Davita L. Watkins, Ph.D.
Department of Chemistry and Biochemistry
William G. Lowrie Department of Chemical and Biomolecular Engineering
The Ohio State University, Columbus, OH 43210; watkins.891@osu.edu; watkinsresearchgroup.org

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Education

Doctor of Philosophy, Chemistry — Memphis, TN
The University of Memphis — 2007-2012
Dissertation*: Novel Photochromic Spirooxazine Dimers: Synthesis, Characterization, and Applications*

Bachelor of Science, Chemistry and Anthropology — Nashville, TN
Vanderbilt University — 2002-2006

Professional History

Associate Professor — Columbus, OH
The Watkins Laboratory, The Ohio State University — 2022-present
(partial appointment ChemE and Biomolecular Eng)

- Near-infrared (NIR) conjugated polymers and fluorophores for bioimaging; Janus-type dendrimers and linear–dendritic block copolymers for theranostics

Associate Professor — University, MS
The Watkins Laboratory, University of Mississippi — 2020-2022

- Near-infrared (NIR) conjugated polymers and fluorophores for bioimaging; Janus-type dendrimers and linear–dendritic block copolymers for theranostics
  - *Collaborative studies* – calmodulin-based biomaterials; hydrogels and organogels; electro-copolymerization

Assistant Professor — University, MS
The Watkins Laboratory, University of Mississippi — 2014-2020

- Optoelectronic behavior of halogen bond assemblies as semiconducting materials; self-assembling Janus dendrimers and linear–dendritic block copolymers for theranostics
  - *Collaborative studies* – calmodulin-based biomaterials; anti-cancer agents derived from panobinostat; self-assembling magnesium oxide (MgO_2) nanoparticles; electro-copolymerization

Postdoctoral Research Associate — Gainesville, FL
The Castellano Laboratory, University of Florida — 2012-2014

- Self-assembling oligomers for photovoltaic devices; solution and solid phase characterization of assembly formation, optoelectronic properties and redox behavior of semiconductors
  - *Advisor* – Dr. Ronald K. Castellano, Professor

Graduate Research Assistant — Memphis, TN
The Fujiwara Laboratory, University of Memphis — 2007-2012

- Photochromic compounds and polymer systems for selective recognition of biomolecules and sensoring of organic/inorganic molecules
  - *Advisor* – Dr. Tomoko Fujiwara, Associate Professor

Chemical Analyst I — Memphis, TN
Eurofins Scientific Incorporated, Memphis Division — 2006-2007

Monsanto Summer Intern — Memphis, TN
Agriculture Company, Memphis Division — 2006-2006

Undergraduate Researcher — Nashville, TN
The Hercules Laboratory, Vanderbilt University — 2005-2006

- Characterization of decomposition occurring in polystyrene-based systems via MALDI-TOF mass spectrometry
  - *Advisor(s)* – Dr. David Hercules/Dr. Grace Zoorob, Professors

Funding

Oak Ridge Associated Universities (ORAU): Ralph E. Powe Junior Faculty Enhancement Award, Halogen Bond Driven Self-Assembly of Hybrid Oligomers for Organic Semiconducting Devices (PI); TOTAL: $10,000

National Science Foundation: CAREER: Elucidating the Role of Sigma-hole Interactions in Advanced Functional Materials (PI); TOTAL: $493,549; Award Abstract #1652094

National Science Foundation: Mississippi NSF EPSCoR RII-Track 1: Center for Emergent Molecular Optoelectronics (CEMOs) (Thrust Leader); TOTAL: $20,000,000; Award Abstract #1757220

National Science Foundation: Mississippi NSF EPSCoR RII Track-2 FEC. Collaborative Research and Education on Synergized Transformational Solar Chemical Looping and Photo-Ultrasonic Renewable Biomass Refinery (Senior Personnel); TOTAL: $ 1,600,000; Award Abstract #1632899

American Chemical Society Petroleum Research Fund New Directions: Elucidating the Effects of Molecular Structure on Janus Dendrimers as Ambidextrous Gelators (PI); TOTAL: $110,000; ACS PRF#61259

National Science Foundation: Harnessing the Aggregation Behavior of Near-Infrared (NIR-II) Fluorophores via Supramolecular Nano-scaffolds (PI); TOTAL: $464,992; Award Abstract # 2203640

The Ohio State University Enterprise for Research, Innovation and Knowledge (ERIK) Education Startup Award - STEM Education Faculty Startup Award (PI); TOTAL: $200,000

National Institute of Health (NIH); National Institute of Biomedical Imaging and Bioengineering: Ionic Liquid-Coated NIR-II Polymer Conjugates as Targeted Brain Theranostics (PI); TOTAL: $ 2,417,396.00; Award # AWD-113530

Awards

American Chemical Society WCC's Rising Stars for 2022 2022

C&EN 2021 Trailblazer 2021

2021 International Union of Pure and Applied Chemistry (IUPAC) 2021

- Young Observer

2018 International Symposium on Halogen Bonding Rising Star 2018

Invited speaker

2018 Emerging Investigators - Journal of Materials Chemistry C 2018

- Faculty early career journal issue

Mike L. Edmonds New Scholar Award 2018

- UM faculty early career development award

American Chemical Society Young Investigator Award 2018

- PMSE faculty early career award

Lloyd N. Ferguson Young Scientist Award for Excellence in Research 2018

- NOBCChE faculty early career award

National Science Foundation CAREER Award 2017

Oak Ridge Associated Universities (ORAU) Ralph E. Powe Award 2015

Carl Storm Underrepresented Minority (CSURM) Fellowship 2013

- Financial support to attend the 2013 Physical Organic Chemistry Gordon Research Conference; selected speaker

5th Annual National Science Foundation (NSF) Future Faculty Workshop 2012

- Selected and invited scholar

Dow Chemical Company B. E. S. T. Symposium, Invited scholar 2012

First Generation Ph.D. Scholar, Fellowship recipient 2008-2012

Service

ACS Omega, Associate editor 2023

ACS Applied Polymer Materials, Editorial advisory board 2023

OSU Chemistry Bridge, Mentor and advisor	2022
OSU NOBCChE, OSU co-advisor	2022
Regional NOBCChE Meeting Committee, Co-organizer	2022
Programming Committee Division of Polymeric Materials Science and Engineering, Co-Chair	2021
Journal of Physical Organic Chemistry, Editorial advisory board	2021
ACS Omega, Editorial advisory board	2021
University Faculty Representative Federal Demonstration Partnership	2021
Member at Large American Chemical Society Colloid and Surface Chemistry Division	2020
American Association for the Advancement of Science, Member	2020
Women in Supramolecular Chemistry, Advisory board	2020
NSF Future Faculty Workshop in Soft Matter, Mentor	2019
Member at Large American Chemical Society PMSE Division	2019
Sigma Xi Scientific Research Honor Society, Member	2019
Operation ICB (I Can Be), Program coordinator	2015
University Chapter of the National Organization of Black Chemists and Chemical Engineers (NOBCChE), UM co-advisor	2015
Society of STEM Women of Color, Inc., Member	2015
Local Section American Chemical Society (ACS) Governance, Secretary	2014-2017
American Chemical Society (ACS), Member	2012

Technical Reviewing

Molecular Foundry, Lawrence Berkeley National Laboratory
National Institute of Health (NIH)
American Chemical Society PRF
ADMIRE Marie Skłodowska-Curie Action COFUND in Advanced Materials Research
National Aeronautics and Space Administration (NASA)
National Science Foundation, Macromolecular, Supramolecular and Nanochemistry (MSN) program and Division of Materials Research (DMR)
Journal of Polymer Science, Part A: Polymer Chemistry, ACS Applied Materials & Interfaces, Polymer Chemistry, Journal of Materials Chemistry C, Crystal Growth and Design, and Frontiers Chemistry (Supramolecular)
American Chemical Society PRF

Publications (Total 49)

1. A. Kulkarni, M. L. Yaddehige, D. J. Cooke, C. M. Hamadani, A. S. Flynt, E. E. L. Tanner, E. L. Que, **D. L. Watkins**, Multifunctional Fluorinated Copolymer Nanoparticles via a Cationic Dendritic-Based Macromolecular RAFT-CTA. Macromol. Chem. Phys. 2024, 2400354. DOI: 10.1002/macp.202400354
2. Green, K. A.; Kulkarni, A.; Jankoski, P. E.; Newton, T. B.; Clemons, T. D.; **Watkins, D. L.**, Morgan, S. E., Biocompatible Glycopolymer-PLA Amphiphilic Hybrid Block Copolymers with Unique Self-Assembly, Uptake, and Degradation Properties. Biomacromolecules, 2024, DOI:10.1021/acs.biomac.4c00885
3. Mukherjee, S.; Kulkarni, A.; Holbrook, J. H.; Dasanayake, G. S.; Hu, D.; Tanner, E. E. L.; Hummon, A. B.; and **Watkins, D. L.**, Uptake of Self-Assembling Amphiphilic Tryptophan-Based Polymer Nanoparticles in Three-Dimensional Cell Culture Models. ACS Appl. Nano Mater., 2024, DOI: 10.1021/acsanm.4c04589

4. Sparks, N. E.; Smith C.; Stahl T.; Hamadani, C. M.; Lambert, E.; Hammer, N. I.; Sokolov A. Y. Fitzkee, N. C.; Tanner, E. E. L.; **Watkins, D. L.**, Multifunctional NIR-II Emissive Thienothiadiazole (TTD)-based Fluorophores and Nanoparticles with Dual Imaging and Photothermal Properties. J. Mater. Chem. C 2024, DOI: 10.1039/D3TC04747D.

5. Sparks, N. E.; Vijayan, S. M.; Roy, J. K.; Dorris, A.; Lambert, E.; Karunathilaka, D.; Hammer, N. I.; Leszczynski, J.; **Watkins, D. L.**, Synthesis and Characterization of Novel Thienothiadiazole-Based D−π–A−π–D Fluorophores as Potential NIR Imaging Agents. ACS Omega 2023, DOI: 10.1021/acsomega.3c02602.

6. Edgecomb, S. X.; Hamadani, C. M.; Roberts, A.; Taylor, G.; Merrell, A.; Suh, E.; Yaddehige, M. L.; Chandrasiri, I.; **Watkins, D. L**.; Tanner, E. E. L., Investigation of Physicochemical Drivers Directing Ionic Liquid Assembly on Polymeric Nanoparticles. Electrochem. Sci. Adv. 2023, DOI: 10.1002/elsa.202300013.

7. Ranathunge, T.A.; Curiac C.; Green, K. A.; Kolodziejczyk, W.; Hill, G.; Morgan, S.; Delcamp, J. H.; and **Watkins,D. L.** "Heteroacene-Based Polymer with Fast-Switching Visible–Near Infrared Electrochromic Behavior," ACS Appl. Mater. Interfaces, 2023, DOI: 10.1021/acsami.2c21111

Prior to OSU

1. Qi, Y; Yaddehige, M. L; Green, K.; Moore, J.; Jha, S.; Ma, G.; Wang, C.; **Watkins, D. L.**; Gu, X.; Patton, D.; Morgan, S.; Dai, Q., "Perovskite Films Passivated by a Dendrimer Toward High Efficiency and High Stability Devices". J. Power Sources. 2022. DOI: 10.1016/j.jpowsour.2022.231518

2. Hamadani, C. M.; Chandrasiri, I.; Yaddehige, M. L; Dasanayake, G. S.; Owolabi, I.; Flynt, A.; Hossain, M.; Liberman, L.; Lodge, T. P.; Werfel, T. A.; **Watkins, D. L.**; Tanner, E. E. L., "Improved Nanoformulation and Bio-functionalization of Linear-Dendritic Block-co-Polymers with Biocompatible Ionic Liquids ". Nanoscale 2022. DOI: 10.1039/d2nr00538g

3. Sparks, N.; Dorris, A.; Vijayan, Vijayan, S. M.; Chandrasiri, I.; Zia, M. F.; Hammer, N. I.; Flynt, A.; **Watkins, D. L.**, "Amphiphilic Self-assembling Isoindigo-based Donor-Acceptor Fluorophore for Near-infrared Bioimaging Applications". Mol. Syst. Des. Eng. 2022, DOI: 10.1039/d2me00014h

4. Chandrasiri, I.; Yaddehige, M. L; Li, B; Sun, Y; Meador, W.; Dorris, A.; Zia, M. F.; Hammer, N. I.; Flynt, A.; Delcamp, J. H.; Davis, E.; Lippert, A.; and **Watkins, D. L.** "Crosslinking PCL-PAMAM Linear Dendritic Block Copolymers (LDBC) for Theranostic Nanomedicine," ACS App. Poly. Mater., 2022, DOI: 10.1021/acsapm.1c01131

5. Don, R. W.; Dowell, T. J.; Simms, B. L.; **Watkins, D. L.**; Wipf, D. O.; and Scott, C.N. "Polyrhodamine: A pH-Responsive Redox Stable Conducting Polyelectrolyte," Polym. Chem., 2021, DOI: 10.1039/D1PY01474A.

6. Ndaleh, D.; Smith, C.; Yaddehige, M. L.; Shaik, A.; **Watkins, D. L.**; Hammer, N. I.; Delcamp, J. H. "Shortwave Infrared Absorptive and Emissive Pentamethine-Bridged Indolizine Cyanine Dyes," J. Org. Chem., 2021, DOI: 10.1021/acs.joc.1c01908.

7. Chatterjee, S.; Meador, W.; Smith, C.; Chandrasiri, I.; Zia, M. F.; Dorris, A.; Flynt, A.; **Watkins, D. L.**; Hammer, N. I.; Delcamp, J. H. "SWIR Emissive RosIndolizine Dyes and Nanoencapsulation of the Dyes in Water Soluble Dendrimers," RSC Adv, 2021, 10.1039/d1ra05479a.

8. Ranathunge, T. A.; Yaddehige, M. L; and **Watkins, D. L.** "Heteroacene-Based Amphiphile as a Molecular Scaffold for Bioimaging Probes," Front. Chem.: Suprastars of Chemistry Edition, 2021, 10.3389/fchem.2021.729125.

9. Simms, B. L.; Chandrasiri, I.; Rieger, W. D.; Yaddehige, M. L; Williams, J. S. D.; and **Watkins, D. L.** "Physicochemical Properties and Bio-Interfacial Interactions of Surface Modified PDLLA-PAMAM Linear Dendritic Block Copolymers (LDBCs)," J. Polym. Sci., 2021, DOI: 10.1002/pol.20210448.

10. Ranathunge, T. A.; Nirmani, L. P. T.; Nelson, T. L.; and **Watkins, D. L.** "Benzodithiophene-S,S-tetraoxide (BDTT) as an Acceptor Towards Donor-Acceptor (D-A) Type Semiconducting Electropolymers," ChemElectroChem, 2021, DOI: 10.1002/celc.202100219.

11. Vijayan, S. M.; Sparks, N.; Roy, J. K.; Smith, C.; Tate, C.; Hammer, N. I.; Leszczynski, J.; and **Watkins, D. L.** "Evaluating Donor Effects in Isoindigo Based Small Molecular Fluorophores," J. Phys. Chem. A., 2020, DOI:10.1021/acs.jpca.0c07796.

12. Yaddehige, M. L.; Chandrasiri, I.; Kotha, A.; Barker, A.; Simms, B. L.; Williams, J. S. D.; Abebe, D. G.; Kucheryavy, P.; Chougule, M. B.; and **Watkins, D. L.** "Cationic, Anionic and Neutral Functionalized PAMAM - Fatty Acid Amphiphilic Janus Dendrimers for Therapeutic Applications," ChemNanoMat., 2020, DOI:10.1002/cnma.202000498.

13. Sparks, N.; Ranathunge, T. A.; Karunathilaka, D.; Tate, C. M.; Delcamp, J. H.; Rajapakse, R. M. G.; and **Watkins, D. L.** "Achieving Complex Isoindigo-based Donor-Acceptor (D–A) Type Copolymeric Materials Via Electro-Copolymerization," ChemElectroChem, 2020, DOI: 10.1002/celc.202000897

14. Chandrasiri, I.; Abebe, D. G.; Yaddehige, M. L.; Williams, J. S. D.; Zia, M. F.; Dorris, A.; Barker, A.; Simms, B. L.; Parker, A.; Le, N.; Gayton, J. N.; Hammer, N. I.; Flynt, A.; Delcamp, J. H.; and **Watkins, D. L.**, "Self-Assembling PCL-PAMAM Linear Dendritic BlockCopolymers (LDBCs) for Bioimaging and Phototherapeutic Applications," ACS Appl. Bio Mater., 2020, DOI: 10.1021/acsabm.0c00432

15. Ranathunge, T. A.; Ngo, D.; Karunathilaka, D.; Attanayake, N. H.; Chandrasiri, I.; Delcamp, J. H.; Rajapakse, R. M. G.; and **Watkins, D. L.** "Hierarchical Structures of Complex Electronically Conducting Organic Polymers Via One-Step Electro-Polymerization," J. Mater. C., 2020, DOI: 10.1039/c9tc06945c

16. Balasubramaniam, S.; May, X., Rivas, F., Dodson, K., Vijayan, S. Adhikari, S., **Watkins, D. L.**, Stoddard, S. "Design and Synthesis of Diazine-based Panobinostat Analogues for HDAC8 Inhibition," Beilstein J. Org. Chem., 2020, 16, 628–637, DOI:10.3762/bjoc.16.59

17. Stoddard, S. V., Dodson, K., Adams, K., **Watkins, D. L.**, "In silico Design of Novel Histone Deacetylase 4Inhibitors: Design Guidelines for Improved Binding Affinity," Int. J. Mol. Sci. 2020, DOI: 10.3390/ijms21010219

18. Ranathunge, T. A.; Ngo, D.; Attanayake, N. H.; Karunathilaka, D.; Delcamp, J. H.; Rajapakse, R. M. G.; and **Watkins, D. L.** "Radically Accessing D–A Type Ambipolar Copolymeric Materials with Intrinsic Electrical Conductivity and Visible–Near Infrared Absorption Via Electro-Copolymerization," Macromol. Chem. Phys., 2019, 220, 1900289, DOI: 10.1002/macp.201900289

19. Steen, A. E., Ellington, T. L., Shuford, K. L., Tschumper, G. S., **Watkins, D. L.** and Hammer, N. I. "A Raman Spectroscopic and Computational Study of New Aromatic Pyrimidine-Based Halogen Bond Acceptors," Inorganics: Special Issue on Halogen Bonding, 2019, 7(10), 119, DOI: 10.3390/inorganics7100119

20. Steen, A; Ellington, T. L.; Nguyen, S. T.; Balasubramaniam, S.; Chandrasiri, I.; Delcamp, J. H.; Tschumper, G. S.; Hammer, N. I.; **Watkins, D. L.** "Probing the Photophysical Behavior of Furan- and Thiophene-Containing Bispyridyl Oligomers via Spectroscopic and TD-DFT Methods," J. Phys. Chem. C. 2019, DOI: 10.1021/acs.jpcc.9b01510

21. Chandrasiri, I.; Abebe, D. G.; Gupta, S.; Williams, J. S. D.; Rieger, W. D.; Simms, B. L.; Noh,Y.; Payne, M. E.; Fortenberry, A.; Smith, A.; Lee, B.; Grayson, S. M.; Schneider, G. J. and **Watkins, D. L.**, "Synthesis and Characterization of PAMAM-Polylactide "Janus-type" Linear-Dendritic Hybrids." J. Polym. Sci. A, 2019, DOI: 10.1002/pola.29409

22. Johnson, S. N.; Ellington, T. L.; Nevarez, J.; Ngo, D.; Sparks, N.; Rheingold, A. L.; **Watkins, D. L.** and Tschumper, G. S. "Probing Non-covalent Interactions Driving Molecular Assembly in Organo-electronic Building Blocks," CrystEngComm., 2019, DOI: 10.1039/C9CE00219G.

23. Rajapakse, R. M. G.; Attanayake, N. H.; Karunathilaka, D.; Steen, A. E., Hammer, N. I.; Strongin, D. R.; and **Watkins, D. L.** "Advances in Electro-copolymerization of NIR Emitting and Electronically Conducting Block Copolymers" J. Mater. C. (Communications), 2019, DOI: 10.1039/C8TC06331A

24. Ranathunge, T. A.; Karunaratne, D.; Rajapakse, R.; **Watkins, D.L.** "Doxorubicin Loaded Magnesium Oxide Nanoflakes as pH Dependent Carriers for Simultaneous Treatment of Cancer and Hypomagnesemia," Nanomaterials., 2019, DOI: 10.3390/nano9020208

25. May, X., Rivas, F., Dodson, K., Vijayan, S. Adhikari, S., Parker, K., **Watkins, D. L.**, Stoddard, S. "Design of Potent Panobinostat Histone Deacetylase Inhibitor Derivatives: Molecular Considerations for Enhanced Isozyme Selectivity between HDAC2 and HDAC8," Mol. Inf., 2018, DOI:10.1002/minf.201800080

26. Baumann, A., Cheema, H., Sabuj, M A., McNamara, L. E., Peddapuram, A., Zhang, Y., Nguyen, S. T., **Watkins, D. L.**, Hammer, N. I., Raib, N. and Delcamp, J. H. "Iodine Binding with Thiophene Versus Furan Based Dyes for DSC," Phys. Chem. Chem. Phys. 2018, DOI: 10.1039/c8cp03065k

27. Weldeab, A. O.; Starkenburg, D. J.; Steen, A., Abboud, K. A.; Xue, J.; Castellano, R. K.; and **Watkins, D. L.** "Hierarchical Assembly of a Low Energy Gap π-Conjugated Oligomer via Synergetic Halogen and Hydrogen Bonding," J. Mater. Chem. C. 2018, DOI: 10.1039/c8tc00074c

28. Nguyen, S. T., Ellington, T. L., Allen, K. E., Gorden, J. D., Rheingold, A. L., Tschumper, G. S., Hammer, N. I., and **Watkins, D. L.** "Systematic Experimental and Computational Studies of Substitution and Hybridization Effects in Solid-State Halogen Bonded Assemblies," Cryst. Growth Des., 2018, DOI: 10.1021/acs.cgd.8b00398

29. Cheema, H.; Peddapuram, A.; Adams, R.; McNamara, L.; Hunt, L.; Le, N.; **Watkins, D. L.**; Hammer, N. I.; Schmehl, R.; Delcamp, J. "Molecular Engineering of NIR Absorbing Thienopyrazine Double Donor Double Acceptor Organic Dyes for DSCs". J. Org. Chem. 2017, DOI: 10.1021/acs.joc.7b01750.

30. Zhang, Y.; Autry, S.; McNamara, L.; Nguyen, S.; Le, N.; Brogdon, P.; **Watkins, D. L.**; Hammer, N.I.; Delcamp, J. "Near-Infrared Fluorescent Thienothiadiazole Dyes with Large Stokes Shifts and High Photostability", J. Org. Chem. 2017, DOI: 10.1021/acs.joc.7b00422

31. Gindt, B. P.; Tang, Z.; **Watkins, D. L.**; Abebe, D. G.; Seo, S.; Tuli, S.; Ghassemi, H.; Zawodzinski, T. A.; Fujiwara, T. “Effects of Sulfonated Side Chains Used in Polysulfone- based PEMs for VRFB Separator”, J. Membrane Sci. 2017, DOI: 10.1016/j.memsci.2017.03.013.
32. Ellington, T.L.; Reves, P.L.; Simms, B.L.; Wilson, J.L.; **Watkins, D. L.**; Tschumper, G.S.; Hammer, N.I. "Quantifying the Effects of Halogen Bonding by Haloaromatic Donors on the Acceptor Pyrimidine”, Phys. Chem.Chem. Phys. 2017, DOI: 10.1002/cphc.201700114
33. Nguyen, S.T.; Rheingold, A.; Tschumper, G. S.; **Watkins, D. L.** “Elucidating the Effects of Fluoro and Nitro Substituents on Halogen Bond Driven Assemblies of Pyridyl-capped π- Conjugated Molecules”, Cryst. Growth Des. 2016, DOI: 10.1021/acs.cgd.6b01321

34. Albers, T.; **Watkins, D. L.**; Gameiro, A.; Povstyanoy, V. y.; Povstyanoy, M.; Lebedyeva, I., Benzotriazole-Based Strategies Toward Peptidomimetics, Conjugates, and Other Peptide Derivatives. In Topics in HeterocyclicChemistry, Springer Berlin Heidelberg: 2015; 1-47.

35. Wilson, J.; Williams, J. S. D.; Petkovsek, C.; Reves, P.; Jurss, J. W.; Hammer, N. I.; Tschumper, G. S.; **Watkins, D. L.** “Synergistic Effects of Halogen Bond and π-π Interactions in Thiophene-based Building Blocks”, R. Soc. Chem. Adv. 2015, DOI: 10. 1039/C5RA16680B.

Prior to UM

1. Shewmon, N. T.; **Watkins, D. L.**; Galindo, J.; Bou Zerdan, R.; Chen, J.; Keum, J.; Roitberg, A. E.; Xue, J.; Castellano, R. K. “Enhancement in Organic Photovoltaic Efficiency through the Synergistic Interplay of Molecular Donor Hydrogen Bonding and π-Stacking”, Adv. Funct. Mater. 2015, 25, 5166-5177. DOI: 10.1002/adfm.201501815
2. Xueying, Z.; Cruz, J. F.; **Watkins, D. L.**; Xue, J.; Roitberg, A. E.; Castellano, R. K.; Perry,S. S. “Hydrogen Bond Directed Assembly of Oligothiophene/fullerene Superstructures on Au”, Org. Electron. 2015, 19, 61-69. DOI: 10.1016/j.orgel.2015.01.022
3. Schulze, B. M.; **Watkins, D. L.**; Zhang, J.; Ghiviriga, I.; Castellano, R. K. “Estimating the Shape and Size of Supramolecular Assemblies by Variable Temperature Diffusion Ordered Spectroscopy”, Org. Biomol. Chem. 2014, 12, 7932-7936. DOI: 10.1039/C4OB01373E
4. Schulze, B. M.; Shewmon, N. T.; Zhang, J.; **Watkins, D. L.**; Mudrick, J. P.; Cao, W.; Bou Zerdan, R.; Quartararo, A. J.; Ghiviriga, I.; Xue, J.; Castellano, R. K. “Consequences of Hydrogen Bonding on Molecular Organization and Device Performance in Molecular Organic Photovoltaic Cells”, J. Mater. Chem. A. 2014, 2, 1541-1549. DOI: 10.1039/C3TA13529B
5. **Watkins, D. L.**; Fujiwara, T. “Bis-Spironaphthooxazine Based Photochromic Polymer Materials”, J. Mater. Chem. C. 2013, 1, 506-514. DOI: 10.1039/C2TC00098A
6. **Watkins, D. L.**; Fujiwara, T. “Synthesis, Characterization, and Solvent-Independent Photochromism of Spironaphthooxazine Dimers”, J. Photochem. Photobiol. A: Chem. 2012, 228, 51-59.
7. Kumar, S.; **Watkins, D. L.**; Fujiwara, T. “Tailored Spirooxazine Dimer as a Photoswitchable Binding Tool”, Chem. Commun. 2009, 28, 4369-4371.

Presentations and Lectures (Total 58)

Formal Conference Presentations

1. Amphiphilic Dendritic Hybrid Block Copolymers (HBCS) For Theranostic Nanomedicine; 18th Pacific Polymer Conference, June 18-23, 2023
2. Self-Assembling pH-responsive Block Copolymers as Nanocarriers for On-Off Emissive Dyes; Artificial Molecular Switches and Motors Gordon Conference, June 18-23, 2023
3. NIR-II Emissive Fluorophores and Nanoparticles for Dual Fluorescence Bioimaging and Photothermal Therapy Applications; 15th International Symposium on Functional pi-Electron System (Fpi15), Raleigh-Durham, NC, June 17-2, 2023
4. Amphiphilic Dendritic Hybrid Block Copolymers (HBCs) for Biomedical Applications; Spring ACS National Meeting, Indianapolis, IN, March 26-30, 2023
5. Multifunctional Supramolecular Nanoparticles for Theranostic Nanomedicine; Spring ACS National Meeting, Indianapolis, IN, March 26-30, 2023
6. Supramolecular Strategies for Theranostics Polymer Nanocarriers, International Materials Research Congress, Cancun, Mexico, Aug 14-19, 2022
7. Supramolecular Polymer Hybrids for Theranostic Nanomedicine, Empowering Women in Organic Chemistry

(EWOC), Pfizer, June 24, 2022

8. Supramolecular Crosslinking Strategies for Theranostics Polymer Nanocarriers, 16th International Symposium of Macrocyclic and Supramolecular Chemistry (ISMSC2022), Eugene, OR, June 19-24, 2022
9. A Curious Mind and the Wonders Behind the Number 5, 2022American Chemical Society Women Chemists Committee's (WCC) Rising Stars Symposium, San Diego, CA, March 22, 2022
10. Supramolecular Crosslinking Strategies for Polylactone-Based Nanocarriers; Polymer-Mediated Supramolecular Assemblies, IUPAC CCCE 2021, Zoom Talk, Aug 5, 2021
11. Supramolecular Crosslinking Strategies for Polylactone-Based Nanocarriers; Spring 2021 ACS National Meeting, Zoom Talk, April 2, 2021
12. A Spotlight on Supramolecular Chemistry in Nanomedicine; University of Mississippi Student Members of theAmerican Chemical Society (SMACS), Zoom Talk, Sept 2, 2020
13. Analysis of Structure-Property Relationship in "Janus-Type" Linear-Dendritic Block Copolymers (LDBCs) with Variations in Hydrophobicity; Fall 2019 ACS National Meeting, San Diego, CA, Aug 25-29, 2019
14. Synthesis and Properties of "Janus-Type" Linear-Dendritic Block Copolymers (LDBCs) for Therapeutic Applications; GPC 2019; The Polymer and Biomacromolecular Applications and Characterization Conference, New Orleans, LA, July 10-11, 2019
15. Systematic Experimental and Computational Studies of Solid-State Halogen Bonded Assemblies for Organic Optoelectronics; Physical Organic Gordon Conference, Holderness, NH, June 23-28, 2019
16. Synthesis and Properties of "Janus-Type" Linear-Dendritic Block Copolymers (LDBCs) for Therapeutic Applications; Polymer-Based Gene & Drug Delivery Systems Symposium; 2019 Spring ACS National Meeting, Orlando, FL, March 30-April 3, 2019
17. Heterobifunctional Linear-Dendritic Block Copolymers (LDBCs) as Multifunctional Carriers for Targeted Drug Therapy; 256th ACS National Meeting, Boston, MA, Aug 19-23, 2018
18. Synthesis and Properties of "Janus-Type" Linear-Dendritic Block Copolymers (LDBCs) for Therapeutic Applications; 256th ACS National Meeting, Boston, MA, Aug 19-23, 2018
19. Systematic Experimental and Computational Studies of Solid-State Halogen Bonded Assemblies for Organic Optoelectronics; 3rd International Symposium on Halogen Bonding (ISXB3), Halogen Bonding Conference, Greenville, SC, June 10-14, 2018
20. Elucidating the Synergic Effects of Sigma-Hole Interactions and pi-pi Stacking within Organic Electronic Materials for Applications in OFETs and OPVs; Cope and Molecules to Functional Molecular Materials Symposium at the 68th SERMACS Conference, Columbia, SC, Oct 23-26, 2016
21. Design and Synthesis of Supramolecular Janus-Type Dendrimers as Efficient Therapeutic Carriers; Block Copolymer Synthesis and Applications Symposium at the 67th SERMACS Conference, Memphis, TN, Nov 4-7, 2015
22. Supramolecular Approaches Towards Organic Electronic Devices; Conjugated Organic Materials for Energy Storage, Energy Conversion and Charge Transport Symposium at the 66th SERMACS Conference, Nashville, TN, Oct 16-19, 2014

Conference Poster Presentations

1. Rational Design of Hybrid Oligomers and Halogen Bond Driven Self-Assembly for Organic Electronic Devices, Gordon Research Conference on Physical Organic Chemistry, Holderness, NH, June 21-26, 2015

Invited Seminar Lectures

1. Supramolecular Polymer Hybrids: Linear-Dendritic Block Copolymers (LDBCs) as Novel Strategies for Theranostic Nanomedicine, University of Wisconsin Madison, Department of Chemistry, Nov 9-11, 2022
2. Supramolecular Polymer Hybrids: Linear-Dendritic Block Copolymers (LDBCs) as Novel Strategies for Theranostic Nanomedicine, Temple University, Department of Chemistry, Sept 1, 2022
3. Supramolecular Polymer Hybrids: Linear-Dendritic Block Copolymers (LDBCs) as Novel Strategies for Theranostic Nanomedicine, Southern Methodist University, Department of Chemistry, April 7-8, 2022
4. Supramolecular Polymer Hybrids: Linear-Dendritic Block Copolymers (LDBCs) as Novel Strategies for Theranostic Nanomedicine, University of Washington, Department of Chemistry, Feb 3, 2022
5. Janus-type Block Copolymers: Supramolecular Strategies to Theranostic Nanomedicine"; University of Florida POLY PMSE Student Chapter Summer Seminar Series, Zoom Talk, July 13, 2021
6. Janus-type Block Copolymers: Supramolecular Strategies to Theranostic Nanomedicine"; Ohio State University,

Zoom Talk, April 21, 2021

7. Janus-type Block Copolymers: Supramolecular Strategies to Theranostic Nanomedicine"; University of Maryland College Park, Zoom Talk, Feb 25, 2021
8. Janus-type" Block Copolymers: Supramolecular Strategies to Theranostic Nanomedicine"; Virginia Polytechnic Institute and State University, Zoom Talk, Feb 12, 2021
9. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; University of Florida, Zoom Talk, Oct 15, 2020
10. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; University of Southern Mississippi, Zoom Talk, Oct 14, 2020
11. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; University of New Hampshire, Zoom Talk, Sept 29, 2020
12. A Spotlight on Supramolecular Chemistry in Nanomedicine" George Mason University, Zoom Talk, Sept 18, 2020
13. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; University of Windsor, Canada, Zoom Talk, Sept 16, 2020
14. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; Massachusetts Institute of Technology, Zoom Talk, Aug 25, 2020
15. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; Dartmouth College, Hanover, NH, Feb 27, 2020
16. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; The Ohio State University, Columbus, OH, Feb 21, 2020
17. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; Louisiana State University, Baton Rouge, LA, Jan 31, 2020
18. Janus-type Linear-Dendritic Block Copolymers (LDBCs) and Dendrimers for Practical Applications in Nanomedicine; UMass Amherst, Amherst, MA, Jan 24, 2020
19. Designing Janus-type Linear Dendritic Block Copolymers as Next Generation Biomaterials; John Hopkins University, Baltimore, MD, Oct 18, 2019
20. Designing Janus-type Linear Dendritic Block Copolymers as Next Generation Biomaterials; Texas A&M University, College Station, TX, Sept 17, 2019
21. Supramolecular Approaches to Advanced Functional Materials; Kansas State University, Manhattan, KS, Sept 12, 2019
22. Supramolecular Approaches to Next Generation Biomaterials, Pharmacy Research Seminar, University of Mississippi School of Pharmacy, University, MS, Apr 25, 2019
23. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, Texas Technological University, Lubbock, TX, Mar 27, 2019
24. Supramolecular Approaches to Next Generation Biomaterials, Graduate Polymer Research Seminar, Georgia Institute of Technology, Atlanta, GA, Mar 15, 2019
25. Supramolecular Approaches to Advanced Functional Materials, Organic Chemistry Seminar, University of Georgia, Athens, GA, Mar 7, 2019
26. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, Mississippi State University, Starkville, MS, Feb 8, 2019
27. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, University of Virginia, Charlottesville, VA, Apr 20, 2018
28. Supramolecular Approaches to Biomaterials, Chemistry Seminar, University of Memphis, Memphis, TN, Nov 9, 2018
29. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, University of Virginia, Charlottesville, VA, Apr 20, 2018
30. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, University of Alabama, Tuscaloosa, AL, Sept 27, 2018
31. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, Tulane University, New Orleans, LA Apr 9, 2018

32. Supramolecular Approaches to Advanced Functional Materials, Chemistry Seminar, Auburn University, Auburn, AL, Feb 8, 2018
33. Supramolecular Approaches to Advanced Functional Materials, Macromolecular Chemistry Seminar, Louisiana State University, Baton Rouge, LA, Apr 22, 2016
34. Controlled Arrangement of pi-Conjugated Building Blocks via Non-covalent Interactions, Chemistry Seminar, Jackson State University, Jackson, MS Oct 30, 2015
35. Controlled Arrangement of pi-Conjugated Building Blocks via Non-covalent Interactions, Chemistry Seminar, University of Memphis, Memphis, TN Feb 22, 2015

Mentoring

Postdoctoral Advising

Daniel G. Abebe	2015-2017	Senior Research Scientist, Dow Chemical
Sivaraman Balasubramaniam	2018-2019	Research Scientist, Bristol Myers Squibb
Anjua Kulkarni	2022-2024	
Sarasija Das	2023-2024	
Shiva Moaven	2024-	
Maria Priscila Quiñonez Angulo	2024-	

Thesis/Dissertation Advising

Jon Dal Williams	2014-2019	Research Scientist, Kebotix
Briana Simms	2016-2021	Assistant Professor, University of Cincinnati
Indika Chandrasiri	2016-2021	Associate Research Scientist, Thermofisher Scientific
Dilan Karunathilaka	2017-2022	Assistant Research Scientist, Thermofisher Scientific
Mahesh De Silva	2017-2022	Research Scientist, Intel
Sajith Vijayan	2017-2022	Assistant Research Scientist, Thermofisher Scientific
Tharindu Ranathunge	2018-2022	Senior Research Technologist, St. Jude Research Hospital
Nicholas Sparks	2018-2023	Postdoctoral Research Associate, University of Minnesota
Blaine Derbigny	2020-	
Angel Weather	2021-	
Thejana Gunathilake	2022-	
Mukherjee Shreyasi	2022-	
Maryam Ghazala	2022-	
Ioana Cosmin	2022-	

Thesis/Dissertation Committee – Christopher Mortensen, Meredith Rudich, Gaya Dasanayake, Mario Djugovski, Christine Hamadani, Ravindar Kaur, Jonathon Watson, Christine Curiac, Sarah Johnson, Yanbing Zhang, Alexandra Baumann, Sweta Adhikari, Adithya Peddapuram, Roberta Rodrigues, Tanya Jones, Michael Molnar, Matthew Dukes, April Steen, Kayla Milano, Keshia Dykes, Yusuke Takahashi

Undergraduate Research Supervision – Erin Hundall, Christina Wurm, Jamey Wilson, Ngoc Le, Suong Nguyen, Christopher Tate, Justin McCray, Sweta Adhikari, William Rieger, Nicholas Sparks, Pu Ouyang, Abigail Barker, Chinwe Udemgba, Azizah Parker, Jordan Varma, Rashandra Rankin, Brianna Sumler, Clarissa Prince, Sheng Wei Tang, Allison Rattey, Nimi Oyelese, Sydney Stewart, Regene Jarvis

High School Research Supervision – Zora Womack, Zaria Cooper, Alisha Burch, Violet Jira, Taniya Bland, Samantha Anderson, Mia Riddley, Shuchi Patel, Takiya Moore, Tia Wilson, Ayana Love

Teaching

Introduction to Physical Organic Chemistry (CHEM 6440)
Overview of advanced level chemical kinetic postulates and principles for studying reaction mechanism.

Organic Chemistry for Majors II (CHEM 2620)
Continuation from 2610, including aromatic systems, carboxylic acids, carboxylic acid derivatives, amines, carbon-carbon bond-forming reactions, polymers, carbohydrates and amino acids.

Elementary Organic Chemistry (CHEM 221 and 222)
An entry-level survey of modern organic chemistry including nomenclature, structure and bonding, and reactions of hydrocarbons and overview of natural and synthetic organic compounds.

Advanced Organic Chemistry: Structure and Mechanism (CHEM 527)

Course provides an advanced level understanding of physical chemical methods and theories regarding properties of organic molecules and the reactions/processes in which they take part. There is an emphasis on bonding and electronic structure theories, chemical kinetics, molecular structure and thermodynamics.

Advanced Organic Chemistry: Structure and Synthesis (CHEM 528)

Course provides a review of basic reaction mechanisms, stereoelectronic effects, functional groups and acid-base chemistry. There is an emphasis on the writing of mechanisms using curved-arrow notation, bonding and electronic structure theories and named organic reactions.

Organic Spectroscopy and Mass Spectrometry (CHEM 563/525)
Course aims to provide an overview of spectroscopic methods and characterization techniques that are used to elucidate the structure of complex organic molecules.