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Science of Advanced Materials Program
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I. Education

September 1996 - April 2000

Ph.D. (Inorganic Chemistry) Rice University. Dissertation title: "Chemical Vapor Deposition of Alumina-Based Thin Films". Advisor: Andrew R. Barron.

September 1990 - April 1996

B.Sc. (Chemistry; High Honours, Co-op designation), University of Regina, Regina, Saskatchewan, Canada. Honours thesis title: "Study of the Chloroantimonic Acid, $\text{BCl}_3\text{:HCl:MCl}$ and $\text{BF}_3\text{:HF:MF}$ Superacidic Systems". Advisors: Keith E. Johnson and W. David Chandler.

II. Appointments

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|-------------------------|---|
| Fall 2010 – Present | Professor of Chemistry, Central Michigan Univ. |
| Fall 2005 – Spring 2010 | Associate Professor of Chemistry, Central Michigan Univ. |
| Fall 2002 – Spring 2005 | Assistant Professor of Chemistry, Central Michigan Univ. |
| Fall 2000 – Spring 2002 | Director of Advanced Laboratories & Lecturer in Chemistry, University of California at Irvine |
| Fall 1998 – Spring 1999 | Research Intern, Akzo Nobel Chemicals, Inc., Deer Park, TX |

III. Honors, Awards and Distinctions

1. Outstanding Achievement and Promotion of the Chemical Sciences from the Midland Section of the American Chemical Society, Sept., 2020.
2. CMU College of Science and Engineering Award for Outstanding Teaching, June, 2017.
3. 2013 IUPAC Young Observer; Istanbul, Turkey, Aug. 8 - 16, 2013.
4. "Materials Chemistry" awarded a National Textbook Excellence Award from the Text and Academic Authors Association, June 2008; the second edition was released in Fall 2011 & continues to be a best-seller for Materials and Chemistry textbooks throughout the world
5. CMU Provost's Award for Research Excellence (2005 Spring)
6. CMU Research Excellence Fund award (2003 Spring)
7. Nominated/Runner-up for Treasurer of the Midland ACS section (2002 Fall)
8. Schlumberger Foundation Fellowship nomination (1999 Fall)
9. Rice University Graduate Student Travel Award (1999 Summer, 1997 Fall)

10. NSERC PGS A Graduate Scholarship (1996 Fall)
11. Canadian Society for Chemical Industry Award of Merit (1996 Fall)
12. HyperCube Scholar Award (1996 Winter)
13. Rhodes Scholarship Provincial Finalist (1995 Fall)
14. Luther College Faculty Scholarship (1992-1995 Fall)
15. Summer Research Scholarship (1995 Spring/Summer)
16. Canadian Society for Chemistry Silver Medal (1995 Winter)
17. Chemistry 330 Prize (1995 Winter)
18. 1995 Undergraduate Award in Analytical Chemistry (American Chemical Society) (1995 Winter)
19. Gordon C. Stevenson Memorial Scholarship (1994 Fall)
20. University of Regina Academic Scholarship (1994 Winter)
21. University of Regina and Luther College Dean's Honours Lists (1994 Winter and 1992 Spring/Summer)
22. NSERC Industrial Undergraduate Student Research Award (at SaskPower Corp.) (1992 Fall)

IV. Teaching Experience

4.1. Central Michigan University

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| CHM 111 | Interaction of Chemistry and Society (Fall 2005-2008, 2014) |
| CHM 127 | General Chemistry Laboratory (Spring 2003-2008) |
| CHM 131 | Introductory Chemistry I (Spring 2011-2022) |
| CHM 132 | Introductory Chemistry II (Fall 2010-2022) |
| CHM 211 | Analytical Chemistry (Spring 2003) |
| CHM 265QR | Physical Science for Teachers (2016-2022 academic years – both Spring/Fall semesters) |
| CHM 331 | Inorganic Chemistry (Fall 2002-2004) |
| CHM 531 | Advanced Inorganic Chemistry (Spring 2006, 2007, 2008, 2009) |
| CHM 551 | Properties & Applications of Modern Materials (Fall 2007-2009) |
| CHM 552 | Synthesis and Characterization of Modern Materials (Spring 2006-2009) |
| CHM 631 | Coordination Chemistry (Fall 2010) |
| CHM 676 | Inorganic Reaction Mechanisms (Spring 2003-2009; Fall 2005-2006) |
| SAM 700 | Advanced Materials I: Inorganic and Nanomaterials (Spring, Fall 2011, Fall 2008) |
| SAM 720 | Inorganic/Nanomaterials Laboratory (Spring 2014, Fall 2015) |
| SAM 722 | Surface Characterization Laboratory (Spring 2012) |
| SCI 197 | Introduction to Nanotechnology (Spring 2008) |
| N/A | “Materials Chemistry” online course for Jilin University (Dec. 1 – 4, 2020) |
| N/A | “Materials Chemistry” at Tianjin University of Technology (Tianjin, China – Summer 2015, 2016, 2017, 2018) |
| N/A | Fisica del Estado Solido Avanzado: Thin Film Deposition Methodologies (Sabbatical, Univ. of Costa Rica – Spring 2010) |
| N/A | “Electronic Materials Chemistry” at Universidad de Costa Rica (Summer 2007) |

4.2. University of California, Irvine

Chem 1C Freshman Chemistry III (Winter Quarter 2002)
Chem 1B Freshman Chemistry II (Spring Quarter 2002)
Chem 151 Analytical Chemistry I (Summer Quarter 2001)
N/A Incoming Graduate Student Training Course (Fall Quarter 2000, 2001)
Chem 152 Advanced Analytical Chemistry (Winter Quarter 2001; co-lectured with Prof. John Hemminger)

4.3. Rice University

Freshman-level Chemistry Discussion Leader (1999 Fall; 1999 Spring; 1997 Fall)
Senior-level Instrumental/Physical Chemistry Laboratory Assistant (1998, 1997 Spring)
“Managerial Chemistry” (class for business executives) tutor (1998 and 1997)
Freshman-level General Chemistry Laboratory Assistant (1996 Fall)

V. Creative and Scholarly Activity

5.1. Peer-Reviewed Publications

1. “Calcined Mesoporous Sn-TiO₂ as a Lithium-Ion Battery Anode”. Islam, M. K.; Khanna, H.; Njeri, E.; Rubio, S. J. B.; Fahlman, B. D.; Suib, S. L. *Future Batteries* **2025**, 5, 100038.
2. “Defect-Rich Reduced Graphitic Carbon Nitride as the Sulfur Host Material for Lithium-Sulfur Batteries,” In *Proceedings of the Ground Vehicle Systems Engineering and Technology Symposium (GVSETS)*. Yazdani, A.; Pandey, J.; Jakhar, M.; Seltin, B.; Barone, V.; Petkov, V.; Ding, Y.; Fahlman, B. D., NDIA, Novi, MI, Aug. 13-15, **2024**.
3. “Removal of arsenate and ammonia from water by molecularly imprinted polymers,” In *Proceedings of the Ground Vehicle Systems Engineering and Technology Symposium (GVSETS)*. Nichols, C.; Anang, E.; Busari, A.; Kirisenage, P.; Myers, J.; Zulqarnain, S.; Dusenbury, J.; Mueller, A.; Fahlman, B. D.; Marquez, I., NDIA, Novi, MI, Aug. 13-15, **2024**.
4. “Computational Design of Single-Atom Catalysts Embedded on Reduced Graphitic Carbon Nitride Monolayers”. Jakhar, M.; Ding, Y.; Fahlman, B. D.; Barone, V. *Nano Express* **2024**, 5, 015028.
5. “Natural Microfibrils/Regenerated Cellulose-Based Carbon Aerogel for Highly Efficient Oil/Water Separation”. Ma, X.; Zhou, S.; Li, J.; Xie, F.; Yang, H.; Wang, C.; Fahlman, B. D.; Li, W. *J. Haz. Mater.* **2023**, 454, 131397.
6. "High Aspect Ratio Copper Nanowires and Copper Nanoparticles Decorated by Reduced Graphene Oxide for Flexible Transparent Conductive Electrodes". Zhou, S.; Zeng, X.; Yan, X.; Xie, F.; Fahlman, B. D.; Wang, C.; Li, W. *Appl. Surf. Sci.* **2022**, 604, 154597.

7. "Development of Adsorptive Membranes for Selective Removal of Contaminants in Water". Kirisenage, P. M.; Zulqarnain, S. M.; Myers, J. L.; Fahlman, B. D.; Mueller, A.; Marquez, I. *Polymers* **2022**, *14*, 3146.
8. "Introducing Chemistry Concepts in an Online Environment through a Citizen-First Approach". Kirk, J. S.; Fahlman, B. D. *J. Chem. Ed.* **2020**, *97*, 3147.
9. "Voltage Stabilization of Sn-Doped Anatase for Li-ion Battery Applications Predicted by DFT Calculations". Barone, V.; Fahlman, B. D.; Ding, Y. *Mater. Chem. Phys.* **2019**, *227*, 347.
10. "Physisorption Induced p-Xylene Gas-Sensing Performance of (C₄H₉NH₃)₂PbI₄ Layered Perovskite". Zhu M. Y.; Zhang, L. X.; Yin, J.; Chen, J. J.; Bie, L. J.; Fahlman, B. D. *Sens. Act. B: Chem.* **2019**, *282*, 659.
11. "Direct Production of Nitrogen-Doped Porous Carbon from Urea via Magnesiothermic Reduction". Chen, J.; Mao, Z.; Zhang, L.; Tang, Y.; Wang, D.; Bie, L.; Fahlman, B. D. *Carbon* **2018**, *130*, 41.
12. "Molten-Salt Synthesis of Ba_{5-x}Sr_xNb₄O₁₅ Solid Solutions and their Enhanced Humidity Sensing Properties". Ji, G. J.; Zhang, L. X.; Zhu, M. Y.; Li, S. M.; Yin, J.; Zhao, L. X.; Fahlman, B. D.; Bie, L. J. *Ceramics Int.* **2018**, *44*, 477.
13. "In Vitro and In Vivo Corrosion, Mechanical Properties and Biocompatibility Evaluation of MgF₂-Coated Mg-Zn-Zr Alloy Cancellous Screws". Li, Z.; Sun, S.; Chen, M.; Fahlman, B. D.; Liu, D.; Bi, H. *Mater. Sci. Eng. C* **2017**, *75*, 1268.
14. "Nitrogen-Deficient Graphitic Carbon Nitride with Enhanced Performance for Lithium Ion Battery Anodes". Chen, J.; Mao, Z.; Zhang, L.; Wang, D.; Xu, R.; Bie, L.; Fahlman, B. D. *ACS Nano* **2017**, *11*, 12650.
15. "Magnetic Nanoparticle-Supported N-Heterocyclic Carbene-Palladium(II): A Convenient, Efficient and Recyclable Catalyst for Suzuki-Miyaura Cross-Coupling Reactions". Vishal, K.; Fahlman, B. D.; Sasidhar, B. S.; Patil, S. A.; Patil, S. A. *Catalysis Lett.* **2017**, *147*, 900.
16. "Modification of Surface Properties and Enhancement of Photocatalytic Performance of g-C₃N₄ via Plasma Treatment". Mao, Z.; Chen, J.; Yang, Y.; Bie, L.; Fahlman, B. D.; Wang, D. *Carbon* **2017**, *123*, 651.
17. "Novel g-C₃N₄/CoO Nanocomposites with Significantly Enhanced Visible-Light Photocatalytic Activity for H₂ Evolution". Mao, Z.; Chen, J.; Yang, Y.; Wang, D.; Fahlman, B. D. *ACS Appl. Mater. Interf.* **2017**, *9*, 12427.
18. "Ultrathin g-C₃N₄ Nanosheets with an Extended Visible-Light Responsive Range for Significant Enhancement of Photocatalysis". Yang, Y.; Chen, J.; Mao, Z.; An, N.; Wang, D.; Fahlman, B. D. *RSC Adv.* **2017**, *7*, 2333.

19. "Phosphors with a 660-nm-Featured Emission for LED/LD Lighting in Horticulture" in *Phosphors, Up Conversion Nano Particles, Quantum Dots and Their Applications*. Wang, D.; Mao, Z.; Fahlman, B. D.; Springer: New York, 2016.
20. "Preparation and Adsorption Capacity of Porous MoS₂ Nanosheets". Li, H.; Xie, F.; Li, W.; Fahlman, B. D.; Chen, M.; Li, W. *RSC Adv.* **2016**, 6, 105222.
21. "Damage-Free Removal of Residual Carbon in a Dielectric Barrier Discharge (DBD) Plasma for Carbothermal-Synthesized Materials". Mao, Z.; Li, G.; Chen, J.; Wang, D.; Yuan, Z.; Fahlman, B. D. *Chem. Mater.* **2016**, 28, 5560.
22. "Tunable Luminescent Eu²⁺-doped Dicalcium Silicate Polymorphs Regulated by Crystal Engineering". Mao, Z.; Lu, Z.; Chen, J.; Fahlman, B. D.; Wang, D.; *J. Mater. Chem. C* **2015**, 3, 9454.
23. "Li₄Ti₅O₁₂/Graphene Nanoribbons Composite as Anodes for Lithium Ion Batteries". Medina, P.; Zheng, H.; Fahlman, B. Annamalai, P.; Swartbooi, A.; LeRoux, L.; Mathe, M. *SpringerPlus* **2015**, 4, 643.
24. "Hafnium(IV) Chloride Complexes with Chelating β -ketiminate Ligands: Synthesis, Spectroscopic Characterization and Volatility Study". Patil, S. A.; Medina, P. A.; Antic, A.; Ziller, J. W.; Vohs, J. K.; Fahlman, B. D. *Spectrochim. Acta A* **2015**, 148, 223.
25. "Synthesis and Characterization of New Unsymmetrical β -diketiminato tris(dimethylamido)hafnium(IV) Complexes as Potential Precursors for the MOCVD of HfO₂". Patil, S. A.; Fahlman, B. D. *J. Coord. Chem.* **2015**, 68, 27.
26. "Partially Oxidized Multiwalled Carbon Nanotubes for Li-ion Battery Applications". Antic, A.; Barone, V.; Fahlman, B. D. *J. Appl. Electrochem.* **2015**, 45, 161.
27. "Hafnium Complexes with Versatile β -diketiminato Ligands: Synthesis, Spectroscopic Investigation and Volatility Study". Patil, S. A.; Medina, P. A.; Antic, A.; Ziller, J. W.; Vohs, J. K.; Fahlman, B. D. *Inorg. Chim. Acta* **2015**, 426, 71.
28. "Monomeric Germanium (II) Amides Bearing β -diketiminato Ligands: Synthesis, Structural Characterization, and Thermal Properties". Ballester-Martinez, E.; Klosin, J.; Fahlman, B. D.; Pineda, L. W. *Eur. J. Inorg. Chem.* **2014**, 30, 5233.
29. "Cost-Effective Approaches for Atomic Deposition (ALD)". Lubitz, M.; Medina, P. A.; Antic, A.; Rosin, J. T. Fahlman, B. D. *J. Chem. Ed.* **2014**, 91, 1022.
30. "Influence of reactant 4-aminobenzonitrile inclusion on the crystal structure of (Z)-4-(4-oxopent-2-en-2-ylamino)benzonitrile". Patil, S. A.; Medina, P. A.; Vohs, J. K.; Ziller, J. W.; Gonzalez-Flores, D.; Dever, S.; Pineda, L. W.; Montero, M.; Fahlman, B. D. *J. Chem. Cryst.* **2014**, 44, 82.

31. "On the Chemical Nature of Thermally-Reduced Graphene Oxide and Its Electrochemical Li Intake Capacity". Uthaisar, C.; Barone, V.; Fahlman, B. D. *Carbon*, **2013**, 61, 558.
32. "Syntheses, Characterizations and Thermal Analyses of Four Novel Unsymmetrical β -diketiminates". Patil, S. A.; Medina, P. A.; Ziller, J. W.; Fahlman, B. D. *SpringerPlus* **2013**, 2:32.
33. "Formic Acid: A Low-Cost, Mild, Ecofriendly and Highly Efficient Catalyst for the Rapid Synthesis of β -Enaminones". Patil, S. A.; Medina, P. A.; Gonzalez-Flores, D.; Vohs, J. K.; Dever, S.; Pineda, L. W.; Montero, M. L.; Fahlman, B. D. *Synth. Commun.*, **2013**, 43, 2349.
34. "Synthesis, characterization, and DFT study of polycyclic aromatic hydrocarbon precursors, 1,4-diiodo-2,3,5,6-tetraphenylbenzene and 1,4-bis(4-bromophenyl)-2,3,5,6-tetraphenylbenzene". Patil, S.A.; Uthaisar, C.; Barone, V.; Fahlman, B. D. *J. Molec. Struct.* **2013**, 1032, 41.
35. "Synthesis of Hafnium (IV) β -Ketoiminates as Potential Precursors for the MOCVD of HfO_2 ". Gonzalez-Flores, D.; Patil, S. A.; Medina, P. A.; Dever, S.; Uthaisar, C.; Pineda, L. W.; Montero, M. L.; Ziller, J. W.; Fahlman, B. D. *Inorg. Chim. Acta* **2013**, 396, 60.
36. "Synthesis, Characterization and Crystal Structure of (Z)-3-(4-Chlorophenylamino)-1-phenylbut-2-en-1-one". Patil, S. A.; Gonzalez-Flores, D.; Medina, P. A.; Dever, S.; Stentzel, M.; Popp, J.; Pineda, L. W.; Montero, M. L.; Ziller, J. W.; Fahlman, B. D. *J. Chem. Cryst.*, **2012**, 42, 543.
37. "Synthesis, Characterization and DFT Study of 1-Bromo-4-(3,7-dimethyloctyl)benzene". Patil, S. A.; Uthaisar, C.; Barone, V.; Fahlman, B. D. *J. Molec. Struct.* **2012**, 1015, 41.
38. "Organic Vapor Sensors Based on Functionalized Macroporous Si using Single and Double-Side Electrochemical Etching". Ramirez-Porras A.; Fahlman, B. D.; Badilla, J. P.; Lopez, V. *Microelectron. Eng.*, **2012**, 90, 55.
39. "Synthesis, Characterization and Crystal Structure of (2Z)-3-[(4-Methylphenyl)amino]-1-phenylbut-2-en-1-one". Patil, S. A.; Gonzalez-Flores, D.; Medina, P. A.; Vohs, J. K.; Dever, S.; Popp, J.; Stentzel, M.; Pineda, L. W.; Montero, M. L.; Fahlman, B. D. *J. Chem. Cryst.*, **2012**, 42, 560.
40. "Surface-functionalized Porous Silicon Wafers: Synthesis and Applications". Fahlman, B. D.; Ramirez-Porras, A. in "Chemical Sensors", InTech Publishing: Croatia, **2012**. Open-access: may be accessed online at <http://www.intechopen.com/articles/show/title/surface-functionalized-porous-silicon-wafers-synthesis-and-applications>.
41. "Development of an Organic Vapor Sensor Based on Functionalized Porous Silicon". Badilla, J. P.; Rojas, D. C.; Lopez, V.; Fahlman, B. D.; Ramirez-Porras, A. *Phys. Status Solidi A* **2011**, 208, 1458.
42. "The Use of Gold Nanoparticles for Ultra-Sensitive Mercury Quantification: A Freshman Laboratory Experience". Moyses, D. D.; Fahlman, B. D. *J. Nano Ed.* **2011**, 3, 62.

43. "Solid-Liquid-Solid (SLS) Growth of Silicon Nanowires". Antic, A.; Oshel, P.; Fahlman, B. D. in *Materials Chemistry*, 2nd ed., Springer: New York, **2011**.
44. "Synthesis of Porous Silicon". Lopez, V.; Badilla, J. P.; Ramirez-Porras, A.; Fahlman, B. D. in *Materials Chemistry*, 2nd ed., Springer: New York, **2011**.
45. "One-Pot Synthesis of Ethanolamine-Modified Mesoporous Silica". Zarabadi-Poor, P.; Badiei, A.; Fahlman, B. D.; Arab, P.; Ziarani, G. M., *Ind. Eng. Chem. Res.* **2011**, *50*, 10036.
46. "Chemical Vapor Deposition of Aluminum Oxide Films". Vohs, J. K.; Bentz, A.; Eleamos, K.; Poole, J.; Fahlman, B. D. *J. Chem. Ed.*, **2010**, *87*, 1102.
47. "Enhanced Electrochemical Lithium Storage by Graphene Nanoribbons". Bhardwaj, T.; Antic, A.; Pavan, B.; Barone, V.; Fahlman, B. D. *J. Am. Chem. Soc.* **2010**, *132*, 12556.
48. "The Use of Concept Maps in an Introductory Nanotechnology Course". Moyses, D.; Rivet, J. L.; Fahlman, B. D. *J. Chem. Ed.*, **2010**, *87*, 285.
49. "Catalytic Chemical Vapour Deposition of Carbon Nanotubes using Fe-Doped Alumina Catalysts". Zarabadi-Poor, P.; Badiei, A.; Yousefi, A. A.; Fahlman, B. D.; Abbasi, A. *Catalysis Today* **2010**, *150*, 100.
50. "Advances in the Controlled Growth of Nanoparticles Using a Dendritic Architecture". Vohs, J. K.; Fahlman, B. D. *New Jour. Chem.* **2007**, *31*, 1041.
51. "Molecular Dynamics Simulation of Polyamidoamine Dendrimer-Fullerene Conjugates: Generations Zero Through Four" Kujawski, M.; Rakesh, L.; Gala, K.; Jensen, A.; Fahlman, B. D.; Feng, Z. R.; Mohanty, D. K. *J. Nanosci. Nanotechnol.* **2007**, *7*, 1670.
52. "Facile Synthesis of Tin Oxide Nanoparticles Stabilized by Dendritic Polymers". Juttukonda, V.; Paddock, R. L.; Raymond, J. E.; Denomme, D.; Richardson, A. E.; Slusher, L. E.; Fahlman, B. D. *J. Am. Chem. Soc.* **2006**, *128*(2), 420. (Highlighted in the Jan. 16, 2006 issue of *Chemical and Engineering News* - Science and Technology Concentrates).
53. "Recent Advances in Chemical Vapor Deposition". Fahlman, B. D. *Curr. Org. Chem.* **2006**, *10*, 1021.
54. "Chloro[N,N'-ethylenediiminobis(acetylacetonato)]gallium(III)". Vohs, J. K.; Miller, D. O.; Denomme, D. R.; Ziller, J. W.; Fahlman, B. D. *Acta. Cryst. C.* **2005**, C61, m287.
55. "Room-Temperature Growth of Carbon Nanofibers From Iron-Encapsulated Dendritic Catalysts". Vohs, J. K.; Raymond, J. E.; Brege, J. J.; Williams, G. L.; LeCaptain, D. L.; Roseveld, S.; Fahlman, B. D. *Polym. News* **2005**, *30*(10), 330.
56. "Supercritical Fluid Facilitated Growth of Copper and Aluminum Oxide Nanoparticles". Williams, G. L.; Vohs, J. K.; Brege, J. J.; Fahlman, B. D. *J. Chem. Ed.* **2005**, *82*(5), 771.

57. "Low Temperature Chemical Vapor Deposition of Aluminosilicate Thin Films on Carbon Fibers". Richards, V. N.; Vohs, J. K.; Williams, G. L.; Fahlman, B. D. *J. Am. Ceram. Soc.* **2005**, 88(7), 1973.
58. "Preparation of Fullerene-Shell Dendrimer-Core Nanoconjugates". Jensen, A. W.; Maru, B. S.; Zhang, X.; Mohanty, D. K.; Fahlman, B. D.; Swanson, D. R.; Tomalia, D. A. *Nano Lett.* **2005**, 5(6), 1171.
59. "Low Temperature Growth of Carbon Nanotubes from the Catalytic Decomposition of Carbon Tetrachloride". Vohs, J. K.; Brege, J. J.; Raymond, J. E.; Brown, A. E.; Williams, G. L.; Fahlman, B. D. *J. Am. Chem. Soc.* **2004**, 126, 9936. (Highlighted by Dai, L. in *Small* 2005, 1(3), 274).
60. "A Density Functional Theory Investigation of the Mechanism Responsible for Chalcogenide Exchange Reactions Involving $[(\text{Bu})\text{Ga}(\mu_3\text{-Te})_4]$ ". Fahlman, B. D.; Barron, A. R. *J. Cluster Sci.* **2002**, 13(4), 587.
61. "Supercritical Fluid Technology: Green Chemistry for the 21st Century" Fahlman, B. D. *Today's Chemist at Work* **2002**, 11(2), 81.
62. "Chemical Vapor Deposition of Carbon Nanotubes: An Experiment in Materials Chemistry". Fahlman, B. D. *J. Chem. Ed.* **2002**, 79, 203 (cover article).
63. "An Investigation of the Reaction of $[\text{RGa}(\mu_3\text{-Te})_4]$ with O_2 , SO_2 , and SeO_2 Using a Combination of Experiment and Density Functional Theory". Fahlman, B. D.; Barron, A. R. *J. Chem. Soc., Dalton Trans.* **2001**, 3239.
64. "The Apparent Energy Shortage". Fahlman, B. D. *Today's Chemist at Work* **2001**, 10(7), 57.
65. "Superconductor Synthesis - An Improvement". Fahlman, B. D. *J. Chem. Ed.* **2001**, 78, 182.
66. "Chemical Vapor Deposition of Chromium-Doped Alumina *Ruby* Thin Films". Fahlman, B. D.; Barron, A. R. *Adv. Mater., C.V.D.* **2001**, 7(2), 62.
67. "An Accuracy Assessment of the Refinement of Partial Metal Disorder in Solid Solutions of $\text{Al}(\text{acac})_3$ and $\text{Cr}(\text{acac})_3$ ". Bott, S. G.; Fahlman, B. D.; Pierson, M. L.; Barron, A. R. *J. Chem. Cryst.* **2001**, 2148.
68. "Substituent Effects on the Volatility of Metal β -Diketonates". Fahlman, B. D.; Barron, A. R. *Adv. Mater. Opt. Electron.* **2000**, 10(3-5), 223.
69. "CVD of Conformal Alumina Thin Films via Hydrolysis of $\text{AlH}_3(\text{NMe}_2\text{Et})$ ". Fahlman, B. D.; Barron, A. R. *Adv. Mater. Opt. Electron.* **2000**, 10(3-5), 135.
70. "Molecular Structure of $\text{Al}_{0.916}\text{Cr}_{0.084}(\text{acac})_3$ ". Fahlman, B. D.; Bott, S. G.; Barron, A. R. *J. Chem. Cryst.* **2000**, 30(1), 65.

71. “Chemical Vapor Deposition of Conformal Alumina Thin Films”. Fahlman, B. D.; Barron, A. R. *Mater. Res. Soc. Symp. Proc.* **2000**, 606 (Chemical Processing of Dielectrics, Insulators and Electronic Ceramics), 75.

72. “Reaction of $[(^t\text{Bu})\text{Ga}(\mu_3\text{-Te})]_4$ with Elemental Sulfur and Selenium: A Facile Chalcogenide Exchange Reaction”. Fahlman, B. D.; Barron, A. R. *Organometallics* **1998**, 17(24), 5310.

73. “Thermodynamic Calculations for Reactions Involving Hydrogen Halide Polymers, Ions, and Lewis Acid Adducts. 2. Polychlorohydrogenate (1-) Anions ($\text{H}_n\text{Cl}_{n+1}^-$), Polychlorohydrogen (I) Cations ($\text{H}_{n+1}\text{Cl}_n^+$), and Hydrogen Chloride Polymers (HCl) $_n$ ”. Chandler, W. D.; Johnson, K. E.; Fahlman, B. D.; Campbell, J. L. E. *Inorg. Chem.* **1997**, 36(5), 776.

74. “Molten Salt and Related Acids”. Johnson, K. E.; Chandler, W. D.; Fahlman, B. D. *Proc.-Electrochem. Soc.*, **1996**, 96-97 (Molten Salts), 92.

5.2. Textbooks

1. “Chemistry in Context”. Fahlman, B. D.; Bouvier-Brown, N.; Sloan, C.; Kirk, J. S.; Kelly, R. M.; Ryan, S. McGraw Hill: New York, 2024 release.

2. “Materials Chemistry”, Fahlman, B. D. Springer Nature: New York, 4th ed., 911 pp., 2023.

3. “Chemistry in Context”. Fahlman, B. D.; Purvis-Roberts, K. L.; Kirk, J. S.; Kelly, R. M.; Daubenmire, P. L. McGraw Hill: New York, 10th ed., 2020.

4. “Chemistry in Context”. Fahlman, B. D.; Purvis-Roberts, K. L.; Kirk, J. S.; Bentley, A. K.; Daubenmire, P. L.; Ellis, J. P.; Mury, M. T. McGraw Hill: New York, 9th ed., 2017.

5. “Materials Chemistry”, Fahlman, B. D. Springer Nature: New York, 3rd ed., 825 pp., 2018.

6. “Materials Chemistry”, Fahlman, B. D., Springer: New York, 2nd ed., 736 pp., 2011.

7. “Materials Chemistry”, Fahlman, B. D., Springer: New York, 485 pp, 2007. Awarded a 2008 Textbook Excellence Award by the Text and Academic Authors Association.

5.3. Presentations Given By Prof. Fahlman

1. (Invited presentation) “Chemistry in Context: Optimizing Engagement” was presented at the Spring ACS National Meeting and Exposition; San Diego, CA; March 24, 2025.

2. “Deposition of Single Atom Catalysts on Carbonaceous Nanostructures for Metal-Sulfur Battery Applications” was presented at the Fall ACS National Meeting and Exposition; Denver, CO; Aug. 19, 2024.

3. "The Design and Implementation of Interactive Activities for a Context-First General Chemistry Course" was presented at the Fall ACS National Meeting and Exposition; Denver, CO; Aug. 19, 2024.
4. "How to Navigate the Content vs. Context Balance in General Chemistry" was presented at the Biennial Conference for Chemical Education (BCCE); University of Kentucky; Lexington, KY; July 29, 2024.
5. (Invited presentation) "Electrode Design for Next-Generation Battery Applications" was presented at the Laboratoire de Chimie de Coordination, Ecole Nationale Supérieure des Ingénieurs en Arts Chimiques et Technologiques, Toulouse, France, Sept. 26, 2023.
6. "Creating Accessible Interactive Digital Activities for Context-First General Chemistry: Pedagogy, Strategies and Considerations" was presented at the Fall ACS National Meeting and Exposition, Indianapolis, IN, March 27, 2023.
7. (Invited presentation) "Design of Interactive Videos for a Context-First Chemistry Course" was presented at the Biennial Conference for Chemical Education (BCCE); Purdue University, W. Lafayette, IN, Aug. 2, 2022. Also served as organizer and Chair for session entitled: "A Contextualized Approach to Teaching Chemistry".
8. (Invited presentation) "Use of Nitrogen-Deficient Graphitic Carbon Nitride Cathodes in Li-S Batteries" was presented at the 2-D Materials for Energy Storage and Conversion symposium; Pacifichem 2021, Virtual, Dec. 16-21, 2021.
9. (Invited presentation) "Use of Digital Media to Foster Student Engagement in Context-First General Chemistry" will be presented at the Teaching with Technology – Help or Hindrance? symposium; Pacifichem 2021, Virtual, Dec. 16-21, 2021.
10. (Invited presentation) "Contextualized General Chemistry: Using the Context of COVID-19 in a Liberal Arts Chemistry Course" webinar was presented at the Spring ACS National Meeting and Exposition, Virtual, Apr. 13, 2021.
11. (Invited presentation) "Chemistry in Context: A Citizen-First Approach to Foster Student Engagement and Motivation" webinar was presented to the American Association of Chemistry Teachers (AACT), Apr. 9, 2020.
12. (Invited presentation) "Metal-Doped Titania Nanoparticles and Mg-Reduced Graphitic Carbon Nitride as Anode Materials for Metal-Ion Batteries" was presented at the Dept. of Chemistry, Jilin University, Zhuhai, China, Dec. 16, 2019.
13. (Invited presentation) "Role of Morphology and Nitrogen Speciation on the Reversible Li- and Na-capacity of Mg-reduced Graphitic Carbon Nitride" was presented at the 258th ACS National Meeting and Exposition; San Diego, CA; Aug. 26, 2019.

14. “Reversible Lithium Capacity of Iron-Doped Titania Nanoparticles” was presented at the 257th ACS National Meeting and Exposition; Orlando, FL; Apr. 2, 2019.
15. “The Importance of Contextualized STEM Education in the ‘Fake News’ Era” was presented at the 257th ACS National Meeting and Exposition; Orlando, FL; Apr. 1, 2019.
16. “Synthesis, Characterization, and Electrochemical Properties of Iron-Doped Titania Nanoparticles” was presented at the International Battery Association 2019 meeting; La Jolla, CA; March 4, 2019.
17. “Maintaining the Context-Content Balance for Elementary Education Students” was presented at the 255th ACS National Meeting and Exposition; New Orleans, LA; March 18, 2018.
18. “Nitrogen-Deficient Graphitic Carbon Nitride for Li-ion Battery Anode Applications” was presented at the 255th ACS National Meeting and Exposition; New Orleans, LA; March 19, 2018.
19. (Invited presentation) “High-Capacity Anode Materials for Li-ion Battery Applications” was presented to the Dept. of Chemistry and Advanced Materials Research Institute at University of New Orleans; New Orleans, LA; Oct. 27, 2017.
20. “Chemistry in Context: How Do We Most Effectively Engage the Non-Science Majors?” was presented at the 253rd ACS National Meeting and Exposition; San Francisco, CA; Apr. 3, 2017.
21. “Whodunit Mystery: Using a Forensics Context in General Chemistry” was presented at the 251st ACS National Meeting and Exposition; Philadelphia, PA; Aug. 22, 2016.
22. “Where Do Metals Come From? Using the Context of Portable Electronics in General Chemistry Curricula” was presented at the 251st ACS National Meeting and Exposition; Philadelphia, PA; Aug. 23, 2016.
23. (Invited presentation) “Context or Content? Both!” was presented at the Connecting Chemistry to Society Symposium; Pacifichem 2015; Honolulu, HI; Dec. 19, 2015.
24. (Invited presentation) “Partially-Oxidized Graphene Nanostructures for Li-ion Battery and Supercapacitor Applications” was presented at SCiMAN 10; University of Costa Rica; San Jose, CR; Dec. 10, 2015.
25. (Invited presentation) “Partially-Oxidized Graphene Nanostructures: Speciation and Li-Capacity Studies” was presented at Argonne National Laboratory; Chicago, IL; Sept. 2, 2015.
26. “Chemistry in Context: A Transformative Philosophy for Liberal Arts Chemistry Courses” was presented at the 41st Biennial ChemEd Conference; Kennesaw State University; Kennesaw, GA; July 29, 2015.

27. "Putting the Liberal Arts Chemistry Laboratory in Context" was presented at the 41st Biennial ChemEd Conference; Kennesaw State University; Kennesaw, GA; July 30, 2015. Co-presenters: Lallie McKenzie (Chem11, LLC) and Patrick Daubenmire (Loyola Univ., Chicago)
28. (Invited presentation) "Reversible Li-Capacities of Partially-Oxidized Graphene Nanostructures" was presented to the Dept. of Chemistry at Pittsburg State University; Pittsburg, KS; Oct. 15, 2014.
29. (Invited presentation) "A Contextual Framework for General Chemistry Curricula" was presented to the ACS Group at Pittsburg State University; Pittsburg, KS; Oct. 14, 2014.
30. "Chemistry in Context: A Transformative Philosophy for Liberal Arts Chemistry Courses" was presented at the 23rd Biennial Conference on Chemical Education (BCCE); Grand Rapids, MI; Aug. 6, 2014.
31. The Role of Surface Speciation on the Li Storage Capacity and Coulombic Efficiency of Reduced Graphene Oxide" was presented at the 11th International Conference on Nanosciences & Nanotechnologies; Thessaloniki, Greece; July 10, 2014.
32. "Synthesis and Volatility Characteristics of Novel Hafnium Complexes Employing β -ketoiminato and β -diketiminato ligand systems" was presented at the 247th National A.C.S. Meeting and Exposition; Dallas, TX; March 18, 2014.
33. "Reduced Graphene Oxides for Li-Ion/Air Battery Applications" was presented at the 2013 Battery Congress, Troy, MI, April 16, 2013.
34. (Invited presentation) "Reduced Graphene Oxides for Energy Storage Applications" was presented at the Fall Scientific Meeting, American Chemical Society - Midland Section, Saginaw Valley State University, Oct. 20, 2012.
35. "High Performance of Reduced Graphene Oxide for Li-ion Battery Applications" was presented at the 244th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 22, 2012.
36. (Invited presentation) "Reduced Graphene Oxides for Battery and Supercapacitor Applications" was presented to the Department of Chemistry at Jilin University, Zhuhai, China, Aug. 13, 2012.
37. (Invited presentation) "An Evaluation of Nanographenes for High-Capacity Li-Ion Batteries" was presented to the R & D group at Duracell Corporation, Bethel, CT, Oct. 10, 2011.
38. (Invited presentation) "Materials Innovation at Central Michigan University" was presented at the Proctor & Gamble Michigan Public Universities Innovation Outreach Event; Mason, OH, May 11, 2011.

39. (Invited presentation) "Electrochemical Testing of Graphene Nanostructures for High-Capacity Li-Ion Battery Applications" was presented to the Dept. of Chemistry at Michigan State University, March 21, 2011.

40. "Novel Nanographenes for Lithium Storage Applications" was presented at Pacifichem 2010, Honolulu, HI; Dec. 17, 2010.

41. "Organic Vapor Sensing using Surface-Functionalized Porous Silicon" was presented at Pacifichem 2010, Honolulu, HI; Dec. 17, 2010.

42. "One-Step Reduction of Graphene Nanoribbons by Controlled Hydrogenation" was presented at 12th Latin American Symposium on Polymers (SLAP 2010), San Jose, Costa Rica; July 14, 2010.

43. (Invited presentation) "Novel Strategies for Nanomaterials Synthesis I: 0-D Nanomaterials" was presented at the Department of Physical Chemistry, University of Pavia, Pavia, Italy; May 25, 2009.

44. (Invited presentation) "Novel Strategies for Nanomaterials Synthesis II: 1-D and 2-D Nanomaterials" was presented at the Department of Physical Chemistry, University of Pavia, Pavia, Italy; May 26, 2009.

45. (Invited presentation) "Novel Strategies for Nanomaterials Synthesis" was presented at the Department of Chemistry, St. Vincent College, Latrobe, PA; Feb. 27, 2009.

46. (Invited presentation) "Quantum Dot Sensitized Solar Cells: Progress & Issues" was presented at the Photovoltaic Symposium, Midland Section Fall ACS Meeting, Midland, Michigan; Oct. 24, 2008.

47. (Invited presentation) "Synthesis and Characterization of Dendrimer-Encapsulated Nanoclusters: The Next Generation" was presented at the Nanomaterials Synthesis Symposium, Midland Section Fall ACS Meeting, Midland, Michigan; Oct. 24, 2008.

48. (Invited presentation) "Synthesis of 0-D, 1-D, and 2-D Nanomaterials" was presented at the University of North Carolina at Charlotte (Nanoscale Science Ph.D. Program Seminar Series), Charlotte, N.C.; Oct. 2, 2008.

49. (Invited presentation) "Atomic Layer Deposition vs. Chemical Vapor Deposition: Hands-On Laboratory Experiences for Undergraduates" was presented at the 236th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 20, 2008.

50. (Invited presentation) "The Use of Nanomaterials in Advanced Coatings" was presented to the Department of Chemistry, Michigan State University, E. Lansing, MI; July 30, 2008.

51. (Invited presentation) "The Use of Nanomaterials in Advanced Coatings" was presented to BASF Corporation (Automotive Coatings Division), Southfield, MI; June 13, 2008.

52. (Invited presentation) “Low-Temperature Routes to Carbon Nanofibrous Growth and Metal Oxide Nanoclusters” was presented at the N.S.F. Workshop on Periodic Patterns, Relationships and Categories of Well-Defined Nanoscale Building Blocks, Mount Pleasant, Michigan; Sept. 24-25, 2007.

53. (Invited presentation) “Novel Routes Toward the Low-Temperature Growth of Nanostructures” was presented to the Department of Chemistry and Physics, Costa Rica Institute of Technology, Cartago, Costa Rica; Aug. 9, 2007.

54. (Invited presentation) “Synthesis of Carbonaceous Nanostructures from a Dendritic Host” was presented to the Department of Biology & Microscopy Center at Bowling Green State University; Bowling Green, OH; Jan. 24, 2007.

55. “Synthesis and Characterization of Metal Oxide Nanoparticles” was presented at the 231st ACS National Meeting and Symposia, Atlanta, GA, March 27-28, 2006.

56. “Design of Single-Source Mixed Acetylacetonate Precursors for Group 13 Oxide Thin Film Growth” was presented at the Spring 2006 Materials Research Symposium, San Francisco, CA, Apr. 18-20, 2006.

57. (Invited presentation) “Dendritic-Based Nanomaterials: New Synthetic Strategies for Intriguing Applications” was presented to the Department of Chemistry, Washington University at St. Louis; St. Louis, MO; Nov. 3, 2005.

58. (Invited presentation) “Synthetic Strategies for Novel Dendritic Nanocomposites and Nanoparticles” was presented at the 61st Fall Scientific Meeting; Midland, MI; Oct. 14, 2005.

59. (Invited presentation) “Dendritic-Based Nanocomposite Materials: Toward New Architectures and Applications” was presented at the 4th International Dendrimer Symposium (IDS-4); Mount Pleasant, MI; May 18 - 21, 2005. Co-organized by Jean Frechet, J. Fraser Stoddart, and Donald Tomalia.

60. (Invited presentation) “Growth of Carbonaceous Nanostructures from Dendritic-Based Catalysts” was presented at the NASA-NIST Joint Workshop on Measurement Issues in Single Wall Carbon Nanotubes; Gaithersburg, MD; Jan. 26-28, 2005.

61. (Invited presentation) “Novel Methodology for the Synthesis of Intriguing Materials” was presented at the Dow Corning Technology Exchange Forum; Midland, MI; Nov. 30, 2004.

62. (Invited presentation) “Next Generation Materials: Synthesis of Novel Nanoscale Composites and Particles” was presented at the Fall 2004 Mid-Michigan Microscopy meeting; Michigan State University, E. Lansing, MI; Nov. 5, 2004.

63. (Invited presentation) “Low-Temperature Synthesis of Dendrimer-Nanostructural Carbon Composite Materials” was presented at the 12th NSF Workshop on Materials Chemistry and Nanoscience; Broomfield, CO; Oct. 28-31, 2004.

64. (Invited presentation) “The Institution of Supercritical Fluid Technology in the Undergraduate Curriculum: Challenges and Outcomes” was presented to the Dept. of Chemistry, Northern Kentucky University; Highland Heights, KY; Oct. 13, 2004.

65. (Invited presentation) “Low-Temperature Synthesis of Dendrimer-Nanotube Composite Materials” was presented to the Dept. of Chemistry, Oakland University, Detroit, MI; Oct. 6, 2004.

66. (Invited presentation) “Keys for Successful Undergraduate Research” was presented at the 2004 Undergraduate Research Scholars Symposium; Mount Pleasant, MI; June 9, 2004.

67. (Invited presentation) “New Routes Toward Novel Thin Films and Nanocomposite Materials” was presented to the Michigan Molecular Institute (MMI); Midland, MI; April 14, 2004.

68. “Chemical Vapor Deposition of Group 13/Iron Bimetallic Thin Films Using Novel Single-Source Precursors” was presented at the 227th National A.C.S. Meeting and Exposition; Anaheim, CA; March 31, 2004.

69. “Synthesis, Characterization, and Volatility of Metal Thiazole Complexes” was presented at the 227th National A.C.S. Meeting and Exposition; Anaheim, CA; March 28, 2004.

70. “New Routes Toward Novel Thin Films and Nanocomposite Materials” was presented at the Faculty Excellence Exhibition; Mount Pleasant, MI; March 24, 2004.

71. (Invited presentation) “Chemical Vapor Deposition of Magnetic Bimetallic Thin Films and Nanotechnology Research: A One-Year Progress Report” was presented to the Materials Discussion Group at Dow Chemical; Midland, MI; Feb. 23, 2004.

72. “Supercritical Fluid Facilitated Growth of Copper and Aluminum Oxide Nanoparticles” was presented at the Gordon Research Conference on Chemistry Education Research and Practice; Ventura, CA; Jan. 4 - 9, 2004.

73. “Improving Freshman Student Problem-Solving Skills Through Guided ‘Implicit Pathways’”, was presented at the 226th National A.C.S. Meeting and Exposition; New York, NY; Sept. 6 – 11, 2003.

74. “Supercritical Fluid Applications for the Undergraduate Curriculum: Inorganic Synthesis” was presented at the 226th National A.C.S. Meeting and Exposition; New York, NY; Sept. 6 – 11, 2003.

75. (Invited presentation) “Thin Film and Nanotechnology Research” was presented to the Analytical Sciences/External Technology Division of Dow Chemical Co., Midland, MI; July 11, 2003.

76. (Invited presentation) "Applied Nanotechnology for the Automotive Industry" was presented to Visteon Corporation at the C.M.U. Center for Applied Research and Technology; March 21, 2003.

77. (Invited presentation) "Considerations in Precursor Design and the Efficacy of Supercritical Fluids for the Chemical Vapor Deposition of Thin Films" was presented at Lake Superior State University; October 25, 2002.

78. (Invited presentation) "Chemical Vapor Deposition: Novel Methodology and Applications" was presented to the Department of Physics at Central Michigan University; October 3, 2002.

79. "Undergraduate Student Exposure to the Industrial Workplace" was presented at the 223rd A.C.S. National Meeting and Exposition; Orlando, FL; April 7 - 11, 2002.

80. "Development of Practical Experiments in Instrumental Analysis: From "Cookbook" Style to Discovery-Based Modules" was presented at the 223rd A.C.S. National Meeting and Exposition; Orlando, FL; April 7 - 11, 2002.

81. "Core of the New Paradigm in Graduate Training in the Physical Sciences at UC Irvine: A Graduate Laboratory Course in Chemical and Materials Physics (ChaMP)" was presented at the 221st A.C.S. National Meeting and Exposition; San Diego, CA; Apr. 1 - 5, 2001.

82. "New Directions in the Development of Physical/Analytical Laboratory Modules" was presented to the Department of Chemistry at the University of California, Irvine; Jan. 27, 2000.

83. "Chemical Vapor Deposition of Conformal Alumina Thin Films" was presented at the Materials Research Society Meeting; Boston, MA; Nov. 28 - Dec.3, 1999.

84. "Chemical Vapor Deposition of Alumina-Based Materials and the Chemistry of Group 13 Chalcogenides" was presented at Celanese Corp.; Corpus Christi, TX; Nov. 14, 1999.

85. "The Utilization of $[(t\text{Bu})\text{Ga}(\mu_3\text{-Te})]_4$ as a Reducing Agent" was presented at the A.C.S. Regional Meeting; El Paso, TX; Oct. 21 - 23, 1999.

86. "Chemical Vapor Deposition of Alumina Thin Films Utilizing Novel Precursor Methodology" was presented at the 218th A.C.S. National Meeting and Exposition; New Orleans, LA; Aug. 22 - 26, 1999.

87. "Molecular Structure of $\text{Al}(\text{acac})_3/\text{Cr}(\text{acac})_3$ Solid Solutions: How Well Can Partial Occupancy of Disordered Metals Be Modeled from X-ray Crystallography?" was presented at the 218th A.C.S. National Meeting and Exposition; New Orleans, LA; Aug. 22 - 26, 1999.

88. "New Developments in the Chemical Vapor Deposition of Alumina Thin Films" was presented at the Rice Quantum Institute Summer Research Symposium; Houston, TX; Aug. 20, 1999.

89. "Chemical Vapor Deposition of Alumina Thin Films Utilizing Novel Precursor Methodology" was presented at the Inorganic Chemistry Gordon Conference; Newport, RI; July 18 - 23, 1999.

90. "Chalcogenide Exchange Reactions of $[(^i\text{Bu})\text{Ga}(\mu_3\text{-Te})]_4$ was presented at the 215th A.C.S. National Meeting and Exposition; Dallas, TX; March 29 – Apr. 2, 1998.

91. "Reactivity of Gallium-Chalcogenide Cubanes" was presented at the 214th A.C.S. National Meeting and Exposition; Las Vegas, NV; Sept. 7 - 11, 1997.

92. "Possible Superacid Systems and Applications: The Chloroantimonic Acid and $\text{BX}_3\text{:HX:MX}$ Systems" was presented at the 10th Annual Western Canadian Undergraduate Chemistry Symposium, University of Alberta; Edmonton, AB, Canada; June, 1996.

93. "The Antimony Pentachloride - Hydrogen Chloride System" was presented at the 3rd Annual Canadian Institute of Chemistry Symposium (Western Canadian Division); Regina, Saskatchewan, Canada; Nov., 1995.

5.4. Presentations Given By Students

1. "Electrochemical Performance of Lithium-Sulfur Batteries Using Optimized Graphitic Carbon Nitride as the Sulfur Host" was presented at the Spring 2025 ACS National Meeting and Exposition; San Diego, CA; March 25, 2025. Presented by postdoctoral researcher Al Yazdani.

2. "Tailoring g- C_3N_4 Properties through Precursor Selection: Polymerization and Crystallinity Insights" was presented at the Spring 2025 ACS National Meeting and Exposition; San Diego, CA; March 27, 2025. Presented by postdoctoral researcher Jyoti Pandey.

3. "The Effect of Calendering on the Performance of Lithium-Sulfur Batteries" was presented at the Fall Scientific Meeting of the Midland Section of the ACS; Central Michigan University; Mount Pleasant, MI; October 25, 2024. Presented by undergraduate student Ben Seltin.

4. "Enhancing Metal-Sulfur Batteries with Single Atom Catalysts and Graphitic Carbon Nitride: Addressing the Polysulfide Shuttle Effect" was presented at the Fall Materials Research Symposium; Boston, MA; Nov. 28, 2023. Presented by postdoctoral researcher Al Yazdani.

5. "Characterization and Modeling of Rhodium Single-Atom Catalysts on Porous Carbon Supports" was presented at the Fall Materials Research Symposium; Boston, MA; Nov. 28, 2023. Presented by postdoctoral researcher Jyoti Pandey.

6. "Synthesis of Molecularly Imprinted polymer for the Removal of Arsenate and Ammonia from Water" was presented at the Spring 2023 ACS National Meeting and Exposition; Indianapolis, IN; March 28, 2023. Presented by M.S. student Priyalatha Kirisenage.

7. "Synthesis of Novel Adsorptive Membranes for the Removal of Arsenate and Ammonia from Water" was presented at the Midland Section ACS Fall Scientific Meeting, Oct. 29, 2022. Presented by M.S. students Jordan Myers, Priyalatha Kirisenage, and Syed Zulqarnain.

8. "Nitrogen Deficient Graphitic Carbon Nitride as a Host Cathode Material for Metal-Sulfur Batteries" was presented at the Great Lakes Regional ACS Meeting; Virtual, June 6-9, 2021. Presented by M.S. student Adebola Ogundare.

9. "Reversible Li- and Na-Capacities of BaTiO₃/p-Si/g-C₃N₄ Nanocomposites" was presented at the 258th ACS National Meeting and Exposition; San Diego, CA; Aug. 26, 2019. Presented by undergraduate Mike Anger.

10. "Reversible Na Capacity of Magnesium Reduced Graphitic Carbon Nitride" was presented at the 258th ACS National Meeting and Exposition; San Diego, CA; Aug. 25 & 26 (also selected for Sci-Mix), 2019. Presented by M.S. student Adesola Adeyemi.

11. "Fe- and Sn-Doped Titania Nanoparticles for Metal-Ion Battery Applications" was presented at the 258th ACS National Meeting and Exposition; San Diego, CA; Aug. 27, 2019. Presented by M.S. student Khairul Islam.

12. "Porous Silicon Composites for High-Capacity Metal-Ion Batteries" was presented at the 255th ACS National Meeting and Exposition; New Orleans, LA; March 18 & 19 (also selected for Sci-Mix), 2018. Presented by undergraduate Mike Anger.

13. "Reproducible Synthesis of Free-Standing Porous Silicon Membranes for Energy Storage Applications" was presented at the 254th ACS National Meeting and Exposition; Washington, DC; Aug. 20, 2017. Presented by undergraduate student Mike Anger.

14. "Electrochemical Analysis of Fe-Doped Anatase Nanoparticles for Li- and Na-ion Battery Applications" was presented at the 251st ACS National Meeting and Exposition; Philadelphia, PA; Aug. 21, 2016. Presented by M.S. student Jonathon Clapham.

15. "Li₄Ti₅O₁₂/Graphene Nanoribbon Composites as Anodes for Li-ion Batteries" was presented at the 2015 Pacifichem meeting; Honolulu, HI; Dec. 18, 2015. Presented by SAM Ph.D. student Phillip Medina.

16. "Electrochemical Performance of Oxidized Graphene Nanoribbons" was presented at the 2013 Fall MRS National Meeting; Boston, MA; Dec. 3, 2013. Presented by undergraduate student David Hicks.

17. "Preparation of Monomeric Germanium (II) Aromatic and Heterocyclic Amides Bearing β -diketiminato Ligands" was presented at the 2013 American Indian Science and Engineering Society (AISES) National Conference; Denver, CO; Nov. 1, 2013. Presented by M.S. student intern (from Univ. of Costa Rica) Ernesto Ballesterro.

18. "Reversible Li Capacity of Thermally- and Chemically-Reduced Graphene Oxide Nanoribbons" was presented at the 2013 American Indian Science and Engineering Society (AISES) National Conference; Denver, CO; Nov. 1, 2013. Presented by SAM Ph.D. student Phillip Medina.

19. "Boron- and Nitrogen-doped Graphene Nanoribbons via Oxidative Unzipping of Doped Multi-walled Carbon Nanotubes" was presented at the 44th ACS Central Regional Meeting; Mt. Pleasant, MI; May 15, 2013. Presented by undergraduate Zach Grim.

20. "Electrochemical Properties of Oxidized Graphene Nanoribbons Obtained from Oxidative Unzipping of Multiwalled Carbon Nanotubes" was presented at the 44th ACS Central Regional Meeting; Mt. Pleasant, MI; May 15, 2013. Presented by undergraduate David Hicks and SAM Ph.D. student Phillip Medina.

21. "Oxidation of Multi-walled Carbon Nanotubes for Improved Specific Capacity in Li-ion Anodes" was presented at the 44th ACS Central Regional Meeting; Mt. Pleasant, MI; May 16, 2013. Presented by SAM Ph.D. student Aleks Antic.

22. "Precursor Design for the Atomic Layer Deposition of Hafnium Oxide Thin Films" was presented at the 2012 American Indian Science and Engineering Society (AISES) National Conference; Anchorage, AK; Nov. 1-3, 2012. Presented by SAM Ph.D. student Phillip Medina.

23. "Synthesis and Characterization of Hafnium (IV) β -ketomimines as Potential Precursors for the MOCVD of Hafnium Oxide" was presented at the 244th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 22, 2012. Presented by undergraduate student Seth Dever.

24. "Synthesis and Characterization of Hafnium (IV) Complexes with Chelating β -ketoimino Ligands: Potential Precursors for MOCVD of Hafnium Oxide Thin Films" was presented at the 244th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 22, 2012. Presented by postdoctoral researcher Siddappa Patil.

25. "Synthesis, Characterization, and DFT Study of Graphene Nanoribbon Precursors" was presented at the 244th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 20, 2012. Presented by SAM Ph.D. student Chananate Uthaisar.

26. "Precursor Design for the Atomic Layer Deposition of Hafnium Oxide/Oxynitride Thin Films" was presented at the 244th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 19, 2012. Presented by SAM Ph.D. student Phillip Medina.

27. "Comparison of Oxidized Graphene Nanoribbons for Improved Li-Ion Batteries" was presented at the Fall 2011 M.R.S National Symposium; Boston, MA; Nov. 28-Dec. 2, 2011. Presented by SAM Ph.D. student Aleks Antic.

28. "Electronic Properties of Metal Adsorption on Low-Dimensional Porous Graphene for Hydrogen Storage" was presented at the Fall 2011 M.R.S National Symposium; Boston, MA; Nov. 28-Dec. 2, 2011. Presented by SAM Ph.D. student Chananate Uthaisar.

29. "Atomic Layer Deposition of Hafnium Oxide Thin Films" was presented at the 2011 American Indian Higher Education Consortium (AIHEC) National Conference; Rapid City, SD; March 24-27, 2011. Presented by SAM Ph.D. student Phillip Medina.

30. "Synthesis, Characterization, and DFT Study of Graphene Nanoribbon Precursor, 1-Bromo-4-(3,7-dimethyloctyl)benzene" was presented at the Fall 2011 Midland ACS Meeting, Alma College, Alma, MI, Oct. 22, 2011. Presented by postdoctoral student Dr. Siddappa Patil.

31. "Synthesis and Characterization of Hafnium Oxide Gates" was presented at the Fall 2011 Midland ACS Meeting; Alma College, Alma, MI; Oct. 22, 2011. Presented by undergraduate students Seth Dever, Mike Stentzel, and Joshua Popp.

32. "Graphene Anode Materials for Lithium Ion Batteries" was presented at the Fall 2011 Midland ACS Meeting; Alma College, Alma, MI; Oct. 22, 2011. Presented by SAM Ph.D. student Aleks Antic.

33. "The Effect of Thermal Reduction of Graphene Oxide for Anodes in Li-Ion Batteries" was presented at the Fall 2011 Midland ACS Meeting; Alma College, Alma, MI; Oct. 22, 2011. Presented by SAM Ph.D. student Chananate Uthaisar.

34. "Novel Nanographenes for Li-Ion Battery Applications" was presented at the 66th Annual Fall Scientific Meeting; CMU, Mt. Pleasant, MI; Oct. 2010. Presented by SAM Ph.D. student Aleks Antic.

35. "Solid-Liquid-Solid (SLS) Growth of Silicon Nanowires" was presented at the 65th Annual Fall Scientific Meeting; Delta College, University Center, MI; Oct. 10, 2009. Presented by SAM Ph.D. student Aleks Antic.

36. "An Evaluation of Study Habits for Freshman Chemistry Students Using the James' Internal-External Locus of Control Scale" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by senior undergraduate Katelyn Carter.

37. "Investigation of the Graphitization Process During the Formation of Carbon Nanofibers" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by senior undergraduate Laura Slusher.

38. "Synthesis of Novel Core-Shell Nanoclusters for Quantum Dot Sensitized Solar Cell Applications" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by sophomore undergraduate Rick Denomme.

39. "Mechanistic Considerations in the Low-Temperature Growth of Carbon Nanofibers" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by senior undergraduate Leo Nezeritis.

40. "Precursor Design for the Atomic Layer Deposition of High-k Dielectric Thin Films" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by senior undergraduate Matt Swartz.

41. "Development of Hands-On Nanotechnology Learning Modules" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by M.A. graduate student David Moyses.

42. "Tackling the Problem of Declining Numbers of Undergraduate Chemistry Majors: The Role of Student Personality and Behavioral Characteristics" was presented at the 235th National Meeting and Symposia; New Orleans, LA; Apr. 6-10, 2008. Presented by M.A. graduate student Jennifer Rivet.

43. "Growth of Carbon Nanofibers from Nanoparticulate Catalysts Generated by *In Situ* Laser Ablation of Metal Targets" was presented at the 233rd ACS National Meeting and Symposia; Chicago, IL; March 25-29, 2007. Presented by senior undergraduate student Leo Nezeritis.

44. "Room Temperature Synthesis of Carbon Nanofibers" was presented at the 231st ACS National Meeting; Atlanta, GA; March 27, 2006. Presented by senior undergraduate student Laura Slusher.

45. "Dendritic Based Nanostructures: Synthesis and Characterization" was presented at the 2005 Michigan Microscopy Society Meeting; Lansing, MI; November 4, 2005. Presented by M.S. candidate – Jeffery Raymond.

46. "Supercritical Fluid Cosolvent-Diffusion Facilitated Synthesis of Bimetallic Nanoparticles" was presented at the Council of Undergraduate Research Posters on the Hill; Washington, D.C.; April 19, 2005. Presented by senior undergraduate student Jonathan Brege.

47. "Synthesis of Mixed Substituted Acetylacetonate Complexes: New Single-Source Precursors for Metal Oxide Thin Film Growth" was presented at the 229th National A.C.S. Meeting and Exposition; San Diego, CA; March 13-17, 2005. Presented by sophomore undergraduate students – Dan Denomme and Andrew Richardson.

48. "Chemical Vapor Deposition of Metal Oxide Thin Films and New Single-Source Precursor Design for Oxynitride Films" was presented at the 229th National A.C.S. Meeting and Exposition; San Diego, CA; March 13-17, 2005. Presented by senior undergraduate students – Laura Lentz and Derek Schaller.

49. "Novel Gallium Catalysts for the Coupling of Carbon Dioxide and Epoxides" was presented at the 229th National A.C.S. Meeting and Exposition; San Diego, CA; March 13-17, 2005. Presented by M.S. candidate – Venkat Juttukonda.

50. "Supercritical Fluid Cosolvent-Diffusion Facilitated Synthesis of Bimetallic Nanoparticles" was presented at the 229th National A.C.S. Meeting and Exposition; San Diego, CA; March 13-17, 2005. Presented by senior undergraduate student – Jonathan Brege.

51. "Investigation of the Relationship between Student Personalities and Critical Thinking Abilities/Pathways" was presented at the 229th National A.C.S. Meeting and Exposition; San Diego, CA; March 13-17, 2005. Presented by M.A. candidate – Angela McGuirk.

52. "Synthesis of Dendrimer-Encapsulated Metal Oxide Nanoparticles in Supercritical Carbon Dioxide" was presented at the Spring 2005 National M.R.S. Symposium; San Francisco, CA; March 28-Apr. 1, 2005. Presented by M.S. candidate -- Venkat Juttukonda.

53. "Room-Temperature Growth of Carbon Nanofibers" was presented at the Spring 2005 National M.R.S. Symposium; San Francisco, CA; March 28-Apr. 1, 2005. Presented by M.S. candidate -- Jeffery Raymond.

54. "Tubes, Films, and Supercritical Fluids: Recent Studies in Materials Science" was presented at the 228th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 23, 2004. Presented by postdoctoral researcher -- Jason Vohs.

55. "Low Temperature Growth of Carbon Nanotubes from the Catalytic Decomposition of Carbon Tetrachloride" was presented at the 228th National A.C.S. Meeting and Exposition; Philadelphia, PA; Aug. 23, 2004. Presented by postdoctoral researcher -- Jason Vohs.

56. "Controlled Growth of Bimetallic Nano-alloys in Supercritical Carbon Dioxide" was presented at the 2004 McNair Research Symposium; Mount Pleasant, MI; June 16, 2004. Presented by senior undergraduate student -- Jonathan Brege.

57. "Low Temperature Growth and Characterization of Carbon Nanotubes" was presented at the Posters at the Capitol event and the Student Research and Creative Endeavors Exhibition; Lansing, MI (April 20, 2004), and Mt. Pleasant, MI (April 14), respectively. Presented by senior undergraduate students -- Jonathan Brege and Jeffery Raymond.

58. "Chemical Vapor Deposition of Titanium Oxide Thin Films" was presented at the Posters at the Capitol event and the Student Research and Creative Endeavors Exhibition; Lansing, MI (April 20, 2004), and Mt. Pleasant, MI (April 14), respectively. Presented by senior undergraduate student -- Laura Lentz.

59. "Chemical Vapor Deposition of Metal Oxide Thin Films: Design of Actively-Protective Clothing Against Chemical Warfare Agents" was presented at the 227th National A.C.S. Meeting and Exposition; Anaheim, CA; March 28, 2004. Presented by M.S. candidate - Vernal N. Richards.

60. "Novel Precursors for the Chemical Vapor Deposition of Group 13 Oxynitride Thin Films" was presented at the 227th National A.C.S. Meeting and Exposition; Anaheim, CA; March 28, 2004. Presented by senior undergraduate student - Duston Miller.

61. "Supercritical Fluid Facilitated Growth of Metal and Metal Oxide Nanoparticles" was presented at the 227th National A.C.S. Meeting and Exposition; Anaheim, CA; March 28, 2004. Presented by sophomore undergraduate student - Jonathan Brege.

62. "The Solubility and Decomposition of Carbon Halides in Supercritical Carbon Dioxide: Toward Low-Temperature Growth of Carbon Nanotubes" was presented at the 227th National

A.C.S. Meeting and Exposition; Anaheim, CA; March 28, 2004. Presented by senior undergraduate student - Allan Brown.

63. "The Solubility and Decomposition of Carbon Tetrachloride in Supercritical Carbon Dioxide" was presented at the Midland A.C.S. Meeting and Exposition; Midland, MI; Oct. 17, 2003. Presented by senior undergraduate student - Allan Brown.

64. "Syntheses and Volatility Assessments of Novel Group 13 Complexes: Toward Aluminum and Gallium Oxynitride Thin Films" was presented at the Midland A.C.S. Meeting and Exposition; Midland, MI; Oct. 17, 2003. Presented by senior undergraduate student - Duston Miller.

65. "Chemical Vapor Deposition of Metal Oxide Thin Films: Design of Actively Protective Clothing Against Chemical Warfare Agents" was presented at the Midland A.C.S. Meeting and Exposition; Midland, MI; Oct. 17, 2003. Presented by M.S. candidate Vernal Richards.

66. "Synthesis, Characterization, and Volatility Studies for Group 13 Amidinate and Triazenide Complexes" was presented at the Midland A.C.S. Meeting and Exposition; Midland, MI; Oct. 17, 2003. Presented by postdoctoral researcher Jason Vohs.

5.5. Development of New Experimental Modules (* CMU modules)

*1. "Solid-Liquid-Solid Growth of Silicon Nanowires", 2017.

*2. "Synthesis of Porous Silicon", 2017.

*3. "How Much Nicotine is in "The Patch": An Application for Supercritical Fluid Extraction (SFE)", Spring 2005.

*4. "Chemical Vapor Deposition of Aluminum Oxide Thin Films", CHM 331, Fall 2004.

*5. "Supercritical Growth and Characterization of Copper and Aluminum Oxide Nanoparticles", CHM 331, Fall 2003.

*6. "Synthesis and Characterization of a New Chromium Thiatriazole Complex", CHM 331, Fall 2003.

*7. "Synthesis of Main-Group and Transition Metal Complexes Featuring a Multidentate Ligand", CHM 331, Fall 2003.

8. "Real-Time Vehicle Emission Monitoring Using LabView", Chem 153, Spring 2002.

9. "Analysis of American and Canadian Pennies for Copper and Zinc Using Atomic Absorption Spectroscopy (AA)", Chem 151L, Summer Session and Fall, 2001.

10. "Who Hit Dennis Rodman's Car? A Forensics Investigation using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)", Chem 151L, Summer Session and Fall, 2001.

11. "Comparison of Gasoline Grades using Gas Chromatography (GC)", Chem 151L, Summer Session and Fall, 2001.

12. "Excitation and Emission Spectra of a Fluorescent Gold Complex", Chem 153, Spring 2001.

13. "LabView Programming", Chem 153, Spring 2001.

14. "Fluorescence Lifetime Measurements using a YAG Laser System", Chem 153, Spring 2001.

15. "A Forensic Investigation using Gas Chromatography (GC)", Chem 151L, Fall 2000.

16. "Determination of Calcium in Apple Juice using Atomic Absorption Spectroscopy (AAS)", Chem 151L, Fall 2000.

17. “Water Quality Analysis using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES)”, Chem 151L, Fall 2000.
18. “Synthesis and Properties of High Temperature Superconductors”, ChaMP, Summer 2000.
19. “Chemical Vapor Deposition of Carbon Nanotubes”, ChaMP, Summer 2000.

5.6. Intellectual Property Experience

1. Rensselaer Polytechnic Inst. v. Samsung Elec. Am., Inc. et al., No. 2:19-cv-20097-KM (D.N.J.). Retained by AXINN and BlankRome as an expert witness on behalf of Samsung, 07/01/2020-05/13/2024.
2. “Low Temperature Synthesis of Carbon Nanotubes”, U.S. Patent #7,556,789 issued July 7, 2009.

5.7. Student Mentoring (* indicates completion of CHM 491 paper, ‡ indicates completion of SAM dissertation/defense or M.S. thesis/defense)

Postdoctoral Researchers

1. Al Yazdani, March 2023 – present.
2. Jyoti Pandey, Feb. 2023 – present.
3. Siddappa Patil, Nov. 2010 - Feb. 2013.
4. SriLakshmi Katar, Oct. 2010 – March 2011; currently employed at Samsung Corp.
5. Tarun Bhardwaj, Sept. 2009 - Aug. 2010.
6. Robert Paddock, Ph.D. from Northwestern University; currently Research Scientist, Catalyst Group, Shell Chemicals; Houston, TX)
7. Jason K. Vohs, postdoctoral researcher (Ph.D. from the University of Georgia; currently Professor & Chair of Chemistry at St. Vincent College; Latrobe, PA)

S.A.M. Ph.D. Graduate Students

- ‡1. Mike Lubitz – “Properties of Alumina-Coated Elastomers via Atomic Layer Deposition”, Fall 2014 – 2017 (graduated in Spring 2017 & employed at Huntsman Corp.).
- ‡2. Phillip Medina - "Development of Porous Cathode Materials for Li-air Battery Applications", Fall 2012 – present (currently postdoc at IBM in San Jose, CA).
- ‡3. Aleks Antic (primary advisor; co-advisor: Veronica Barone (PHY)) – “Synthesis and Characterization of Nanomaterials as Anode Materials for Li-ion Battery Applications”, Summer 2009 – 2014 (graduated in Fall 2014 & is employed at Ivy Tech Community College, Indiana).
- ‡4. Chananate Uthaisar – (secondary advisor; primary advisor: Veronica Barone (PHY)) - “DFT studies and electrochemical testing of nanographenes for Li-ion Battery Applications”, Summer 2010 – Fall 2013 (graduated in Fall 2013 & is employed with Fraunhofer).

Masters Graduate Students

- †1. Vernal N. Richards, M.S. completed Spring 2004 (awarded a Ph.D. from Washington University in St. Louis in 2010 (advisor: William Buhro) & is currently a Research Scientist at Washington University, St. Louis)
- *2. Jeffrey Raymond, B.S. completed Spring 2004 (performed M.S. research (ABD); awarded a Ph.D. from Univ. of Michigan in 2012 (advisor: Ted Goodson) & was a postdoc at Texas A & M University (advisor: Karen Wooley))
- †3. Venkateswarlu Juttukonda, M.S. completed Spring 2006 (currently employed as a pharmacist at Alma, MI Hospital)
- †4. Angela McGuirk, M.A. completed Fall 2005 (currently lecturer in CHM at CMU)
- †5. Jennifer Rivet, M.A. completed Spring 2008 (currently a high school teacher in Detroit, MI)
- †6. David Moyses, M.A. completed Fall 2008 (currently lecturer at Mid-Michigan Community College and CMU)
- †7. Suneth Kalapugama, M.S. completed Fall 2010 (awarded a Ph.D. from the Univ. of Alberta)
- †8. Mike Lubitz, M.S. completed Fall 2011 (currently employed at Dow Chemical Co. - catalysis group)
- ‡9. Diego Gonzalez, M.S. student from the University of Costa Rica - worked in our laboratory (internship) from Dec. 2010 - March 2011; awarded a M.S. degree in 2012 and is currently working at the Center for Electrochemistry at the Univ. of Costa Rica
- ‡10. Ernesto Ballesteros, M.S. student from the University of Costa Rica - internship from Sept. - Dec. 2013; currently a Ph.D. candidate at the Technische Universitat Berlin.
- 11. Jonathon Clapham, Fall 2015-2018.
- 12. Khairul Islam, M.S. completed summer 2020 (currently in Ph.D. program at Univ. of Connecticut)
- 13. Adesola Adeyemi, M.S. completed Fall 2020 (currently in Ph.D. program at Univ. of North Carolina, Charlotte).
- 14. Adebola Ogundare, M.S. completed Fall 2021 (currently in Ph.D. program at Rice University).
- 15. Priyalatha Kirisenage, M.S. completed in Spring 2023 (co-supervising with Anja Mueller and Itzel Marquez)
- 16. Syed Zulqarnain, M.S. completed in Fall 2022 (co-supervised with Anja Mueller and Itzel Marquez)
- 17. Jordan Myers, M.S. in progress (co-supervising with Anja Mueller and Itzel Marquez)

Undergraduate Students (= completed CHM 491 thesis)*

- *1. Misty Bennett, B.S. Fall 2003 (graduated, completed M.A. in Psychology at CMU; currently Assoc. Prof. in Dept. of Psychology at CMU)
- *2. Jonathan J. Brege, B.S. completed Spring 2005 (awarded a Ph.D. at Rice Univ. in 2009; currently employed as a petroleum technologist, Shell Oil Co., Houston, TX)
- *3. Duston O. Miller, B.S. completed Spring 2005. Currently Project Leader at MPI Research, Saginaw, MI
- *4. Laura M. Lentz, B.S. completed Spring 2005 (currently employed at PowderMet in Ohio)
- *5. Derek Schaller, B. S. completed Spring 2006 (awarded a M.D. degree from Wayne State University; currently Ass't Prof. in the College of Medicine, CMU)
- *6. Allan E. Brown, B.S. completed Spring 2004 (currently in the M.B.A. program at the Illinois Institute of Technology, Chicago, IL)

- *7. Dan Denomme, B.S. completed Spring 2007 (awarded M.S. degree from the Univ. of Florida).
- *8. Laura Slusher, B.S. completed Spring 2008
- *9. Andrew Richardson, CHM major (worked during 2006-2007 academic year)
- 10. Dylan Freeland, BIO major (worked during 2007-2008 academic year)
- 11. Joanne Rogers, BIO major (worked during 2007-2008 academic year)
- 12. Beth Hartwick, BIO major (worked during 2007-2008 academic year)
- 13. Anne Germeroth (German exchange student for the 2006-2007 academic year)
- *14. Katelyn Carter, B.S. completed Spring 2008
- *15. Leo Nezeritis, B.S. completed Spring 2008
- *16. Matt Swartz, B.S. completed Spring 2008
- *17. Kathy Liedke, B.S. completed Spring 2008
- 18. Rick Denomme, B.S. completed Spring 2010 (worked during 2007-2008 academic year)
- 19. John Stanley, B.S. completed Spring 2010 (worked during 2008-2009 academic year)
- *20. Ashley Morgan, B.S. completed Spring 2009
- 22. Joshua Popp, B.S. completed Spring 2014 (worked during the 2010-2011 academic year)
- *22. Phillip Medina, B.S. completed in Spring 2012 (currently in the SAM Ph.D. Program at CMU)
- *23. Michael Stentzel, B.S. completed Spring 2012 (currently in the Ph.D. program at Northern Illinois University)
- 24. Seth Dever, Senior (worked during the 2011-2012 academic year)
- *25. David Hicks, B.S. completed Spring 2014
- 26. Geoffrey Bourdon, B.S. completed Spring 2014
- 27. Joseph Rosin, Junior (worked during 2013-2014 academic year)
- *28. Zachary Grim, B.S. completed Spring 2014
- *29. Mike Gunnels, B.S. completed Spring 2014
- *30. Mandi Shook, B.S., completed Spring 2014
- *31. Bradley Sugg, B.S., completed Spring 2014
- 32. Andrew Sumner, B.S. completed Spring 2014
- *33. Christian Burns, B.S. completed Spring 2016
- *34. Casey Weitzel, B.S. completed Spring 2016
- *35. Garrett Rockwell, B.S. completed Spring 2018
- *36. Adam Kalish, B.S. completed Spring 2018
- 37. Mike Anger, Senior (worked during 2018-2020)
- 38. Korryn Brickner, B.S. completed Fall 2023
- 39. Nathan Alchin, B.S. completed Fall 2023
- 40. Isaac McWethy, B.S. completed Fall 2023 (co-supervised with Anja Mueller and Itzel Marquez)
- 41. Yasman Ferguson, B.S. completed Spring 2023 (co-supervised with Anja Mueller and Itzel Marquez)
- 43. Ben Seltin, B.S. completed Spring 2025 (currently in grad school at University of Michigan)
- 44. Marsel Halilaj, B.S. completed Spring 2025 (currently applying for Medical School admission)
- 44. Isaac Boakye, Sophomore, currently working in our group

VI. Grants and Contracts

6.1. Proposals Successfully Funded and Equipment Donations († while at CMU; * External funding)

†*1. “Porous Carbon-Supported Single Atom Catalysts for Metal-Sulfur Batteries” funded by the Department of Defense Ground Vehicle Systems Center (DoD - GVSC), Spring 2025 – 2027. Amount awarded: \$1,648,500. Co-P.I.s: Veronica Barone (PHY), Valeri Petkov (PHY).

†*2. "Adsorptive and Photocatalytic Membranes for Water and Wastewater Treatment" funded by the Department of Defense Ground Vehicle Systems Center (DoD - GVSC), Spring 2025 – 2027. Amount awarded: \$725,000. Co-P.I.s: Anja Mueller (CHM), Itzel Marquez (EGR).

†*3. “De Novo Design of Energy Storage Materials Through a Synergistic Approach” funded by the Department of Defense Ground Vehicle Systems Center (DoD - GVSC), Fall 2022 – 2024. Amount awarded: \$1,330,170. Co-P.I.s: Veronica Barone (PHY), Valeri Petkov (PHY).

†*4. "Safe Water for All: Novel Adsorbent and Membrane Materials for Water and Wastewater Treatment" funded by the Department of Defense Ground Vehicle Systems Center (DoD - GVSC), Fall 2022 – 2024. Amount awarded: \$655,000. Co-P.I.s: Anja Mueller (CHM), Itzel Marquez (EGR).

†*5. “Doped Metal Oxide Nanoparticles as High-Capacity Metal-Ion Electrodes” funded by funded by Tank and Automotive Research and Development Engineering Center (TARDEC/GVSC), Spring 2018 – 2020. Amount awarded: \$162,100. Co-P.I.: Veronica Barone (PHY).

†*6. "MRI: Acquisition of a Transmission Electron Microscope for Multidisciplinary Research and Teaching at Central Michigan University" funded by the National Science Foundation, Aug. 2015. Amount awarded: \$492,285. Co-P.I.s: Jennifer Schisa (BIO; lead P.I.), Gabriel Caruntu (CHM), Joanne Dannenhoffer (BIO), Eric Linton (BIO).

†*7. “Chemical Unzipping of Doped Multi-Walled Carbon Nanotubes for Energy Storage Applications” funded by Research Corporation, Nov. 2012 – June 2015. Amount awarded: \$75,000. Co-P.I.: Veronica Barone (PHY).

†8. "Materials Innovation for Sustainable Energy" faculty cohort funded by the Provost's Office, Central Michigan University, Sept. 2012. Amount awarded: \$1.2M. Co-P.I.s: Alan Jackson (PHY), Mary Tecklenburg (CHM), Mohamad Qatu (EGR), Juan Peralta (PHY).

†*9. “Precursor Design and Atomic Layer Deposition of High- κ Dielectric Thin Films” funded by the National Science Foundation, Aug. 2009 - 2013. Amount awarded: \$255,000.

†*10. "Anode Materials for Li-Ion Battery Applications" funded by the Tank and Automotive Research and Development Engineering Center (TARDEC), July 2009 - 2012. Amount awarded: \$699,127. Co-P.I.: Veronica Barone (PHY).

†11. "Design of Dendrimer-Based Quantum Dot Sensitized Solar Cells" funded by the CMU President's Research Investment Fund, July 2007 – 2008. Amount awarded: \$14,902.

†12. "The Advanced Materials Research Initiative" funded by the CMU 2010 committee (Priority III), Nov. 2006 - May 2010. Amount awarded: \$750,000. Co-P.I.s Alan Jackson (PHY), Mary Tecklenburg (CHM), Bob Howell (CHM), Valeri Petkov (PHY).

†*13. "Mechanistic Considerations in the Growth of Carbon Nanofibers" funded by Research Corporation, June 2006 – 2009, \$31,218 (R.C.) and \$16,000 (CMU) for a total of \$47,218.

†*14. "Supercritical Fluid Facilitated Growth of Carbon Nanotube-Dendrimer Nanocomposite Materials" funded by Research Corporation, Jan. 2004 - 2007, \$37,831 (R.C.) and \$15,338 (CMU) for a total of \$53,169.

†*15. "Dendritic Coatings For Sensing and Deactivation of Airborne Warfare Agents" funded by the Department of Defense (Army Research Laboratory), June 2004 - 2005. Amount awarded: \$314,877 for 1 year. Co-P.I. Anton Jensen (CHM).

†*16. "Design of Actively-Protective Materials for the Low Temperature Degradation of Chemical Warfare Agents and Pesticides" funded by the State of Michigan Research Excellence Fund, March 2003 - 2005. Amount awarded: \$123,201.

†*17. "Design of Self-Decontaminating Dendritic Thin Film Coatings for the Deactivation of Chemical and Biological Warfare Agents" funded by the Department of Defense (Army Research Laboratory), February 2003 - 2004. Amount awarded: \$197,845; co-P.I. Anton Jensen.

†*18. "Development of Supercritical Fluid Applications for the Undergraduate Curriculum" funded by the Dreyfus Foundation, February 2003 - 2006. Amount awarded: \$25,000 (Dreyfus) and \$30,079 (CMU) for total of \$55,079.

†19. "Synthesis of Single-Source Precursors for the Chemical Vapor Deposition of GaN Thin Films" funded by the President's Research Investment Fund (CMU), November 2002 - 2004. Amount awarded: \$24,912.

†20. "Chemical Vapor Deposition of Doped Aluminosilicate Thin Films and Subsequent Template Growth of Metal Oxide Nanostructures" funded by the "Faculty Research and Creative Endeavor" program (CMU), August 2002 - 2003. Amount awarded: \$7,451.

*21. "Powder X-ray Diffraction in Advanced Undergraduate Laboratories" funded by the Dreyfus Foundation, January 2002 - 2005. Amount awarded: \$31,421 (Dreyfus) and \$31,421 (UCI) for total of \$62,842.

*22. “A Modular Supercritical Fluid System for Diverse Undergraduate Curricular Applications” funded by the NSF (C.C.L.I. - A. & I.), May 2001 - 2004. Amount awarded: \$29,289 (NSF) and \$29,289 (UCI) for total of \$58,578.

23. “Increasing Student Interest and Motivation in Chemistry: Undergraduate Student Exposure to the Industrial Workplace” funded by the UCI Department of Undergraduate Education (DUE), March 2001 - 2002. Amount awarded: \$4,680.

24. Negotiated and arranged the donation of an Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) from Varian, Inc., June 2001. Estimated value: \$40,000.

6.2. Other Proposals Submitted (all external grants)

1. “Improving the Li-ion Rate Capability of Si-Based Anodes Through Morphological Control and Piezoelectric Poling” submitted to the U.S. Department of Energy (DE-FOA-0002197), Amount requested: \$650,000. Co-P.I.: Gabriel Caruntu (CHM), not funded.

1. "REU: Research Experience for Undergraduates in Materials Science and Nanotechnology at Central Michigan University" submitted to the National Science Foundation, Aug. 2014, \$285,655 for 3 years; lead P.I.: Gabriel Caruntu (CHM), not funded.

2. "REU: Research Experience for Undergraduates in Materials Science and Nanotechnology at Central Michigan University" submitted to the National Science Foundation, Aug. 2013, \$283,960 for 3 years; lead P.I.: Gabriel Caruntu (CHM), not funded.

3. "Surface Functionalized Graphenes and Porous Silicon-Graphene Hybrids for Li-ion Battery Applications" submitted to the 2013 Henry Dreyfus Teacher-Scholar Awards Program, May 2013, \$60,000 for 5 years, not funded (sole P.I.).

4. "Li-Graphene Interactions: Unraveling their Atomic-Level Mechanisms" submitted to the National Science Foundation (CHE), Oct. 2012, \$411,990 for 3 years; co-P.I.s: Veronica Barone (PHY) and Valeri Petkov (PHY), not funded.

5. "Solar Selective Coatings" submitted to Los Alamos National Laboratory (DoE SunShot Competition), June 1, 2012, \$302,323 for 3 years; co-P.I.: Steven Obrey (LANL), not funded.

6. “Nonlinear and Surface Plasmon Optical Devices using Infiltrated Photonic Crystal Fiber” submitted to the National Science Foundation (ECCS), Feb. 2012, \$374,075 for 3 years; lead P.I.: Adam Mock (EGR), not funded.

7. “Li-Graphenes Interactions: Unraveling their Atomic-Level Mechanisms” submitted to the Army Research Office (ARO), July 2011; co-P.I.s: Veronica Barone (PHY) and Valeri Petkov (PHY), not funded.

8. “MRI: Acquisition of an Atomic Force Microscope (AFM)” submitted to the National Science Foundation (Major Research Instrumentation program), Jan. 27, 2011; co-P.I.s: Anja Mueller (CHM), Bing-Bing Li (CHM), Steve Juris (BIO/CHM), not funded.
9. “Polydendron Nanochannels for Photovoltaic Materials” pre-proposal submitted to National Science Foundation (SOLAR), Dec. 2009, pending. P.I.: Anton Jensen; other co-P.I.s: Dillip Mohanty (CHM), Don Tomalia (CHM), Leela Rakesh (MTH), not funded.
10. “Design of Dendritic-Based Quantum Dot Sensitized Solar Cells” submitted to the National Science Foundation (SOLAR), Dec. 2008, co-P.I.s: Petar Dvornic, Michigan Molecular Institute, Andrew Barron, Rice University, not funded.
11. “Design of Dendritic-Based Quantum Dot Sensitized Solar Cells” submitted to the National Science Foundation (CBET), March 2008, \$319,578 for 3 years, co-P.I.: Petar Dvornic, Michigan Molecular Institute, not funded.
12. “Novel Strategies for the Deposition of High- κ Dielectric Thin Films” re-submitted to the National Science Foundation (Division of Materials Research), Nov. 2007, \$299,305 for 3 years, not funded (sole-P.I.).
13. “Dispersion of Nanomaterials in Polymer Matrices: Computation and Experiment” submitted to the National Science Foundation (DMR), Nov. 2007, \$470,747 for 3 years, co-P.I.s: Leela Rakesh, Stan Hirshi, Anja Mueller, not funded.
14. Atomic Layer Deposition of High- κ Dielectric Thin Films” submitted to the Dreyfus Foundation (Henry Dreyfus Teacher-Scholar Awards Program), June, 2007, \$60,000 for 5 years, not funded (sole-P.I.).
15. “Novel Strategies for the Deposition of High- κ Dielectric Thin Films” submitted to the National Science Foundation (Division of Materials Research), Nov. 2006, \$299,305 for 3 years, not funded (sole-P.I.).
16. “Mechanistic Studies of Low-Temperature Catalyzed Nanostructural Carbon Growth” submitted to the National Science Foundation (Division of Materials Research), Nov. 2005, \$455,755 for 3 years, not funded (sole-P.I.).
17. “Investigation of the Multilayered Synergistic Effects of Nanoscale Functional Coatings” submitted to the National Science Foundation (Collaborative Research in Chemistry), Nov. 2005, \$2,500,000 for 5 years, not funded (co-P.I.s: Dillip Mohanty, Anton Jensen, Paula Hammond (MIT)).
18. “Mechanistic Studies of Low-Temperature Nanostructural Carbon Growth” submitted to Research Corporation (renewal application), Nov. 2005, \$32,000 for 2 years, not funded (sole-P.I.).

19. “Synthetic and Mechanistic Studies of the Low-Temperature Catalyzed Growth of Carbon Nanostructures” submitted to the Office of Naval Research (Young Investigator Program), Jan. 2005, \$355,530 for 3 years, not funded (sole-P.I.).

20. “Room-Temperature Synthesis and Characterization of Dendrimer-Nanostructural Carbon Composite Materials” submitted to the Department of Energy, October 2004, \$489,281 for 4 years, not funded (sole-P.I.).

21. “Empirical and Theoretical Investigations of Low-Temperature Carbonaceous Nanostructural Growth Catalyzed by Metal-Encapsulated Polymers” submitted to the National Science Foundation, September 2004, \$511,125 for 3 years, not funded (co-P.I.: Leela Rakesh (MTH)).

22. “The Incorporation of Nanomaterials and Thin Film Technology within the Undergraduate Curriculum” submitted to the National Science Foundation (CCLI – A & I), November 2004, \$190,000 for 3 years, not funded (co-P.I.s: Dillip Mohanty (CHM), and Jean-Claude Thomassian (EGR)).

23. “Low-Temperature Synthesis and Characterization of Carbonaceous Nanostructures Grown Directly from Metal-Encapsulated Polymer Catalysts” submitted to the Camille & Henry Dreyfus Foundation (Camille Dreyfus Teacher-Scholar Award), November 2004, \$74,991 for 3 years, not funded (sole-P.I.).

24. “Nanocomposite Materials for Decomposition of Biological and Chemical Warfare Agents” submitted to Concurrent Technologies, March 2003, \$448,637 for 3 years, not funded (co-P.I.: Anton Jensen (CHM)).

25. “Application of Supercritical Solutions for Removal of Nanoscale Surface Contamination from Integrated Circuits” submitted to the National Science Foundation, Oct. 2003, \$113,745 for 1 year. Co-P.I. Bai Xu (SUNY - Albany). Not funded.

26. “Acquisition of a Multi-Technique Instrument for Surface Characterization of Thin Films and Nanostructural Materials” submitted to the National Science Foundation, Jan. 2003, \$829,840 for 3 years. Not funded.

VII. Professional Organizations & Certifications

Member, American Chemical Society (Sept. 1996 – present)

Member, The Authors Guild (Feb. 2021 – present)

Member, Professional Photographers of America (Feb. 2021 – present)

Certified Professional Photographer (Professional Photographers of America; July 2021 – present)

FAA-licensed remote pilot (Aug. 2018 – present)