

## JOSEPH WASSWA

Dept of Civil and Environmental Engineering, Syracuse University, 151 Link Hall, Syracuse, NY  
13244

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### Education

- **PhD Civil Engineering**, Syracuse University, Syracuse, NY | August 2017 – Present (CGPA=3.9/4). *My research focuses on understanding the effect of several biogeochemical processes on the photophysical and photochemical properties of dissolved organic matter and how these changes affect engineering applications like drinking water treatment, contaminant abatement and ecological engineering.*
- **MS Civil Engineering**, San Diego State University, San Diego, CA | August 2015 – August 2017. (CGPA 3.9/4). Thesis title; “*Application of Fluorescence Spectroscopy to Track Membrane Fouling, Failure, and Contaminants in Water and Wastewater Systems.*”
- **BSc Agricultural Engineering**, Makerere University, Kampala, Uganda | Aug 2008 – January 2013 (First-class Degree and Best student, class of 2013). (CGPA 4.61/5). Thesis title; “*Feasibility study for the construction of a subsurface dam on River Kanyagareng in Amudat, Karamaoja.*”

In addition to my PhD research, with funding from NSF-NRT EMPOWER, and 2018 NSF-CUAHSI pathfinder fellowship, I am leading a team of researchers from Syracuse University and Makerere University, Uganda to study the occurrence of micropollutants in drainage channels, lakes, rivers, wastewater treatment plants and drinking water sources in Kampala, Uganda. I collected over 90 samples from drinking water sources, water ways and wastewater treatment plants in Kampala, filtered, and solid phase extracted (SPE) them from Uganda and transported them to Syracuse University for further analyses. A manuscript from this work is under preparation of ACS *ES&T* journal.

### Professional Certification

- Engineering in Training (EIT)

### Skills

Project Management, GIS (basics), Autocad, Solid works, MINITAB, R software, SAS, Microsoft excel, MATLAB, SIMCA, HPLC, LC-MS/MS, Fluorescence spectroscopy and Absorbance, ICP-MS, Data analysis, Multivariate statistics, Machine learning, Python and SQL(Basics), Electrochemistry, Experimental research design, Sustainable enterprise and Report writing.

### Professional Experience

- **Research Assistant, Environmental Chemistry Lab, Syracuse University (August 2017-present)**  
Responsible for maintaining laboratory equipment and chemical inventory, ensuring health and safety operating procedures in the lab are enforced, soil and water quality analyses and supervising and training new laboratory recruits.
- **Research Assistant, Water Reuse Lab, San Diego State University (August 2015-July 2017)** I was laboratory lead personnel responsible for the maintenance of laboratory equipment and supplies which included Shimadzu TOC-TDN analyzer, pH meters, Benchtop and insitu fluorescence machines, HPLC; water quality sampling and analyses, ensuring health and safety working procedures in the lab; training new laboratory recruits, designed and operated bench scale anaerobic baffled reactor and membrane filtration set up for class demonstration and laboratory experiments; and produced reports for the semi-monthly chemical inventory in the laboratory.

- ***Soil and water engineer, the Global climate change alliance Project funded by the Irish government and Kingdom of Norway under UN-FAO, Uganda. (Feb 2014-Nov 2014)*** I lead a team of hired consultants, government technical team, and partner NGOs for implementing the soil and water related activities of the project and ensuring that these were done in accordance with terms of agreement with UN-FAO.

Activities included mapping of watersheds using GIS, collected and analyzed soil samples along the horizons in dug pits for laboratory analysis, collected and analyzed water samples from identified water sources in the watersheds, designed small scale irrigation systems that can be managed by community farmers, designed and recommended structures for slope stability on the dams, recommended soil and water conservation measures for the farmers under the project basing on results from watershed analysis and I produced the initial working report that was later implemented for the whole project.

- ***Water resources engineer, BLOWI Engineering Consultancy (U) Limited. (Nov 2012- Jan 2014; then Dec 2014-June 2015)*** I worked as a water resources and sanitation engineer on projects which included; (i) feasibility studies for the construction of water storage dams and irrigation schemes across the country; (ii) monitoring and evaluation of the Eco-San toilets in the country implemented by government of Uganda funded by Swedish government, and (iii) mapping of the catchment areas by different river like Rwizi.

Activities included collecting GPS points and mapping using GIS, topographic surveying to estimate the valley dam volume and amount of cut and produced topographic maps, designing a subsurface dam, estimating the bill of quantities for the construction of the subsurface dam and supervising the construction of the dam, assessing the efficiency of Ecosan toilets in providing both sanitation and resource recovery benefits and performed watershed analysis survey to recommend measures that can be implemented for soil and water conservation. I produced reports for all these activities.

- ***Food processing engineer and research assistant, School of Food Technology, Nutrition and Bioengineering, Makerere University.(August 2012-Oct 2013)*** I was the project manager and engineer for the fruit processing mobile factory that was deployed around the country to provide feasibility studies for the construction of current mango and tomato processing factories in Uganda.

I managed the budget to run the factory as well as pay workers and buy fruits from local people. I operated, serviced and maintained all machines and equipment in the factory. I produced quarterly reports for the status quo of the whole project.

### **Teaching Experience**

During my tenure at Makerere University, I also tutored undergraduate courses

### **Research grants and fellowships**

- CUAHSI pathfinder fellowship, 2018
- NSF-EMPOWER Program Emerging Interdisciplinary Research Seed Grant

### **Honors and Awards**

- (a) The Nelson L. Nemerow Memorial Scholarship in Environmental Engineering (2019)
- (b) Syracuse University Water Fellowship, 2018/2019
- (c) Turner Designs Travel Fund, 2017
- (d) SDSU Graduate Student Travel Fund, 2016
- (e) 2016 Student Scholarship, the American Society of Civil Engineering Young Membership Forum (ASCE YMF)

- (f) Third Best Student, Poster presentation competition, AWWA California-Nevada Annual Conference 2016
- (g) Intercultural Student Ambassador Honorarium, SDSU 2016
- (h) Presidential Non-Resident Tuition Waiver Fellowship, SDSU 2015/2016
- (i) Best student in the Department of Agricultural and Bio-systems engineering at Makerere University for Class of 2013
- (j) Uganda Government Sponsorship for BSc. in Agricultural Engineering at Makerere University

## Publications

- 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.
- Wasswa, J.**, Driscoll, C. T. and Zeng, T. 'Contrasting Controls of Photochemical and Microbial Processing on DOM Photochemical Reactivity', *in preparation for Environmental science & technology journal*
- Wasswa, J.**, Shiru, W., Feldman, A., Banadda, N., Kabenge, I., Kiggundu, N., and Zeng, T. 'Spatial and temporal distribution of organic micro pollutants in the waterways, drinking water sources and wastewater treatment plants in Kampala, Uganda', *in preparation for Environmental science & technology journal*

## Conference Presentations

### (i) Oral Presentations

- **Wasswa, J.** and Mladenov, N. Assessing the potential of fluorescence spectroscopy to monitor contaminants in water systems. 10<sup>th</sup> 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.

**Membership**

- American Chemical society (ACS)
- American water works association (AWWA)
- American society of Civil Engineers (ASCE)
- American Membrane Technology Association (AMTA)