

Kayla Chantel Brignac

Curriculum Vitae

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Career Objective

To understand the degradation and photochemistry of plastics and associated compounds in the environment by performing high-quality chemical analyses in order to preserve marine ecosystems.

Education

Master of Science in Polymer Science and Engineering

Aug. 2020-Present

P.C. Rossin College of Engineering and Applied Sciences

Advisor: Raymond Pearson

Lehigh University, Bethlehem, PA

and Sarah-Jeanne Royer

Overall GPA: 4.0

Bachelor of Science in Global Environmental Science; Minor in Chemistry

Aug. 2016-Fall 2018

School of Ocean, Earth Science, and Technology

Advisor: Jim Potemra and

University of Hawaii at Manoa, Honolulu, HI

Jennifer Lynch

Overall GPA: 3.53

Dean's List: Spring 2018, Fall 2017, Spring 2017, Fall 2016

University Transfer of Science

Aug. 2011-May 2016

Palomar College, San Marcos, CA

Overall GPA: 3.43

Dean's List: Spring 2016, Fall 2014, Spring 2014, Spring 2013

Professional Experience

Research Technician

Aug. 2020-Present

Center for Marine Debris Research

Supervisor: Jennifer Lynch

Hawaii Pacific University | The Ocean Cleanup

and Sarah-Jeanne Royer

- Responsible for designing, installing, and maintaining, experimental set-ups that hold plastic samples in nearshore Oahu marine waters and in flow-through outdoor tanks.
- Responsible for designing and developing polymer degradation science protocols and conducting polymer chemical testing on plastic samples collected from the field trials.
- Responsible for drafting written and oral reports of the experimental results through theses, publications, presentations at conferences, press releases, and reports to funders.
- Responsible for training lab members, maintaining a sample archive and database, preventative maintenance on laboratory equipment, and participating in education and outreach events

Research and Laboratory Manager | Education and Outreach Coordinator

Jan. 2020-Present

Center for Marine Debris Research

Supervisor: Brenda Jensen

Hawaii Pacific University | National Institute of Standards and Technology

and Jennifer Lynch

- Responsible for managing the daily operations of the Center for Marine Debris Research, Hawaii operations of the U.S. NIST Pacific Islands Biorepository Program, and providing technical expertise
- Responsible for student/member on-boarding, safety, instrument, and sample processing training, project supervision, and mentorship
- Responsible for laboratory, instrument, and equipment maintenance, ordering and restocking supplies,
- Perform sample collection, inventory and archiving of samples, laboratory and field research, data collection and analysis, scientific publications, conference presentations, and seminars

- Responsible for laboratory tours, classroom visits and lectures, and education and outreach activities/workshops for events and local schools across Oahu

Scientific Advisor and Educator Seed.World LLC	Jan. 2019-Present Founder: Ray Aivazian III
<ul style="list-style-type: none"> • Responsible for disseminating robust science regarding plastic pollution, sustainability, and Earth system processes to the public • Provide educational lectures, seminars, and demonstrations to local schools and international university groups across Oahu 	

Research Technician Education and Outreach Coordinator Center for Marine Debris Research Hawaii Pacific University National Institute of Standards and Technology	Oct. 2018-Jan 2020 Supervisor: Brenda Jensen and Jennifer Lynch
<ul style="list-style-type: none"> • Assist with the development and management of the Center for Marine Debris Research • Responsible for assisting with the Hawaii-based operations of U.S. NIST Pacific Islands Biorepository Program • Assist in BEMAST necropsies of sea turtles as well as sample collections, storage, inventory and archiving, transfer, and shipments for BEMAST, MMHSRP, and STAMP • Assist with student on-boarding, safety training, instrument training and maintenance, and project supervision • Responsible for coordinating education and outreach activities for events and local schools across Oahu 	

Conference Assistant Dissertation Symposium in Chemical and Physical Oceanography (DISCO/PODS)	Oct. 21-25, 2018 Supervisor: Chris Measures
<ul style="list-style-type: none"> • Assisted with preparation work (i.e. secretarial duties) required for the conference • Assisted with session management and technical equipment 	

Note Taker NOAA's Hawaii Marine Debris Action Plan Workshop (HI-MDAP)	Aug. 13-14, 2018 Supervisor: Mark Manuel
<ul style="list-style-type: none"> • Assisted the facilitator during breakout sessions to develop a 2-year action plan that supports the goals and strategies of the Hawaii Marine Debris Action Plan (HI-DAP) initiated by the National Oceanic and Atmospheric Administration (NOAA) • Took notes and assisted in leading discussions during the breakout sessions 	

Session Assistant 15 th Annual Asia and Oceania Geosciences Society	Jun. 03-08, 2018
<ul style="list-style-type: none"> • Assisted the session chair in running research conference sessions for Oceanography and Planetary Sciences • Assisted with technological equipment, timing presentations, and the following question/discussion segment 	

Summer Undergraduate Research Fellowship National Institute of Standards and Technology	May-Aug. 2018 Mentor: Jennifer Lynch
<ul style="list-style-type: none"> • First Project: Polymer identification of seafloor plastic marine debris collected near Oahu and Maui • Second Project: Validation of current analytical methods for multi-layer composite marine debris 	

Department Tutor School of Ocean, Earth Science, and Technology (SOEST), University of Hawaii at Manoa	Aug. 2017-Dec. 2017 Supervisor: Leona Anthony
<ul style="list-style-type: none"> • Tutored undergraduates within SOEST in mathematics, physics, and chemistry • Scheduled weekly tutoring sessions and group sessions for my students 	

Summer Undergraduate Research Fellowship National Institute of Standards and Technology	May-Aug. 2017 Mentor: Jennifer Lynch
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- First Project: Calculation of hook depths from longline fisheries to study the correlation between sea turtle capture depths and ingested marine debris plastic polymer densities
- Second Project: Polymer identification of plastic marine debris collected on beaches throughout the main Hawaiian Islands

Learning Assistant

Department of Physics and Astronomy, University of Hawaii at Manoa

Jan. 2017-Dec. 2017

Supervisor: Mark Slovak

- Undergraduate teaching assistant for mechanics, electromagnetism and optics
- Assist 20-40 students with challenging problems in a non-traditional classroom-based setting that centers around student involvement, interaction, and participation
- Presents mini lectures to lecture hall style classrooms on assigned topics

Laboratory Assistant

SOEST Laboratory for Analytical Biogeochemistry, University of Hawaii at Manoa

Sept. 2016-May 2017

Supervisor: Danielle Hull

- Responsible for receiving and processing incoming marine and freshwater sample sets
- Analyze samples for salinity via conductivity, chlorophyll a, total suspended solids, and pH
- Responsible for general housekeeping, acid washing, and creating solutions

Stock Room Assistant

Department of Chemistry, Palomar College

Oct. 2015-May 2016

Supervisor: Tsung Lee

- Assisted in the management of all laboratory classrooms, predominantly organic chemistry
- Responsible for the preparation of chemical solutions, hazardous waste organization for proper disposal, and maintaining laboratory equipment, instrumentation, and glassware

Publications

Kayla C. Brignac, Melissa Jung, Cheryl King, Sarah-Jeanne Royer, Lauren Blickley, Megan Lamson, Jim T. Potemra, Jennifer M. Lynch. 2019. Marine Debris Polymers on Main Hawaiian Island Beaches, Sea surface, and Seafloor. *Environmental Science and Technology*, 53(21), 12218-12226.

Jennifer M. Lynch, Raquel Corniuk, **Kayla C. Brignac**, Kellie Teague, Katherine Shaw. 2020. Characterization of Plastics Incorporated in a Polymer Reference Kit. Report of Analysis. U.S. Department of Commerce, National Institute of Science and Technology, Material Measurement Laboratory, Chemical Sciences Division.

Jens J. Currie, Stephanie H. Stack, **Kayla C. Brignac**, Jennifer M. Lynch. 2019. Nearshore sea surface macro marine debris in Maui County, Hawaii: Distribution, drivers, and polymer composition. *Marine Pollution Bulletin*, 138, 70-83.

Melissa R. Jung, George H. Balazs, Thierry M. Work, T. Todd Jones, Sara V. Orski, Viviana C. Rodriguez, Kathryn L. Beers, **Kayla C. Brignac**, K. David Hyrenbach, Brenda A. Jensen, Jennifer M. Lynch. 2018. Polymer Identification of Plastic Debris Ingested by Pelagic-phase Sea Turtles in the Central Pacific. *Environmental Science and Technology*. 52(20), 11535-11544.

Melissa R. Jung, F. D. Horgen, Sara V. Orski, Viviana Rodriguez Cardenas, Kathryn L. Beers, George H. Balazs, T. T. Jones, Thierry M. Work, **Kayla C. Brignac**, Sarah-Jeanne Royer, K. D. Hyrenbach, Brenda A. Jensen, Jennifer M. Lynch. 2018. Validation of ATR FT-IR to Identify Polymers of Plastic Marine Debris, Including Those Ingested by Marine Organisms. *Marine Pollution Bulletin*. 127: 704-716.

Kayla C. Brignac, Melissa R. Jung, Kevin O'Brien, James Morioka, Jennifer M. Lynch. In prep. Marine Debris Polymers in the Northwestern Hawaiian Islands. *To be submitted to Marine Pollution Bulletin*

Katherine Shaw, Joelle Marchiani, **Kayla C. Brignac**, Jennifer M. Lynch. In prep. Identification of Additives in Hawaiian Marine Debris using ATR-FTIR. *To be submitted to Environmental Science and Technology*

Jennifer M. Lynch, Wanda Weatherford, Rick Wagner, Melissa R. Jung, **Kayla C. Brignac**, Cheryl King. In prep. A Deep Dive into Polymer Identification Methods for Meso- to Microplastic Marine Debris.

Kerrianne O'Malley, Sheena Weller, Cheryl King, Angelica Moua, Kellie Teague, Melissa R. Jung, **Kayla C. Brignac**, Jennifer M. Lynch. In prep. Using polymer identification of plastic marine debris to monitor the effectiveness of Maui's polystyrene take-out container ban.

Abstracts

Jennifer M. Lynch, Katherine Shaw, Raquel Corniuk, **Kayla C. Brignac**, Kellie Teague. Material Standards for Microplastic Research. *Society of Environmental Toxicology and Chemistry*. Honolulu, HI. 16 March 2021.

Jennifer M. Lynch, **Kayla C. Brignac**, Melissa R. Jung, Joelle Marchiani, Raquel Corniuk, Cheryl King. Improved methods for polymer identification of weathered polyethylene pollution. *PacifiChem 2020*. Honolulu, HI. 15-20 December 2020.

Katherine Shaw, Joelle Marchiani, **Kayla C. Brignac**, Jennifer M. Lynch. Identification of Additives in Hawaiian Marine Debris using ATR-FTIR. *PacifiChem 2020*. Honolulu, HI. 15-20 December 2020.

Melissa R. Jung, **Kayla C. Brignac**, Kerrianne O'Malley, Sheena Weller, Cheryl King, Sarah-Jeanne Royer, Megan R. Lamson, Jens Currie, and Jennifer M. Lynch. Measuring Amounts, Sizes, and Types of Aquaculture Gear in Marine Debris in Hawaii. *Aquaculture America 2020*. Honolulu, HI. 9-12 February 2020.

Jennifer M. Lynch, Wanda Weatherford, Rick Wagner, Melissa R. Jung, **Kayla C. Brignac**, Cheryl King. A deep dive into polymer identification methods for Hawaiian beach plastic marine debris. *Society of Environmental Toxicology and Chemistry*. Toronto, Canada. 8-11 November 2019.

Sheena Weller, Cheryl King, Angelica Moua, Kellie Teague, **Kayla C. Brignac**, Melissa R. Jung, Jennifer M. Lynch. Using polymer identification of plastic marine debris to monitor the effectiveness of Maui's polystyrene take-out container ban. *Society of Environmental Toxicology and Chemistry*. Toronto, Canada. 8-11 November 2019.

Joelle Marchiani, **Kayla C. Brignac**, Jennifer M. Lynch. Mining Hawaiian Beach FTIR Spectra for Additives and Weathering Indicators. *NOAA/NIST Hawaii Marine Debris Action Plan Workshop*. Waimanalo, HI. 25-26 July 2019.

Sheena Weller, Joelle Marchiani, Kellie Teague, Angelica Moua, **Kayla C. Brignac**, Melissa R. Jung, Cheryl King, Jennifer M. Lynch. Identifying polymers of plastic marine debris to monitor the effectiveness of Maui's expanded polystyrene (EPS) foam food service container ordinance. *NOAA/NIST Hawaii Marine Debris Action Plan Workshop*. Waimanalo, HI. 25-26 July 2019.

Jennifer M. Lynch, Melissa R. Jung, **Kayla C. Brignac**, Ashok Deshpande, Bridget O'Donnell, Wanda Weatherford, Sarah-Jeanne Royer. Chemistry of Plastic Marine Debris. *NOAA/NIST Hawaii Marine Debris Action Plan Workshop*. Waimanalo, HI. 25-26 July 2019.

Dante Freeman, Ashok Deshpande, Jennifer Lynch, Nigel Lascelles, Davielle Drayton, **Kayla C. Brignac**, Melissa R. Jung, Dionne Hoskins-Brown. Comparing 2 methods to characterize the chemical components of marine plastic debris. *Association for the Sciences of Limnology and Oceanography 2019 Aquatic Sciences Meeting*. San Juan, Puerto Rico. 23 February-02 March 2019.

Jennifer M. Lynch, Ashok Deshpande, Wanda Weatherford, Rick Wagner, **Kayla C. Brignac**, Kathleen Page, Melissa R. Jung, Davielle Drayton, Nigel Lascelles, Dante Freeman, Cheryl King. An inter-laboratory comparison for polymer identification of Hawaiian plastic marine debris: What exactly comprises the debris? *Society of Environmental Toxicology and Chemistry North America 39th Annual Meeting*. Sacramento, CA. 04-08 November 2018.

Jennifer M. Lynch, Melissa R. Jung, Sara V. Orski, Viviana Rodriguez C., Kathryn L. Beers, George H. Balazs, Thierry M. Work, **Kayla C. Brignac**, Sarah-Jeanne Royer, Brenda A. Jensen. Validation of ATR FT-IR to identify polymers of ingested plastic marine debris. *6th International Marine Debris Conference*. San Diego, CA. 12-16 March 2018.

Melissa R. Jung, Sara V. Orski, Viviana Rodriguez C., Kathryn L. Beers, George H. Balazs, Thierry M. Work, T. Todd Jones, **Kayla C. Brignac**, K. David Hyrenbach, Brenda A. Jensen, Jennifer M. Lynch. Polymer Identification of Plastic Debris Ingested by Pelagic-phase Sea Turtles in the Central Pacific. *6th International Marine Debris Conference*. San Diego, CA. 12-16 March 2018.

Melissa R. Jung, Sara V. Orski, Viviana Rodriguez C., Kathryn L. Beers, George H. Balazs, Thierry M. Work, T. Todd Jones, **Kayla C. Brignac**, K. David Hyrenbach, Brenda A. Jensen, Jennifer M. Lynch. What's for Dinner?: Polymer Identification of Plastic Debris Ingested by Pelagic-phase Sea Turtles in the Central Pacific. *38th Annual Symposium on Sea Turtle Biology and Conservation. International Sea Turtle Society*. Kobe, Japan. 18-23 February 2018.

Conferences and Symposia

Kayla C. Brignac, Melissa Jung, Cheryl King, Sarah-Jeanne Royer, Lauren Blickley, Megan Lamson, Jim T. Potemra, Jennifer M. Lynch. Marine Debris Polymers on Main Hawaiian Island Beaches, Sea Surface, and Seafloor. Microplastics in the Ocean: A Woods Hole Oceanographic Institution Initiative. Woods Hole, MA. 15-18 October 2019.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Sarah-Jeanne Royer, Lauren Blickley, Megan Lamson, Jim T. Potemra, Jennifer M. Lynch. Marine Debris Polymers on Main Hawaiian Island Beaches, Sea Surface, and Seafloor. NOAA/NIST Hawaii Marine Debris Action Plan Workshop. Waianae, HI. 25 July 2019.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Sarah-Jeanne Royer, Lauren Blickley, Katie Page, Megan Lamson, Kevin O'Brien, Jim Potemra, Jennifer M. Lynch. Identification and Spatial Distribution of Plastic Marine Debris Polymers in the Hawaiian Islands: Beach, Sea Surface, and Seafloor. UH Manoa's Global Environmental Science Symposium. Honolulu, HI. 7 December 2018.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Sarah-Jeanne Royer, Lauren Blickley, Katie Page, Megan Lamson, Kevin O'Brien, Jim Potemra, Jennifer M. Lynch. Identification and Spatial Distribution of Plastic Marine Debris Polymers in the Hawaiian Islands: Beach, Sea Surface, and Seafloor. *Society of Environmental Toxicology and Chemistry North America 39th Annual Meeting*. Sacramento, CA. 04-08 November 2018.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Sarah-Jeanne Royer, Jens Currie, Stephanie Stack, Megan Lamson, Lauren Blickley, Kevin O'Brien, Jim T. Potemra, Jennifer M. Lynch. Polymer Identification of Plastic Marine Debris Throughout the Hawaiian Archipelago by FT-IR to Determine Sources. *15th Annual Asia and Oceania Geosciences Society*. Honolulu, HI. 03-08 June 2018.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Jens Currie, Megan Lamson, Kevin O'Brien, Lauren Blickley, Sarah-Jeanne Royer, Jim Potemra, Jennifer M. Lynch. Polymer Identification of Plastic Marine Debris on Beaches and Sea Surface in the Hawaiian Archipelago by FT-IR to Determine Sources. *43rd Alfred L. Tester Memorial Symposium*. Honolulu, HI. 26 April 2018.

Kayla C. Brignac, Melissa R. Jung, Cheryl King, Jens Currie, Megan Lamson, Kevin O'Brien, Lauren Blickley, Sarah-Jeanne Royer, Jim Potemra, Jennifer M. Lynch. Polymer Identification of Plastic Marine Debris on Beaches and Sea Surface in the Hawaiian Archipelago by FT-IR to Determine Sources. *6th International Marine Debris Conference*. San Diego, CA. 12-16 March 2018.

Guest Speaker and Outreach/Volunteer Events

International Programs of Outreach College-University of Hawaii at Manoa. *Kyung Hee University Special Program on Sustainable Development in Hawaii and the US: Past, Present, and Future*. Honolulu, HI 4-5 February 2020.

KITV News. *Plastic from the Ocean Ending Up On Hawaii*. Waimanalo, HI. 28 October 2019.

School of Ocean, Earth Science and Technology Open House. *HPU's Center for Marine Debris Research*. Honolulu, HI. 25 October 2019.

HPR: The Conversation with Catherine Cruz. *Marine Debris in Hawaii's Waters*. Honolulu, HI. 15 October 2019.

KGMB-HON (CBS). Hawaii News Now Sunrise Show. *Plastic Debris on Hawaii Beaches*. Honolulu, HI. 14 October 2019.

The 47th Urasenke Hawaii Seminar. *Marine Pollution*. Honolulu, HI. 20 July 2019.

Hawaii Baptist Academy. *Plastic Pollution*. Honolulu, HI. 15 April 2019.

Blanche Pope Elementary School. *Marine Plastics*. Waimanalo, HI. 14 March 2019.

Koko Head Elementary School. *Ocean Pollution*. Hawaii Kai, HI. 21 February 2019.

Research Panelist. *Rise Against Plastics Campaign*. Surfrider Foundation University of Hawaii at Manoa Chapter. Honolulu, HI. 13th November 2018.

Think Tech Hawaii Talkshow. *Ocean Plastics*. Honolulu, HI. 24 July 2017.

NOAA Marine Debris Program's *Hawaii Marine Debris Research Workshop*. Honolulu, HI. 30 March 2017.

Skills

Software: TA Trios, Thermo Omnic, Agilent Microlab, Perkin Elmer Spectrum 2.0, MS Office, R, MATLAB, GMT, and Unix OS

Analytical Equipment: Thermo Scientific iN10MX Infrared Imaging Microscope, Thermo Scientific iS5 Fourier Transform Infrared Spectrometer, TA Instruments Discovery Series DSC25, Agilent 630 Cary Fourier Transform Infrared Spectrometer, Raman Spectrometer, Perkin Elmer Attenuated Total Reflectance Fourier Transform Infrared Spectrometer, Turner Designs 10AU Fluorometer, Metrohm 905 Titrando Automatic Titrator, Electrothermal Mel-Temp 3.0, Perkin Elmer 1600 Infrared Spectrometer, Heidolph G1 Rotary Evaporator, and Varian EM 360 NMR

Field Work: Aerial ghost net surveys, Marine debris sampling on beaches and sea surface, University of Hawaii at Manoa Geology and Geophysics Research Experience for Undergraduates (REU) Kilo Moana cruise, and Biological and Environmental Monitoring and Archival of Sea Turtle Tissues (BEMAST) sampling

Scholarships and Awards

Fall 2018	SOEST Achievement Scholarship	\$1,024
Summer 2018	NIST Summer Undergraduate Research Fellowship	\$5,500
Spring 2018	Alfred L. Tester Symposium: Best Undergraduate Poster Honorable Mention	
Spring 2018	Undergraduate Research Opportunity Program	\$5,000
2017-2018	SOEST Achievement Scholarship	\$5,100
Summer 2017	NIST Summer Undergraduate Research Fellowship	\$5,500

Professional Memberships

- 2020-Present Society of Plastic Engineers
- 2020-Present Surfrider Foundation Oahu Chapter
- 2018-2019 Society of Environmental Toxicology and Chemistry
- 2017-Present Golden Key International Honor Society

References

- Dr. Jennifer Lynch jennifer.lynch@nist.gov, (843) 442-2188
- Dr. Jim Potemra jimp@hawaii.edu, (808) 956-2737
- Dr. Katy Shaw katherine.shaw@nist.gov, (949) 939-6129