

JOSEPH WASSWA

+1 619-598-3859

@jhwasswa



jhwasswa@gmail.com/jwasswa@syr.edu



www.linkedin.com/in/joseph-wasswa/

Postdoctoral Research Associate, Massachusetts Institute of Technology (M.I.T) postdoctoral fellow for engineering excellence, School of Engineering, Department of Civil and Environmental Engineering, Massachusetts, Boston. USA. Fall 2022

Education

PhD Civil Engineering, Syracuse University, Syracuse, NY 2017 - 2022

Dissertation title: Exploring the Roles of Organic Matter Source and Transformation for Photochemical Characterization of New York Lake Waters.

Advisor: Teng Zeng

Certificate of Advanced Study in Sustainable Enterprise (CASSE)

Syracuse University, Martin J. Whitman School of Management. 2018 - 2021

Consultancy Project: Developing set of tools (training, framework, KPIs) to embed the SDGs into CEMEX's team day-to-day work and help employees understand why SDGs are important.

Advisor: Todd Moss

MS Civil Engineering, San Diego State University, San Diego, CA 2015 - 2017

Dissertation title: Application of Fluorescence Spectroscopy to Track Membrane Fouling, Failure, and Contaminants in Water and Wastewater Systems.

Advisor: Natalie Mladenov

BSc Agricultural Engineering, Makerere University, Kampala, Uganda 2008 - 2013

Thesis title: Feasibility study for the construction of a subsurface dam on River Kanyagareng in Amudat, Karamoja.

Advisor: Noble Banadda and Micheal Iwadra.

Publications

Wasswa, J., Wang, S., Feldman, A. C., Kabenge, I., Kiggundu, N., & Zeng, T. (2022). Suspect Screening to Support Source Identification and Risk Assessment of Organic Micropollutants in the Aquatic Environment of a Sub-Saharan African Urban Center. *Water Research*, 220(March), 118706. <https://doi.org/10.1016/j.watres.2022.118706>

Wasswa, J., Driscoll, C. T., & Zeng, T. (2022). Contrasting Impacts of Photochemical and Microbial Processing on the Photoreactivity of Dissolved Organic Matter in an Adirondack Lake Watershed. *Environmental Science and Technology*, 56(3), 1688–1701. <https://doi.org/10.1021/acs.est.1c06047>

- Wasswa, J.**, Driscoll, C. T. and Zeng, T. (2020) 'Photochemical Characterization of Surface Waters from Lakes in the Adirondack Region of New York', *Environmental science & technology*, 54(17), pp. 10654–10667. doi: 10.1021/acs.est.0c02811.
- Alexandra Sanchez, A., Mladenov, N. and **Wasswa, J.** (2020) 'Fluorescent compounds retained by ultrafiltration membranes for water reuse', *Journal of Membrane Science*. 600, doi: 10.1016/j.memsci.2020.117867.
- Kajjumba, GW, Eren. Y.S. Aydın, S. Emik, T. Ağun, F. Osra, and **J. Wasswa**. (2019) A facile polymerization of magnetic coal to enhanced phosphate removal from solution. *Journal of Environmental Management*, 247, 356-362. doi.org/10.1016/j.jenvman.2019.06.088
- Wasswa, J.**, Pearce, W., and Mladenov, N. (2019) Assessing the potential of fluorescence spectroscopy to monitor contaminants in water systems, *Environmental Science: Water research and Technology*, 5, 370-382. DOI: 10.1039/C8EW00472B
- Wasswa, J.** and Mladenov, N. (2018) Improved Temperature Compensation for In Situ Humic-Like and Tryptophan-Like Fluorescence Acquisition in Diverse Water Types, 2018, *Environmental Engineering Science*, 35(9). DOI: 10.1089/ees.2017.0315
- Xie, M., Mladenov, N., Williams, M.W., Neff, J.C., **Wasswa, J.**, and Hannigan, M.P. (2016). Water soluble organic aerosols in the Colorado Rocky Mountains, USA: Composition, sources, and optical properties. *Scientific Reports 6 (September)*, Nature Publishing Group. 39339, doi:10.1038/srep39339.

In preparation

- Wasswa, J** and Zeng, T. 'Machine learning and structural equation models as tools to assess the Impact of algal organic matter on the photochemical of lake water impacted by harmful algal blooms',

Conference Presentations

- Wasswa, J.**, C.T. Driscoll and Teng Zeng. Comparing the photochemical reactivity of intracellular and extracellular algal organic matter. 2021 ACS Fall meeting. Presented on August 22, 2021
- Wasswa, J.**, C.T. Driscoll and Teng Zeng. Contrasting controls of photochemical and microbial processing on DOM photochemical reactivity. 2021 ACS spring meeting. Presented on April 14, 2021
- Wasswa, J.** and Mladenov, N. Assessing the potential of fluorescence spectroscopy to monitor contaminants in water systems. 10th Annual SDSU Student Research Symposium. Presented on Mar 4, 2017.
- Wasswa, J.** and Mladenov, N. Fluorescence spectroscopy: A tool to monitor presence of contaminants in water reuse systems. 253rd ACS National Meeting, San Francisco, CA. Presented on Apr 3, 2017.
- Wasswa, J.** and Mladenov, N. 3D bench top fluorometer vs an insitu C3 submersible

fluorometer. American Water Works Association (CA-NV AWWA) 2017 Spring Conference, Anaheim, CA. Presented on Apr 13, 2017.

Honors and Awards

- The Black Trailblazers in Engineering Fellow, Purdue University (2021)
- The Nelson L. Nemerow Memorial Scholarship in Environmental Engineering (2019) (\$1000)
- Syracuse University Graduate Student Travel Fund, 2016 (\$1000)
- Syracuse University Water Fellowship, 2018/2019 (\$25000)
- Turner Designs Travel Fund, 2017 (\$1000)
- SDSU Graduate Student Travel Fund, 2016 (\$1000)
- 2016 Student Scholarship, the American Society of Civil Engineering Young Membership Forum (ASCE YMF) (\$1000)
- Third Best Student, Poster presentation competition, AWWA California-Nevada Annual Conference 2016
- Intercultural Student Ambassador Honorarium, SDSU 2016
- Presidential Non-Resident Tuition Waiver Fellowship, SDSU 2015/2016
- Best student in the Department of Agricultural and Bio-systems engineering at Makerere University for Class of 2013
- Uganda Government Sponsorship for BSc. in Agricultural Engineering at Makerere University

Research grants and fellowships

- CUAHSI pathfinder fellowship, 2018 (\$5000)
- NSF-EMPOWER Program Emerging Interdisciplinary Research Seed Grant (\$4000)

Professional Experience

- **Water resources engineer and watershed management officer**, United Nations Food and Agriculture Organization (UN-FAO) (Feb 2014-Nov 2014)
- **Water resources and Environmental Engineer**, BLOWI Engineering Consultancy (U) Limited. (Nov 2012- Jan 2014; then Dec 2014-June 2015)
- **Process Engineer**, School of Food Technology, Nutrition and Bioengineering, Makerere University. (August 2012-Oct 2013)

Professional Certification

- Engineering in Training (EIT)

Teaching Experience

- Teaching Assistant: Treatment processes in environmental engineering, Syracuse University, Fall 2021

- Teaching Assistant: Environmental Engineering Laboratory, SDSU, Fall, 2016.
- Part-time Lecturer: Introduction to environmental Engineering, Water resources Engineering, Hydraulics and Hydrology, and Energy resources and sustainability, Makerere University

Student Mentoring

- Brianna Marie Brackett, Syracuse University Summer 2021, currently Senior at SUNY ESF
- Anita Alexandria Sanchez, SDSU 2016-2017, currently PhD student at Cornell University
- Lorelay Mendoza Grijalva, SDSU 2016-2017, currently PhD student at Stanford University
- Musaaazi G Isaac, Fall 2017-Spring 2018, currently PhD student at Howard University

Services

Membership

- American Chemical society (ACS)
- American water works association (AWWA)
- American society of Civil Engineers (ASCE)
- Association of Environmental Engineering and Science Professors (AEESP)
- International Humic Substances Society (IHSS)

Reviewer

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| • Limnology and Oceanography | • Environmental Pollution |
| • Biogeochemistry | • Sustainability |
| • Envi Scie: Water Research and Technology | • Processes |
| • Water | • Sensors |
| • Water Research | • Environmental Monitoring and Assessment |
| • Environmental Science and Technology | • ES&T letters |