

Laura Marie Murphy

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EDUCATION

University of Washington Chemistry PhD <i>National Defense Science & Engineering Research Fellow</i>	Seattle, WA Expected August 2018
Pacific Lutheran University BS Chemistry (Biochemistry Emphasis), BA Physics, Mathematics Minor	Tacoma, WA May 2013

AWARDS AND FELLOWSHIPS

Best Oral Presentation at the International Symposium on Olefin Metathesis	July 2017
National Defense Science & Engineering Graduate Research Fellowship	2015 – Present
Kwiram/CCR Graduate Recruiting Fellowship	2013 – 2015
Dean's Scholarship at Pacific Lutheran University	2009 – 2013
University of Washington Department of Chemistry Graduate Student Merit Fellowship	March 2018

TEACHING ASSISTANT EXPERIENCE

University of Washington Department of Chemistry	September 2013 – June 2015
<ul style="list-style-type: none">• Chemistry 152: General chemistry lab and quiz section• Chemistry 241: Organic chemistry lab• Chemistry 242: Organic chemistry lab• Participated in Cottrell Scholars National Teaching Assistant Collaborative Workshop (May 2015)	

RESEARCH AND PROFESSIONAL EXPERIENCE

Start-Up Co-Founder: Boydston Chemical Innovations, Inc. Chief Technical Officer	Seattle, WA May 2017 – Present
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- Formed start-up to bring to market photoredox-mediated ring-opening metathesis polymerization (PhotoROMP), a metal-free method for production of industrially relevant ROMP polymers
- Interviewed perspective customers to learn their technical needs for high-performance thermoset products, technical manufacturing requirements, and their end-market uses
- Created budgets and contributed market research for grant applications, two of which have been awarded
- Developed and currently executing research plan to produce polymer on bench scale and consider pilot scale-up, to evaluate mechanical properties of injection-molded polymer, and to assess suitability of polymer product for end users

University of Washington Graduate Researcher (PhD Candidate)	Seattle, WA September 2013 – Present
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- Evaluated photo-oxidants for PhotoROMP and correlated efficacy with optical and redox properties
- Investigated functional group tolerance of PhotoROMP
- Determined PhotoROMP polymer stereochemistry using nuclear magnetic resonance spectroscopy
- Led two students in the synthesis of 2.8 kg of mechanochromic polycaprolactone, which was subsequently filamentized by the company Functionalize and is now in beta testing in 3D printing programs

The Boeing Company BR&T Chemical Technologies Specialty Coatings Intern	Seattle – Tukwila, WA June 2011 – August 2011; June 2013 – September 2013
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- Co-invented method for the preparation of composites of silicon-oxy-carbide using atmospheric plasma deposition towards thermo-oxidative barriers and adhesion promoters
- Established a polishing method for in-field repairs of cracks and chips in airplane windows
- Tested and certified a variety of coating (decals and paints)

University of Arizona Department of Chemistry Summer Undergraduate Research Student	Tucson, AZ June 2012 – August 2012
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- Prepared ITO/ZnO/C₆₀/Al₂O₃/Al electron-only device to evaluate charge collection at the ZnO/C₆₀ interface
Used current-voltage to assess device function and atomic force microscopy to evaluate causes of shorting

Pacific Lutheran University Undergraduate Researcher	Parkland, WA January 2012 – May 2012; September 2012 – January 2013
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- Synthesized CdSe Wurtzite nanocrystals (NCs) and characterized NCs using UV/Visible and photoluminescence spectroscopy to evaluate solution and ligand effects on nanocrystal photoluminescence

ADDITIONAL EXPERIENCE

Lab Safety Officer: Boydston Group, University of Washington Department of Chemistry May 2014 – December 2016

- Coordinated lab safety to ensure compliance with EH&S standards in a synthetic research lab

STEM Outreach

Mathematics Engineering Science Achievement (MESA)

November 2011 – May 2012

Tacoma chapter at Pacific Lutheran University

- Organized and led hands-on activities and tutored math to introduce students to STEM concepts and career opportunities

Boydston Group Outreach Volunteer Experiences:

2014 – Present

- Yakima Valley Science and Engineering Festival: Presented 3D printing demo & polymer chemistry career booth
- UW STEM Upward Bound Program: Organized and led a problem-based learning module
- Sammamish High School: Organized and led a hands-on problem-based learning modules, presented a polymer chemistry booth at career fairs, delivered chemistry careers presentation at Sammamish Leads

Mentoring

September 2014 – Present

- Mentored three undergraduate research students in the lab on projects, technical skills, and career development

Patent Applications

- Tsotsis, T. A.; Ranade, A. N.; Matos, M. A.; Murphy, L. M. Composites Including Silicon-Oxy-Carbide Layers and Methods of Making the Same. U. S. Patent Appl. 2013/0288044, Mar. 20, 2014.
- Boydston, A. J.; Ogawa, K.; Goetz, A. E.; Dunford, D.; Murphy, L. Methathesis Polymerization Methods. International Patent Appl. WO 2016/036976 A1, Mar. 10, 2016.

Publications

- Pascual, L. M. M.; Goetz, A. E.; Roehrich, A. M.; Boydston, A. J. Investigation of Tacticity and Living Characteristics of Photoredox-Mediated Metal-Free Ring-Opening Metathesis Polymerization. *Macromol. Rapid Commun.* **2017**, *38*, 1600766.
- Goetz, A. E.; Pascual, L. M. M.; Dunford, D. G.; Ogawa, K. A.; Knorr, D. B., Jr.; Boydston, A. J. Expanded Functionality of Polymers Prepared Using Metal-Free Ring-Opening Metathesis Polymerization. *ACS Macro Lett.* **2016**, *5*, 579-582.
- Pascual, L. M. M.; Dunford, D. G.; Goetz, A. E.; Ogawa, K. A.; Boydston, A. J. Comparison of Pyrylium and Thiopyrylium Photooxidants in Metal-Free Ring-Opening Metathesis Polymerization. *Synlett.* **2016**, *27*, 759-762.

Conference Oral Presentations

- "Photoredox-Mediated Ring-Opening Metathesis Polymerization: Methods, Scope, and Scalability." Pascual, L. M. M.; Goetz, A. E.; Dunford, D. G.; Ogawa, K. A.; Kensy, V. K.; Boydston, A. J. 233rd Electrochemical Society Meeting, Seattle, WA, May 23, 2018.
- "Photoredox-Mediated Ring-Opening Metathesis Polymerization: Methods, Scope, and Scalability." Pascual, L. M. M.; Goetz, A. E.; Dunford, D. G.; Ogawa, K. A.; Kensy, V. K.; Boydston, A. J. 255th American Chemical Society National Meeting, New Orleans, LA, March 20, 2018.
- "Photoredox-Mediated Ring-Opening Metathesis Polymerization." Pascual, L. M. M.; Ogawa, K. A.; Goetz, A. E.; Dunford, D. G.; Lu, P.; Alrashdi, N. M.; Boydston, A. J. International Symposium on Olefin Metathesis, Zurich, Switzerland, July 10, 2017.
- "Expanded Scope of Methodology and Polymer Functionality for Photoredox-Mediated Ring-Opening Metathesis Polymerization." Pascual, L. M. M.; Goetz, A. E.; Dunford, D. G.; Ogawa, K. A.; Boydston, A. J. Electrochemical Society PRiME, Honolulu, HI, October 4, 2016.
- "Photoredox Mediators for Metal-Free Ring-Opening Metathesis Polymerization." Pascual, L. M. M.; Dunford, D. G.; Goetz, A. E.; Ogawa, K. A.; Boydston, A. J. 252nd American Chemical Society National Meeting, Philadelphia, PA, August 23, 2016.
- "Photoredox-Mediated Ring-Opening Metathesis Polymerization: Methods and Functionality." Pascual, L. M. M.; Dunford, D. G.; Goetz, A. E.; Ogawa, K. A.; Boydston, A. J. Graduate Research Polymer Conference, Akron, OH, June 20, 2016.