

Mary Elizabeth Williams

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Education.

St. John Fisher College	Chemistry	B. A. <i>magna cum laude</i>	1994
University of North Carolina	Chemistry	Ph. D.	1999

Appointments.

Associate Professor	The Pennsylvania State University	July, 2007 - present
Assistant Professor	The Pennsylvania State University	July, 2001 – June, 2007
Postdoctoral Research Asst.	Northwestern University	Aug., 1999 – May, 2001

Honors and Awards.

- Alpha Chi Sigma Professor Award 2008
- The Society for Electroanalytical Chemistry Young Investigator 2007
- 3M Nontenured Faculty Award 2006
- Alfred P. Sloan Foundation Fellow 2005
- David and Lucile Packard Foundation Fellowships for Science and Engineering 2003
- National Science Foundation Faculty Early Career Development Award 2002
- ACS Division of Analytical Chemistry Graduate Fellowship 1998 - 1999
- Albert G. Ledoux Fellowship 1997 - 1998
- Union Carbide Kenan Analytical Award 1998
- Electrochemical Society Graduate Summer Fellowship 1997
- University of North Carolina Department of Chemistry Dobbins Award 1996
- Charles N. Reilley Graduate Award 1994

Professional Memberships and Activities.

- Defense Science Study Group Member 2008 – 2010
- Elected Board of Directors, Society for Electroanalytical Chemistry 2006
- Member, Penn State Center for Molecular Nanofabrication and Devices
- Member, Penn State Materials Research Institute
- Member, Penn State Cancer Institute
- Invited faculty speaker at 2007 “Preparing for Life After Graduate School’ Workshop at Penn State University.
- Member of American Chemical Society; Electrochemical Society; Society for Electroanalytical Chemistry; American Association for the Advancement of Science; Materials Research Society
- Manuscript reviews for *Journal of the American Chemical Society*; *Nature Materials*; *Nanotechnology*; *Langmuir*; *Journal of Electroanalytical Chemistry*; *Analytical Chemistry*; *Inorganic Chemistry*; *Accounts of Chemical Research*; *Nano Letters*; *Chemistry of Materials*; *Nanotechnology*; *Journal of the Electrochemical Society*, 10 others
- Proposal reviews and panel reviews for National Science Foundation; American Chemical Society Petroleum Research Fund; The Electrochemical Society Graduate Student Fellowship Program; US Department of Energy; Kentucky Science and Engineering Foundation; US Army Research Office; Department of Energy; National Institutes of Health
- Annual participant in 2002 - 2008 National Science Foundation Research Experience for Undergrads programs at Penn State
- Participant in 2002 – 2005, 2007 Penn State Women in Science & Engineering (high school girls) program
- Participant in 2005, 2007 Penn State Summer Research Opportunities Program
- Developed and taught new graduate-level class, Chem 597A Nanoscience, for Fall 2002 semester (with P. S. Weiss)
- Developed and taught freshman special topics class, Chem 297, Spring 2006
- Faculty mentor for 2007 “American Wizard’ Competition at Penn State

Research Associates.

Graduate Student Coworkers.

Brian P. Gilmartin (Ph. D., 2006)
Lisa M. Pantzar (M. S., 2006)
Benjamin M. Hutchins (Ph. D., 2006)
David A. Fleming (Ph. D., 2006)
Kristi L. Ohr, (Ph. D., 2007)
Christopher Morgan, (M.S. 2007)
Andrew Latham*, (Ph. D., 2008)
Hyewon Youm, (M. S., 2008)
Christopher Thode, Graduate Research Assistant (Ph. D. expected 3/2009)
Lauren Levine, Graduate Research Assistant (Ph. D. expected 7/2009)
Carl Myers, Graduate Research Assistant (Ph. D. expected 5/2010)
Jason Stephens, Graduate Research Assistant (Ph. D. expected 5/2012)
Matthew Coppock, Graduate Research Assistant (Ph. D. expected 5/2012)
Eric Fillerup, Graduate Research Assistant (Ph. D. expected 5/2012)
Jacob Beveridge, Graduate Research Assistant (Ph. D. expected 5/2012)
Christopher Fennig, Graduate Research Assistant (Ph. D. expected 5/2013)
Ashley Figueiredo, Graduate Research Assistant (Ph. D. expected 5/2013)
Joy Gallagher, Graduate Research Assistant (Ph. D. expected 5/2013)

Undergraduate Student Coworkers.

Lisa Bemben (B. S. Chemistry, 2002)
Michael Napolitano (B. S. Chemistry, 2003)
Jennifer L. Lyon* (B. S. Chemistry, 2003)
Heather Agnew+ (B. S. Chemistry and Biochemistry with Honors 2003,)
Gregory Pinkowsky (B. S. Premed, 2003)
Ryan O'Neil (REU Summer Assistant; B. S. Chemistry 2004, St. Francis Univ.)
Carly Carter** (B. S. Chemistry, 2004)
Rebecca Grimme (REU Summer Assistant; B. S. Chemistry 2005, Shippensburg Univ.)
Emily Mantini (B. S. Science, 2004)
Megan Moore+ (B. S. Chemistry 2005)
Patrik Johansson+ (B. S. Chemistry 2005)
Samira Musah (SROP assistant 2005; B. S. Chemistry, SUNY Binghamton, 2006)
Rebekah McLaughlin (B. S. Chemistry with Honors, 2007)
Janice Heinold (REU Summer Assistant; B. S. Chemistry UT-CC 2007)
Ian Hamilton (B.S. Science, 12/2007)
Anand Tarpara+ (B. S. Chemistry, 2008)
Neil Mucha (B. S. Chemistry, 2008)

Tory Miksiewicz* (B. S. Chemistry expected 2009)
Tien Van (B. S. Chemistry expected 2009)
Kate Deuschle (REU Summer Assistant, B. S. expected 2010)
Dallas Kerr (B.S. Chemistry expected 2010)
Ben Lemay (B.S. Chemistry expected 2010)
Matt Kapelewski (B.S. Chemistry expected 2012)
Sara Gold[#], (SROP Summer Assistant)
Michael Burek (Co-op—University of Waterloo)

* These students also conducted summer research with REU funding

& Jointly supervised with Professor Erin Sheets

+ These students also conducted summer research with TEAS funding

[#] Jointly supervised with Professor Will Hancock

Postdoctoral Coworkers.

Robert C. Johnson (July, 2002 – March, 2003)
Mark Platt (November, 2004 – December, 2005)
Srecko Kirin (April, 2006 – December, 2007)

Sabbatical Visitor.

Richard S. Kelly East Stroudsburg University (January, 2009 – August, 2009)

Collaborators.

Christine Keating The Pennsylvania State University (Chemistry Dept.)
Peter Schiffer The Pennsylvania State University (Physics Dept.)
Paul S. Weiss The Pennsylvania State University (Chemistry and Physics Depts)
James Connor The Pennsylvania State University Hershey Medical Center
David Tiede Argonne National Laboratory

Graduate and Postdoctoral Advisors.

Thesis Advisor: Royce W. Murray University of North Carolina - Chapel Hill
Postdoctoral Advisor: Joseph T. Hupp Northwestern University

Publications. (H-Index: 15)

Publications as an independent researcher at Penn State include 34 published and 2 accepted as of 1/29/2009. Corresponding author(s) are underlined.

Submitted Publications.

Accepted Publications.

57. Thode, C. J. and Williams, M. E. "Spherical & Anisotropic Metal Oxide Magnetic Nanomaterials – Synthesis and Functionalization" Nanomaterials for Life Sciences, Vol. 4 Challa Kumar, Ed., Submitted (~ 70 pages), In press.
56. Levine, L. A.; Kirin, S. I.; Myers, C. P.; Williams, M. E. "Ferrocene-Rhenium Complexes Linked by an Amonioethylglycine Scaffold" *Eur. J. Inorg. Chem.* **2009**, In Press.

Publications.

55. Levine, L. A.; Youm, H. W.; Yennawar, H.P.; Williams, M. E. "Synthesis and Characterization of a (Dipyridylthioephene)platin Complex of a Pyridyl-Substituted Aminoethylglycine Artificial Dipeptide" *Eur. J. Inorg. Chem.* **2008**, 26, 4083-4091.
54. Thode, C. J.; Williams, M. E. "Grignard Functionalization of Weinreb Amide Modified Au Nanoparticles" *Langmuir* **2008**, 24, 5988-5990.
53. Myers, C.P.; Gilmartin, B. P.; Williams, M. E. "Aminoethylglycine-Functionalized Ru(bpy)₃²⁺ with Pendant Bipyridines Self-Assemble Multimetallic Complexes by Cu and Zn Coordination" *Inorg. Chem.* **2008**, 47, 6738-6747.
52. Latham, A. H.; Williams, M. E. "TEM-Induced Structural Evolution in Amorphous Fe, Ni and Co Oxide Nanoparticles" *Langmuir* **2008**, 24, 14195-14202.
51. Latham, A.H.; Williams, M. E. "Controlling Transport and Chemical Functionality of Magnetic Nanoparticles" *Accounts Chem. Research*, **2008**, 41, 411-420.
50. Thode, C. J.; Williams, M. E. "Kinetics of 1,3-Dipolar Cycloaddition on the Surfaces of Au Nanoparticles" *Journal of Colloid & Interface Science*, **2008**, 320(1), 346-352.
49. Williams, M. E. "Hybrid Materials, Synthesis, Characterization and Applications G. Kickelbick, Ed." *Adv. Mater.*, **2007**, 10.1002/adma. 200701805.
48. Latham, A. H.; Williams, M. E. "Functional Magnetic Nanoparticles as an Attractive Approach to Separations and Analysis" *Lab Plus International* **2007**, May-June, 8-11.
47. Latham, A.H.; Tarpara, A.P.; Williams, M. E. "Magnetic Field Switching of Nanoparticles between Orthogonal Microfluidic Channels" *Anal. Chem.* **2007**, 79, 5746-5752.
46. Kirin, S. I.; Yennawar, H. P.; Williams, M. E. "Synthesis and Characterization of Cu(II) Complexes with Amino Acid Substituted Di(2-pyridyl)amine Ligands" *Eur. J. Inorg. Chem.* **2007**, 3686-3694.
45. Williams, M. E.; Hutchins, B. M.; Platt, M.; Hancock, W. O. "Controlling Placement, Alignment and Transport of Microtubules with Magnetic Fields" *ECS Transactions* **2006**, 3(19), 1-7.
44. Hutchins, B. M.; Morgan, T. T.; Williams, M. E. "Optical Properties of Fluorescent Mixtures: Comparing Quantum Dots to Organic Dyes" *J. Chem. Ed.* **2007**, 84, 1301-1303.
43. Mullen, T. J.; Dameron, A. A.; Saavedra, H. M; Williams, M. E.; Weiss, P. S. "Dynamics of Solution Displacement in 1-Adamantanethiolate Self-Assembled Monolayers" *J. Phys. Chem. C*, **2007** 111, 6740.

42. Kirin, S. I.; Ohr, K.; Yennawar, H. P.; Morgan, C. M.; Levine, L. A.; Williams, M. E. "Synthesis and X-ray Single Crystal Structure Analysis of an Inorganic Nucleoside Analog" *Inorg. Chem. Comm.* **2007**, 10, 652 – 656.
41. Ohr, K.; McLaughlin, R. L.; Williams, M. E. "Redox Behavior of Phenyl-Terpyridine Substituted Artificial Oligopeptides Cross-Linked by Co and Fe" *Inorg. Chem.* **2007**, 46, 965 – 974.
40. Latham, A. H.; Wilson, M. J.; Schiffer, P.; Williams, M. E. "TEM-Induced Structural Evolution in Amorphous Fe Oxide Nanoparticles" *J. Am. Chem. Soc.* **2006**, 128, 12632 – 12633.
39. Hutchins, B. M.; Platt, M.; Hancock, W. O.; Williams, M. E. "Motility of CoFe₂O₄ Nanoparticle-Labeled Microtubules in Magnetic Fields" *Micro & Nano Letters* **2006**, 1, 47 – 52.
38. Hutchins, B. M.; Hancock, W. O.; Williams, M. E. "Magnet Assisted Fabrication of Microtubule Arrays" *Phys. Chem. Chem. Phys.* **2006**, 8, 3507 – 3609.
37. Hutchins, B. M.; Platt, M.; Hancock, W. O.; Williams, M. E. "Directing Transport of CoFe₂O₄-Functionalized Microtubules with Magnetic Fields" *Small* **2007**, 3, 126 - 131.
36. Fleming, D. A.; Thode, C. J.; Williams, M. E. "Triazole Cycloaddition as a General Route for Functionalization of Au Nanoparticles" *Chem. Mater.* **2006**, 18, 2327 – 2334.
35. Latham, A. H. and Williams, M. E. "Versatile Routes toward Functional, Water-Soluble Nanoparticles via Trifluoroethylester-PEG-thiol Ligands" *Langmuir* **2006**, 22, 4319 - 4326.
34. Platt, M.; Muthukrishnan, G.; Hancock, W. O.; Williams, M. E. "Selective Alignment of Magnetic Nanoparticle Functionalized Microtubules in Magnetic Fields" *J. Am. Chem. Soc.* **2005**, 127, 15686 – 15687.
33. Levine, L. A.; Morgan, C. M.; Ohr, K.; Williams, M. E. "Tetraplatinated Artificial Oligopeptides Afford High Affinity Intercalation into dsDNA" *J. Am. Chem. Soc.* **2005**, 127, 16764 – 16765.
32. Gilmartin, B. P.; McLaughlin, R. L.; Williams, M. E. "Artificial Tripeptide Scaffolds for Assembly of Hetero-, Multimetallic Structures with Tunable Electronic and Magnetic Properties" *Chem. Mater.* **2005**, 17, 5466 - 5454.
31. Muthukrishnan, G.; Hutchins, B. M.; Williams, M. E.; Hancock, W. O. "Transport of Semiconductor Nanocrystals by Kinesin Molecular Motors" *Small* **2006**, 2, 626 - 630.
30. Ohr, K. L.; Gilmartin, B. P.; Williams, M. E. "Pyridine-Substituted Oligopeptides as Scaffolds for Assembly of Multimetallic Complexes: Variation in Chain Length" *Inorg. Chem.* **2005**, 44, 7876 - 7885.
29. Latham, A. H.; Freitas, R.; Schiffer, P.; Williams, M. E. "Capillary Magnetic Field Flow Fractionation Separation and Analysis of Magnetic Nanoparticles" *Anal. Chem.* **2005**, 77, 5055 - 5062.
28. Gilmartin, B. P.; Ohr, K. L.; McLaughlin, R. L.; Koerner, R.; Williams, M. E. "Artificial Oligopeptide Scaffolds for Stoichiometric Metal Binding" *J. Am. Chem. Soc.* **2005**, 127, 9546 - 9555.

27. Lyon, J. L.; Fleming, D. A.; Stone, M. B.; Schiffer, P.; Williams, M. E. "Synthesis and Characterization of Fe Oxide Core/Au Shell Nanoparticles by Iterative Hydroxylamine Seeding" *Nano Letters*, **2004**, *4*, 719-723.
26. Fleming, D. A.; Williams, M. E. "Size Controlled Synthesis of Gold Nanoparticles Via High Temperature Reduction" *Langmuir*, **2004**, *20*(8), 3021-3023.
25. Hutchins, B. M.; Latham, A.; Williams, M. E. "Chemically Functional Semiconductor Nanocrystals: Electrochemistry and Self-Assembly on Surfaces" *Proc. Mater. Res. Soc.* **2003**, *737*, 169 - 174.
24. Fleming, D. A.; Napolitano, M.; Williams, M. E. "Chemically Functional Alkanethiol Derivatized Magnetic Nanoparticles" *Proc. Mater. Res. Soc.* **2003**, *746*, 207 - 212

Publications from Prior to Penn State.

23. Harper, A. S.; Leone, A. M.; Lee, D.; Wang, W.; Ranganathan, S.; Williams, M. E.; Murray, R. W. "Ion Atmosphere Relaxation Controlled Electron Transfers in Cobaltocenium Polyether Molten Salts" *J. Phys. Chem. B* **2005**, *109*, 18852-18859.
22. Dinolfo, P. H.; Williams, M. E.; Stern, C. L.; Hupp, J. T. "Rhenium-Based Molecular Rectangles as Frameworks for Ligand-Centered Mixed Valency and Optical Electron Transfer" *J. Am. Chem. Soc.* **2004**, *126*, 12989-13001.
21. Harper, A. S.; Lee, D.; Crooker, J. C.; Williams, M. E.; Murray, R. W. "Parallel Variation of Mass Transport and Heterogeneous and Homogeneous Electron Transfer Rates in Hybrid Redox Polyether Molten Salts" *J. Phys. Chem.*, **2004**, *108*, 1866 - 1873.
20. Williams, M.E.; Benkstein, K. D.; Abel, C.; Dinolfo, P. H.; Hupp, J. T. "Shape-Selective Transport Through Rectangle Based Molecular Materials: Thin-Film Scanning Electrochemical Microscopy Studies" *Proc. Nat. Acad. Sci.* **2002**, *99*, 5171.
19. Zhang, J.; Williams, M. E.; Keefe, M. H.; Morris, G. A.; Nguyen, S. T.; Hupp, J. T. "Molecular Sieving and Thin-film Transport by Molecular Materials Featuring Large (>20 Angstrom Diameter) Component Cavities" *Electrochemical and Solid State Letters*, **2001**, accepted.
18. Williams, M. E.; Hupp, J. T. "Electrochemistry in Nanostructured Inorganic Molecular Materials" *Proc. Mat. Res. Soc.* **2001**, *676*, Y1.5.1.
17. Williams, M. E.; Hupp, J. T. "Scanning Electrochemical Microscopy Assessment of Rates of Molecular Transport Through Mesoporous Thin Films of Porphyrinic "Molecular Squares"" *J. Phys. Chem. B.* **2001**, *105*, 8944-8950.
16. Kulescza, P.; Dickinson, E. V; Williams, M. E.; Murray, R.W. " Solid State Voltammetry in Hybrid Hexacyanometallate-Polyether Melts" *J. Phys. Chem. B.* **2001**, *105*, 5833.
15. Leone, A. M.; Codden, S. J.; Williams, M. E.; Thorp, H. H.; Murray, R. W. "An Ionic Liquid Form of DNA: Redox-Active Molten Salts of Nucleic Acids. " *J. Am. Chem. Soc.* **2001**, *123*, 218.

14. Williams, M. E.; Hupp, J. T. "Mesoporous Inorganic Materials" in The Encyclopedia of Electrochemistry, Vol. 10, Bard, A. J.; Ed. Wiley-VCH Publishers, Germany, in press.
13. Williams, M. E.; Masui, H.; Murray, R. W. "Solid State Voltammetry In A Polyether-Tailed Co Tris(Bipyridine) Molten Salt: Ion Pairing Effects" *J. Phys. Chem. B* **2000**, *104*, 10699.
12. Williams, M. E.; Stevenson, K. J.; Massari, A. M.; Hupp, J. T. "Imaging Size-Selective Permeation through Micropatterned Thin Films Using Scanning Electrochemical Microscopy" *Anal. Chem.* **2000**, *72*, 3122.
11. Williams, M. E.; Murray, R. W. "Solid State Voltammetry of an Anthraquinone Molten Salt" *J. Phys. Chem. B* **1999**, *103*, 10221.
10. Dickinson, E. V; Masui, H.; Williams, M. E.; Murray, R. W. "Effect of Position of Polyether Attachment on the Electron Self-Exchange Activation Barrier Energies of Redox Polyether Hybrid Molten Salts" *J. Phys. Chem. B* **1999**, *103*, 11028.
9. Dickinson, E. V; Williams, M. E.; Hendrickson, S. M.; Masui, H.; Murray, R. W. "Hybrid Redox Polyether Melts Based on Polyether-Tailed Counterions" *J. Am. Chem. Soc.* **1999**, *121*, 613.
8. Williams, M. E.; Murray, R. W. "Polyether Tailed Perylene: Highly Soluble, Luminescent, Redox-Active Dyes" *Chem. Mater.* **1998**, *10*, 3603.
7. Williams, M. E. "Solvent Dynamic Control of Co(III/II) Heterogeneous Kinetics Over a 10^{11} Range" *Interface* **1998**, *7*, 66.
6. Masui, H.; Williams, M.E.; Long, J. W.; Troutman, M.; Murray, R. W. "Effect of Positive Charge Concentration on T_G in Completely Amorphous Salt-Polyether Solutions" *Solid State Ionics* **1998**, *107*, 175.
5. Long, J. W.; Terrill, R. H.; Williams, M. E.; Murray, R. W. "An Electron Time of Flight Method Applied to Charge Transport Dynamics in A Cobalt Bipyridine Redox Hybrid Polyether" *Anal. Chem.* **1997**, *69*, 5082.
4. Williams, M. E.; Crooker, J. C.; Pyati, R.; Lyons, L. J.; Murray, R. W. "A 10^{11} -Fold Range of Solvent Dynamics Control of Heterogeneous Electron Transfers of Co(III/II) tris(Bipyridine)" *J. Am. Chem. Soc.* **1997**, *119*, 10249.
3. Williams, M. E.; Lyons, L. J.; Long, J. W.; Murray, R. W. "Transport and Electron Transfer Dynamics in a Polyether-Tailed Cobalt Bipyridine Molten Salt: Electrolyte Effects" *J. Phys. Chem.* **1997**, *101*, 7584.
2. Emmenegger, F.; Williams, M. E.; Murray, R. W. "Hybrid Redox Polyether Copper Bipyridine Complex Molten Salts" *Inorg. Chem.*, **1997**, *36*, 3146.
1. Williams, M. E.; Masui, H.; Long, J. W.; Malik, J.; Murray, R. W. "Electron Transport in Hybrid Redox Polyether Melts: Co and Fe Bipyridines with Attached Polyether Chains" *J. Am. Chem. Soc.* **1997**, *119*, 1997.

Oral Presentations. (*Invited; Presenter is underlined; * Principal Investigator)

63. ⁺Williams, M. E.; Myers, C. P.; Ohr, K.; Levine, L. A. "Metal-Linked Artificial Oligopeptides as Molecular Wires" 236th ACS National Meeting, Philadelphia, PA: August 2008.
62. ⁺Williams, M. E.; Thode, C. J.; Latham, A. H. "Magnetic Nanoparticles as Building Blocks" 236th ACS National Meeting, Philadelphia, PA: August 2008.
61. ⁺Williams, M. E. "Directing Nanoparticle Transport: From Magnets to Motor Proteins" Wayne State University, Department of Chemistry, Detroit, MI: February 22, 2008.
60. ⁺Williams, M. E. "Finding Your Tenzing Norgay for the Tenure Landscape" Distinguished Women in Science Lecture, Stanford University, Palo Alto, CA: January 2008.
59. Williams, M. E. "Metal-Linked Artificial Peptides: Molecular Wires & Antennas" Stanford University, Stanford, CA: January 31, 2008.
58. Levine, L. A.; Williams, M. E. "Model Platinum Artificial Oligopeptides Designed for Biological Applications" Ithaca College, Ithaca, NY: November 6, 2007.
57. Williams, M. E. "DNA for Robots" Westminster College, New Wilmington, PA: October 16, 2007.
56. Williams, M. E. "Heisenburg & TEM Imaging of Magnetic Nanoparticles" Potters Lodge Meeting, Blue Mountain Lake, NY: September 8, 2007.
55. Williams, M. E. "Magnetic Control of Nanoparticle Transport in Microchannels" 3M, St. Paul, MN: August 10, 2007.
54. Williams, M. E. "Multifunctional Magnetic Nanoparticles: Hershey Medical Center Symposium on Nanotechnology" Hershey, PA: June 26, 2007.
53. Williams, M. E. "Preparing for Life After Graduate School: Faculty at a Research Institution" Penn State, University Park, PA: June 6, 2007.
52. Williams, M. E. "Directing Nanoparticle Transport: from Magnets to Motor Proteins" James Madison University, Harrisonburg, VA: June 28, 2007.
51. Thode, C. J.; Fleming, D. A.; Williams, M. E. "Kinetic Trends of 1,3 Dipolar Cycloaddition on the Surface of Au Nanoparticles" Meeting of the ACS, Chicago, IL: March 25, 2007.
50. ⁺Williams, M. E. "PfLAGS: Faculty at a Research Institution" Penn State Preparing for Life After Graduate School Workshop: April 4, 2007.
49. ⁺Williams, M. E. "Electron Transfers in Metal-Linked Artificial Oligopeptide Duplexes" SEAC Reilley Award & Young Investigator Symposium, Pittcon, Chicago: February 28, 2007.
48. Latham, A. H.; Tarpara, A.; Williams, M. E. "Functional Magnetic Nanoparticles: From Synthesis to Analysis and Purification" Pittcon, Chicago: February 28, 2007
47. ⁺Latham, A.H. Williams, M. E. "The Development and Applications of Nanoscale Magnetic Materials."Salem State College: February, 2007.

46. Williams, M. E.* "Bioinspired Inorganic Materials" The Pennsylvania State University: November, **2006**
- 45.+ Williams, M. E.* "Metal-Linked Artificial Oligopeptides as Model 1-D Wires" University of Rochester, Rochester NY: November, **2006**
- 42.+ Williams, M. E.*; Hutchins, B. M.; Platt, M.; Hancock, W. O. "Directing Placement, Alignment, and Transport of Magnetic Nanoparticle-Labeled Microtubules" Meeting of the Electrochemical Society, Cancun MX: November, **2006**.
- 41.+ Williams, M. E.* "Directing Placement and Transport of Functional Magnetic Nanoparticles" Women's Chemist Committee Lectureship, Case Western Reserve University, Cleveland, OH: October, **2006**.
- 40.+ Williams, M. E.* "Inorganic Analogs of DNA" Inorganic Chemistry Gordon Research Conference, Newport, RI: July, **2006**.
- 39.+ Williams, M. E.* "Directing Transport and Placement of Functional Nanoparticles" 3M: June 22, **2006**.
- 38.+ Williams, M. E.* "Directing Transport and Placement of Functional Nanoparticles: From Motor Proteins to Refrigerator Magnets" Northwestern University, June 9, **2006**.
- 37.+ Williams, M. E.* "Directing Motion and Placement of Functional Nanoparticles" Dickinson College: April 4, **2006**.
- 36.+ Hutchins, B. M., Hancock, W. O.*, Williams, M. E.* "Magnetic Bioengines: Parking and Steering Bio-cars with Magnetic Fields" Skidmore College: April 5, **2006**.
- 35.+ Williams, M. E.* "Directing Patterning and Transport of Functional Nanoparticles" Ithaca College: February 24, **2006**.
- 34.+ Williams, M. E.* "Directing Patterning and Transport of Functional Nanoparticles" Cornell University: February 23, **2006**.
33. Hutchins, B. M.; Platt, M.; Hancock, W. O.*; Williams, M. E.* "Directing Biomotors with Refrigerator Magnets" Electrochemistry Gordon Conference: February 15, **2006**.
- 32.+ Williams, M. E.* "iDNA: from recognition to robots" Electrochemistry Gordon Conference: February 13, **2006**.
- 31.+ Williams, M. E.* "iDNA: From Recognition to Robots" Duke University: January 27, **2006**.
- 30.+ Williams, M. E.* "Directed Assembly of Multimetallic Complexes with Artificial Oligopeptide Scaffolds" University of California at Berkeley: December 2, **2005**.
- 29.+ Williams, M. E.* ""Molecular Recognition Using Metal Binding Artificial Oligopeptides" ICAM Workshop, Penn State: November 14, **2005**
- 28.+ Williams, M. E.* "Biomimetic Inorganic Nanostructures: iDNA and Moving Nanoparticles" Louisiana State University: October 14, **2005**
- 27.+ Williams, M. E.* "Biomimetic Inorganic Nanostructures" GlaxoSmithKline: September, **2005**.

- 26.+ Williams, M. E.* “iDNA: Inorganic Structural and Functional Analogs of DNA” University of North Carolina – Chapel Hill: September, **2005**
- 25.+ Williams, M. E.* “Directing Motion and Placement of Functional Nanoparticles” Potters Lodge Meeting IV, Blue Mountain Lake, NY: September, **2005**
24. Williams, M. E.*, Hutchins, B. M., Platt, M., Hancock, W. O.*, and Muthukrishnan, G. “Semiconductor Nanocrystal Protein Conjugates: Imaging Single Molecule Biomotors with Quantum Dots” American Chemical Society National Meeting, Washington, D. C.: August, **2005**
23. Gilmartin, B. P. and Williams, M. E.* “Artificial oligopeptide duplex and triplex assemblies by directed metal binding”, American Chemical Society National Meeting, Washington, D. C.: August, **2005**
22. Fleming, D. A. and Williams, M. E.* “Electrochemical Investigation of Functional Magnetic Nanoparticles” American Chemical Society National Meeting, Washington, D. C.: August, **2005**
- 21.+ Williams, M. E.*, Levine, L. A., Ohr, K. L., Gilmartin, B. P., and Morgan, C. M. “iDNA: Metal-Binding Oligopeptides” American Chemical Society National Meeting, Washington, D. C.: August, **2005**
- 20.+ Williams, M. E.* “iDNA” University of Wyoming, Laramie, WY: April, **2005**.
- 19.+ Williams, M. E.* “iDNA” Colorado State University, Fort Collins, CO: April, **2005**
- 18.+ Williams, M. E.* “iDNA” University of Utah, Salt Lake City, UT: March, **2005**.
- 17.+ Williams, M. E.* “iDNA: Functional and Structural Analogs of DNA” Packard Fellows Meeting, Monterey, CA: September, **2004**.
- 16.+ Williams, M. E.* “iDNA” Gordon Research Conference on Electron Donor Acceptor Interactions, Newport, RI: August, **2004**
- 15.+ Williams, M. E.* “iDNA: Oligomeric Helicates Based on Metal Coordination” Princeton University: April, **2004**.
- 14.+ Williams, M. E.* “Electron Transfers in Metal-Linked Oligomeric Duplexes” Potter’s Lodge Meeting III, Blue Mountain Lake, NY: September, **2003**
13. Williams, M. E.* “Nanoscale Inorganic Materials As Structural and Functional Analogs of Biological Systems” Penn State University REU Seminar: July, **2003**
- 12.+ Williams, M. E.* “Nanoscale Analogs of Biological Systems: from Inorganic DNA to Nanobots”, SUNY Brockport, Brockport, NY: March, **2003**
- 11.+ Williams, M. E.* “Directing and Measuring Transport of Inorganic Nanoparticles”, Gordon Research Conference on Electrochemistry, Ventura, California January, **2003**
10. Williams, M. E.* “Driving Chemical Reactants: Nanoparticles as Vehicles for Delivery and Recovery” Penn State University REU seminar: June, **2002**.

9. Fleming, D. A. and Williams, M. E.* “Chemically Functional Magnetic Nanoparticles” The Pittsburgh Conference, New Orleans, LA: March, **2002**.
- 8.+Williams, M. E.* “Driving Chemical Reactants: Nanoparticles as Vehicles for Delivery and Recovery,” St. John Fisher College, Rochester, NY: February, **2002**.
- 7.+ Williams, M. E.* “Driving Chemical Reactants: Nanoparticles as Vehicles for Delivery and Recovery,” Hobart and William Smith Colleges, Geneva, NY: February, **2002**.
6. Williams, M. E., Hupp, J. T.* “Mesoporous Inorganic Materials” Materials Research Society National Meeting, San Francisco, CA: April, **2001**.
5. Williams, M. E., Hupp, J. T.* “Electrochemistry in Mesoporous Inorganic Materials” 221st American Chemical Society National Meeting, Nanoelectrochemistry Symposium, San Diego, CA: April, **2001**.
- 4.+ Williams, M. E. “Electrochemistry in Nanostructured Materials” ‘Murray Into the Millenium Symposium– 40 Years in the Southern Part of Heaven’, University of North Carolina, Chapel Hill, NC: October, **2000**.
- 3.+ Williams, M. E. “Solid State Voltammetry in Hybrid Redox-Polyether Melts” Northwestern University, Evanston, IL: June, **2000**.
2. Williams, M. E.; McDonald, E. M.; Wightman, R. M.; Murray, R. W.* “Electrochemistry and Luminescence of a Novel Perylene-Polyether Hybrid” 193rd Meeting of the ECS, San Diego, CA: May, **1998**.
- 1.+ Williams, M. E.* “Electron Transport in Hybrid Redox-Polyether Melts” Union Carbide Kenan Award Symposium, Charleston, WV: May, **1998**.

Poster Presentations (+ Invited; Presenter is underlined; * Principal Investigator)

31. Myers, C. P.; Williams, M. E. “Aminoethylglycine Derivated Ru(bpy)₃²⁺ Compounds as Scaffolds for Artificial Photosynthetic Processes” GRC: Electron Donor Acceptor, Newport, RI: August 2008.
30. Thode, C. J.; Williams, M. E. “Grignard Functionalization of Weinreb Amide Modified Au Nanoparticles” GRC: Nanostructure Fabrication, Tilton, NH: July 2008.
29. Levine, L. A.; Yennawar, H. P.; Williams, M. E. “Novel Luminescent Pt(II) Cross-linking Artificial Peptides” Graduate Exhibition, The Pennsylvania State University, University Park, PA, March 30, 2008.
28. Kirin, S. I.; Williams, M. E. “Inorganic models of nucleic acids: Synthesis & Structure of Cu(dpa)₂ complexes”, 20th Croatian Meeting of Chemists and Chemical Engineers, Zagreb, Croatia: May 1, 2007.
27. Latham, A. H. , Williams, M. E. “Magnetic Nanoparticles: Controlling Movement and Function on the Nanoscale” Grad Exhibition, Penn State: March 2007.
26. Myers, C.; Williams, M. E. “Photoinduced Energy Transfer in Heterometallic Aminoethylglycine Derivatized Ru(bpy)₃²⁺ Hairpin Complexes” Pittcon, Chicago: Feb. 28, 2007.

25. Latham, A. H.; Williams, M. E. The Synthesis and Purification of Water-Soluble Magnetic Nanoparticles. Presented at Crossover, University Park, PA, October, 2006.
24. Levine, L. A.; Williams, M. E. "Binding of Artificial Multimetallic Peptides with Double Stranded DNA" PSU Frontiers in Metallobiochemistry 2006 Symposium: June 8, 2006.
23. [†] Williams, M. E.* "Oligopeptide-Linked Multichromophore Assemblies as Molecular Antennas" NAS Kavli Frontiers of Science Meeting, Irvine, CA: November, **2006**.
22. Levine, L. A.; Williams, M. E.* "" PSU Frontiers in Metallobiochemistry **2006** Symposium: June 8, **2006**.
21. Hutchins, B. M.; Platt, M.; Hancock, W. O.*; Williams, M. E.* "" Electrochemistry Gordon Conference, Santa Ynez Valley: February, **2006**
20. Latham, A. H. and Williams, M. E.* "Capillary Magnetic Field Flow Fractionation and Analysis of Magnetic Nanoparticles" American Chemical Society National Meeting, Washington, D. C.: August, **2005**
19. Williams, M. E.* and Latham, A. H. "Capillary Magnetic Field Flow Fractionation and Analysis of Magnetic Nanoparticles" Analytical Chemistry Gordon Conference, Roscoff, France: June 10 – 16, **2005**
18. Hutchins, B. M.; Muthukrishnan, G.; Hancock, W. O.*; and Williams, M. E.* "Imaging Biomolecular Motor Proteins with Semiconductor Nanocrystals" Analytical Chemistry Gordon Conference, Roscoff, France: June 10 – 16, **2005**
17. Grimme, R. A.; Richardson, J. N.; Williams, M. E.* "DNA Oligonucleotide Functionalized Fe₂O₃ Core/Au Shell Nanoparticles as a Means of Selective Magnetic Separations of Mixtures of DNA" 37th Middle Atlantic Regional Meeting of the American Chemical Society May 22-25, **2005**.
16. Richardson, J. N.*; Weikel, A. L.; Hutchins, B. M.; Conklin, S. D.; Kaval, N.i; Williams, M. E.* "Electrochromic Behavior of CdSe/ZnS Quantum Dots Immobilized in a Quaternized Poly(4-vinylpyridine) Ionic Exchange Film" 229th National Meeting & Exposition of the American Chemical Society, San Diego, CA; March, **2005**.
15. Platt, M.; Hutchins, B. M.; Muthukrishnan, G.; Hancock, W. O.*; Williams, M. E.* "Motor Protein/Microtubule Tagging: DNA, Bio-Linker, and Quantum Dot Labels for Selective Attachment and Imaging" Gordon Research Conference on Electrochemistry, Ventura, CA: Feb **2005**
14. Williams, M. E.* "iDNA" Gordon Research Conference on Electrochemistry, Ventura, CA; February, **2005**.
13. Muthukrishnan, G.; Hutchins, B. M.; Platt, M.; Hancock, W. O.*; Williams, M. E.* "Motor Protein/Microtubule Tagging: DNA, Bio-Linker, and Quantum Dot Labels for Selective Attachment and Imaging" MRSEC Center for Nanoscale Science Poster Session, University Park, PA: Jan **2005**
12. Gilmartin, B. P.; Morgan, C. M.; Williams, M. E.* "Artificial Oligopeptide Scaffolds for Stoichiometric Metal Binding" Gordon Conference on Electron Donor Acceptor Interactions, Newport, RI-: August, **2004**

11. Williams, M. E. "iDNA: Structural and Functional Analogs of DNA" German American Frontiers of Science, Hamburg, Germany: June, **2004**
10. Gilmartin, B.P., Koerner, R., Williams, M.E. * "Oligomeric Helicates: Inorganic Analogues of DNA Capable of Electron Transfer." Quilmes Nanoscience Workshop: Electronics with Molecules and Quantum Dots, sponsored by the National Science Foundation, Ruinas de Quilmes, Argentina: May, **2003**.
9. Carter, C. J.; Ohr, K. L.; Williams, M. E. * "Redox Networks Defined by Coordination Chemistry" Gordon Research Conference on Electrochemistry, Ventura, CA January, **2003**.
8. Yartym, J.; Ohr, K. L.; Williams, M. E. * "Magnetic Field Effects on Electron Transport Kinetics in Solid-State Voltammetry" Gordon Research Conference on Electrochemistry, Ventura, CA, January, **2003**.
7. Fleming, D. A.; Williams, M. E. * "Chemically Functional Alkanethiol Derivatized Magnetic Nanoparticles" Gordon Research Conference on Electrochemistry, Ventura, CA January, **2003**.
6. Hutchins, B. M.; Latham, A.; Williams, M. E. * "Chemically Functional Semiconductor Nanocrystals: Electrochemistry and Patterned Surface Arrays" MRS National Meeting, Boston, MA, December **2002**.
5. Fleming, D. A.; Williams, M. E. * "Synthesis, Characterization and Properties of Magnetic Core/Shell Nanoparticles" MRS National Meeting, Boston, MA December, **2002**.
4. Williams, M. E. and Hupp, J. T. * "Scanning Electrochemical Microscopy of Porphyrinic Molecular Squares' Gordon Research Conference on Electrochemistry, Ventura, CA: January, **2001**.
3. Williams, M. E.; Stevenson, K. J.; Hupp, J. T. * "Scanning Electrochemical Microscopy Assessment of Molecular Transport in Mesoporous Films" Gordon Research Conference on Electrochemistry, Ventura, CA: January, **2000**.
2. Williams, M. E.; Crooker, J. C.; Pyati, R.; Lyons, L. J.; Murray, R. W. * "Solvent Dynamics Control of Heterogeneous Electron Transfer Over a 10¹¹-Fold Range" Meeting of The Electrochemical Society, Paris, France, September, **1997**.
1. Williams, M. E.; Long, J. W.; Masui, H.; Murray, R. W. * "Electron Transport Dynamics in Hybrid Redox-Polyether Melts as a Function of Polyether Tail Length" Meeting of The Electrochemical Society, San Antonio, TX: October, **1996**.

Committee and Service Work at Department Level.

- College Strategic Plan Advisory Committee (2008)
- Chemistry Department Executive Officer Ad Hoc Review Committee (2008)
- Chemistry Department Curriculum Committee (2007 –)
- Chemistry Department Advisory Committee (2007 –)
- Graduate Student Admissions and Recruiting Committee, Chair (2007 –)

Graduate Student Admissions (2003 – 2004, 2006 – 2007)
Climate and Diversity (2007 – 2008)
Departmental Advisory Committee (2006 – 2009)
Graduate Student Counseling and Awards Committee (2005 – 2006)
Faculty Search Committee (2004 – 2005)
Analytical Chemistry Seminar Chair (2003 – 2004, 2004 – 2005)
Departmental Faculty Think Tank (2004 – 2007)
Departmental REU committee (2004 – 2005)
Colloquium Committee (2002 – 2003)
Faculty Priestley Award Advisory Committee (2002 – 2003)
Library Committee (2001 – 2002)
Space Allocation Committee (2002 – 2005)
Safety Committee (2001 – 2002)
Ad-Hoc Graduate Student Recruiting Committee, Chair (2004)

Committee and Service Work at University and College Levels.

Assistant University Marshal (2004 –)
Chemistry Department Head Review Committee (2007)
University SBIR Internal Review Panel (2002, 2003)
University Packard Nomination Review Panel (2004 - 2007)
University-Wide TEM Steering Committee (2004 –)
Materials Science Building Programming Committee (2005)