURES:

Since 1990 Swager has given over 250 university/industrial lectures and more than 200 invited, plenary, or keynote lectures at professional meetings.

Selected Named University Lectureships

Class of 1960 Lecture, Williams College 1998
Mona Zacharia Lecture, University of Rhode Island 1999
Merck Frosst Lecture, University of Ottawa, 2000
Hall Lecture Series, Bowling Green State University 2002
Boerhinger-Ingelheim Lecturer, Colorado State University 2003
Five College Lecturer, U. Mass. Amherst, Smith, Hampshire, Amherst, Mt. Holyoke, 2004.

Jerome Berson Lecture, Yale University 2004
Merck Frosst Lecture, University of Alberta, 2007
Rohm and Haas Lecturer, Pennsylvania State University, 2007
Guthikonda Lecture, Columbia University 2007
Dawson Lecture, University of Kentucky 2007
Hirshmann Lectures, University of Wisconsin 2008
John Wiley Jones Distinguished Lecturer, Rochester Institute of Technology 2008
Nakamoto Lecture, Marquette University 2008
Barré Lecturer, University of Montreal 2009
Powell Lecturer, University of Richmond 2009
Troisième Cycle Lecturer, Switzerland 2009
Distinguished University Lecturer, University of York (UK) 2009
Bayer Lecturer, Cornell University 2010
MacLean Lectureship, McMaster University 2010
Lundbeck Lecturer, Université de Sherbrooke 2010
Ingold Lecture, Steacie Institute for Molecular Sciences, Ottawa 2010
Konarka-Tripathy Lecture, University of Massachusetts, Lowell 2010
Frontiers in Chemistry Lecturer, Case Western Reserve University 2011
Arnold Lecture, University of Southern Illinois, Carbondale 2011
Haines Lecture, University of South Dakota 2011
John D. Roberts Lecture, California Institute of Technology 2011
Raucher Memorial Lecture, Rensselaer Polytechnic Institute, 2011
Herron Lecture, Florida State University, 2012
J. T. Donald Lectures, McGill University 2012
Joullie Lecture, University of Pennsylvania, 2012
Harold A. Iddles Lectures, University of New Hampshire, 2012
George Wheland Lecture, University of Chicago, 2013
Sackler Lecturer, Tel-Aviv University, 2013
William Dauben Lecture, University of California, Berkeley, 2013
Roseman Lecture, Johns Hopkins University 2013
Aldrich Lecture, Georgia Institute of Technology 2013
Lind Lecture, University of Tennessee and Oakridge National Laboratory, 2015
Jones Lecture, Queens's University, 2015
Ritter Memorial Lecture, Miami University 2015
Dow/Karabatsos Lecturer, Michigan State University 2016
Jean Dreyfus Boissevain Lectureship, Harvey Mudd College, 2016
Lord Lewis Lectureship, University of Cambridge, UK, 2016
Lemieux Lecturer, University of Ottawa, Canada, 2016