

MARYLIA DUARTE BATISTA

mduarte1@umbc.edu · LinkedIn Profile: in/marylia-duarte-a677b3b0

EDUCATION

PhD program Environmental Engineering

University of Maryland, Baltimore County

June 2023 – Present

Baltimore, MD

M.S. Environmental Engineering

University of Colorado Boulder

January 2017 – May 2020

Boulder, CO

- Emphasis in drinking water, wastewater, and reuse treatment
- Related coursework: Water Treatment, Wastewater Treatment, Water Reuse, Water Chemistry, Applied Microbiology & Toxicology, Bioenergy & Resource Recovery, Stream Ecology, Leadership & Management
- Thesis: “Impacts of Water Use Pattern, Temperature and Disinfectant Type On Water Quality In Storage Water Heaters”

B.S. Environmental Engineering

Federal University of Triangulo Mineiro

January 2010 – August 2016

Brazil

- Thesis: “Use of hydrodynamic cavitation applied to microalgae inactivation”
 - Evaluated a hydraulic system with a Venturi tube to generate hydrodynamic cavitation and applied it as an advanced oxidation process to inactivate microalgae *Scenedesmus sp.*

Science Without Borders program

University of Colorado Boulder

June 2014 – August 2015

Boulder, CO

- Admitted to a Brazilian mobility program - full scholarship for a year of study in the U.S.
 - Took undergraduate level courses in Environmental Engineering

WORK EXPERIENCE

Graduate Research Assistant

University of Maryland, Baltimore County

June 2023 – Present

Baltimore, MD

Guest Researcher

National Institute of Standards and Technology (NIST)

December 2020 – May 2023

Gaithersburg, MD

- Participating in NIST Professional Research Experience Program (PREP) in partnership with Georgetown University and University of Maryland College Park
- Conducting research on impacts of premise plumbing operating conditions on pathogen growth and measurement of pressure losses in modern plumbing fittings
 - Designed laboratory facility to study response of opportunistic premise plumbing pathogens (OPPPs) to temperature and water use pattern in premise plumbing and water heaters
 - Collecting water samples and conducting bench-scale physical/chemical and microbial analysis
 - Assisted design of laboratory to study pressure losses in modern plumbing fittings
 - Assisted design, sample collection, and analysis in a study to assess OPPP occurrence in the NIST Net-Zero Energy Residential Test Facility

Professional Research Assistant

University of Colorado Boulder

May 2020 – October 2020

Boulder, CO

- Assessed water quality in a residence hall at the University of Colorado Boulder as a result of stagnant or very low water use during the COVID-19 pandemic

Graduate Research Assistant

University of Colorado Boulder

January 2018 – May 2020

Boulder, CO

- Impacts of water use pattern, pipe material, pipe size, disinfectant type, and temperature on water quality in premise plumbing and water heaters (US EPA funded)
 - Collaborated with team members on planning and designing the study
 - Performed experiments to evaluate the impact of household premise plumbing conditions on disinfection byproduct formation and microbial growth
 - Conducted analysis of bench-scale drinking water quality parameters and disinfection byproducts

- Applied statistical tests for data analysis and interpretation
- Communicated research findings at conferences and group meetings
- Operation of bench-scale granular activated carbon columns to evaluate the effect of pre-oxidation on the control of disinfection byproducts
 - Built and maintained experimental apparatus
 - Collected and analyzed water samples to assess treatment
 - Conducted laboratory-scale pre-treatment and chlorination of drinking water samples
 - Analyzed disinfection byproduct formation

Teaching Assistant

January 2017 – December 2019

University of Colorado Boulder

Boulder, CO

- Laboratory instructor for General Biology Laboratory in the Ecology and Evolutionary Biology Department
- Lecture assistant for Weather and the Atmosphere in the Atmospheric and Oceanic Sciences Department
 - Enhanced communication and presentation skills by communicating concepts and guiding students
 - Provided review sessions, held office hours, developed and graded class assignments

Intern

May 2015 – August 2015

Institute of Arctic and Alpine Research (INSTAAR)

Boulder, CO

- Summer research program focused on algae monitoring and classification in the Rocky Mountain region
 - Developed field work and sample collection practices
 - Used laboratory instrumentation and computer software to quantify and classify algal species

PUBLICATIONS AND PRESENTATIONS

Master's thesis

- **Duarte Batista, M.** (2020). Impacts of Water Use Pattern, Temperature and Disinfectant Type On Water Quality In Storage Water Heaters. University of Colorado Boulder.

Peer reviewed journal articles and technical notes

- **Duarte Batista, M.**, Anhê, A. C. B. M., & de Souza Inácio Gonçalves, J. C. (2017). *Use of Hydrodynamic Cavitation for Algae Removal: Effect on the Inactivation of Microalgae Belonging to Genus Scenedesmus*. *Water, Air, & Soil Pollution*, 228(11), 443. <https://doi.org/10.1007/s11270-017-3624-x>
- Tolofari, D. L., Bartrand, T., Masters, S. V., **Duarte Batista, M.**, Haas, C. N., Olson, M., & Gurian, P. L. (2022). *Influence of Hot Water Temperature and Use Patterns on Microbial Water Quality in Building Plumbing Systems*. *Environmental Engineering Science*, 39(4), 309–319. <https://doi.org/10.1089/ees.2021.0272>
- Lin, L., **Duarte Batista, M.**, & Milesi-Ferretti, N. S. (2022). *State-of-the-art Review on Measurement of Pressure Losses of Fluid Flow through Pipe Fittings* (NIST TN 2206; p. NIST TN 2206). National Institute of Standards and Technology. <https://doi.org/10.6028/NIST.TN.2206>
- Logan-Jackson, A. R., **Duarte Batista, M.**, Healy, W. Ullah, T., Whelton, A.J., Bartrand, T.A., and Proctor, C. (2023) *A Critical Review on the Factors That Influence Opportunistic Premise Plumbing Pathogens: From Building Entry to Fixtures in Residences*. *Environmental Science & Technology* 57 (16): 6360–72. <https://doi.org/10.1021/acs.est.2c04277>.
- **Duarte Batista, M.**, Summers, R.S., Bartrand, T. A, Yu, Y., Tolofari, D. L., Seidel, C., Masters, S.V. (2023). *Trihalomethane, haloacetic acid, and haloacetonitrile behaviors in water heater storage tanks*. *Environmental Science: Water Research & Technology*, 9, 2965 – 2978. <https://doi.org/10.1039/D3EW00375B>

Conferences and meetings

- Gurian, P., Masters, S., Bartrand, T., **Duarte Batista, M.**, Water Conservation and Water Quality: Understanding the Impacts of New Technologies and New Operational Strategies. U.S.EPA update meeting, January 2019, Boulder, CO.
- **Duarte Batista, M.**, Yu, Y., Young, A., Bartrand, T., Tolofari, D., Seidel, C., Masters, S., Summers, R.S., Impacts of Water Use Pattern, Disinfectant Type and Temperature on Water Quality in Storage-Type Water Heaters. Oral Presentation at the 16th Annual Rocky Mountain Student Conference, May 2019, Boulder, CO.
- Yu, Y., **Duarte Batista, M.**, Bartrand, T., Young, A., Tolofari, D., Seidel, C., Masters, S., Summers, R.S., Impacts of Water Use Pattern, Pipe Material, Pipe Size, Disinfectant Type, and Temperature on Water Quality in Premise Plumbing and Water Heaters. Oral Presentation at the AEEESP conference, May 2019, Tempe, AZ.

- Summers, R.S., Yu, Y., **Duarte Batista, M.**, Bartrand, T., Young, A., Tolofari, D., Seidel, C., Masters, S., Impacts of Water Use Pattern, Pipe Material, Pipe Size, and Disinfectant Type on Disinfection Byproduct Behavior in Premise Plumbing. U.S.EPA update meeting, June 2019, Boulder, CO.
- **Duarte Batista, M.**, Yu, Y., Young, A., Bartrand, T., Tolofari, D., Seidel, C., Masters, S., Summers, R.S., Impacts of Water Use Pattern, Pipe Material, Pipe Size, Disinfectant Type, and Temperature on Water Quality in Premise Plumbing and Water Heaters. Oral Presentation at the AWWA Annual Conference & Exposition, June 2019, Denver, CO.
- **Duarte Batista, M.**, Yu, Y., Young, A., Bartrand, T., Tolofari, D., Seidel, C., Masters, S., Summers, R.S., Impacts of Water Use Pattern, Disinfectant Type and Temperature on Water Quality in Storage-Type Water Heaters. Oral Presentation at the 2019 Rocky Mountain Water Conference, September 2019, Keystone, CO.
- **Duarte Batista, M.**, Bartrand, T.; Yu, Y.; Tolofari, D.; Masters, S.; Seidel, C., R. Scott Summers. Disinfection By-Product Behavior in Simulated Residential Hot Water Systems. Virtual Oral Presentation at the Hot Water Forum Virtual, March 2022.
- **Duarte Batista, M.**, Logan, A., Ullah, T., Healy, W. Design and Operation of a New Laboratory Facility at NIST to Study Opportunistic Premise Plumbing Pathogen Occurrence in Hot Water Systems. Virtual Poster Presentation at the 29th Annual NIST Sigma Xi Early-Career Poster Presentation (ECPP), March 2022.
- **Duarte Batista, M.**, Logan, A., Ullah, T., Healy, Design and Operation of a New Laboratory Facility to Study Opportunistic Premise Plumbing Pathogen Occurrence in Hot Water Systems. Oral Presentation at the AWWA Annual Conference & Exposition, June 2022, San Antonio, TX.
- **Duarte Batista, M.**, Logan, A., Ullah, T., Healy, Design and operation of a NIST laboratory facility to study opportunistic premise plumbing pathogen (OPPP) occurrence in hot water systems. Oral Presentation at the NIST Premise Plumbing Research Workshop, November 2022, Gaithersburg, MD.
- **Duarte Batista, M.**, Logan, A., Ullah, T., Healy, Design and operation of a NIST laboratory facility to study opportunistic premise plumbing pathogen (OPPP) occurrence in hot water systems. Oral Presentation at the 2023 AEESP Research and Education Conference, June 2023, Boston, MA.

SKILLS

- **Laboratory skills:** processing of water samples from building water systems, bench-scale analysis of water quality parameters, DNA extraction, analysis of opportunistic premise plumbing pathogens through droplet digital Polymerase Chain Reaction (ddPCR), heterotrophic plate count (HPC) method, chlorination, rapid small-scale column tests, analysis of chlorination disinfection byproducts by liquid-liquid extraction and gas chromatography
- **Computer skills:** MS Office, Origin, R
- **Languages:** Fluent in English and Portuguese