

KEBREAB GHEBREMICHAEL, PH.D.
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Kebreab@usf.edu

EDUCATION

Ph.D. Water Resources Engineering (2005), Royal Institute of Technology, Sweden.
M. Eng. Sc. Water Engineering (1996), University of New South Wales, Australia
B. Sc. Civil Engineering (1991), Addis Ababa University, Ethiopia

Certificates: University Teaching Qualification (2011)
E-learning and student centred learning (2007)

AWARDS AND SCHOLARSHIPS

- Recipient of Excellence in Environmental Engineering & Science University Research Grand Prize along with faculty and students in Civil and Environmental Engineering (2020).
- Global Student Success Achievements Award, Honourable mention, USF World, University of South Florida (2019)
- Recipient of the prestigious Carnegie African Diaspora Fellowship, for project collaboration with Kwame Nkrumah University of Science and Technology (KNUST) in Ghana (2017)
- Recipient of full PhD scholarship from the Swedish International Development Agency (SIDA)
- Recipient of scholarship for graduate study from the Australian Agency for International Development (AusAID)
- Recipient of the Bill Stolte student prize for 'best student paper and presentation' at the Canadian Water Resources Association 57th annual conference, Montreal, Canada, (2004)

PROFESSIONAL EXPERIENCE

2018 – Present: Associate Professor, University of South Florida

Research and projects

- Water Sanitation and Hygiene (WASH) research project, NSF-IRES (\$284,000, 2019-2021, Co-PI)
- Enhancing performance of biosand filters and community engagement, McCann Foundation (\$40,000, 2019, PI)
- Sustainability Superheroes: Developing Global Citizens for a Sustainable Economic Future (\$200,000, 2019-2020, Senior faculty)
- Biological filtration for water treatment
- Nutrient and pathogen removal from onsite wastewater systems for reuse
- Low cost adsorbents for fluoride removal
- Green infrastructure for sustainable storm water management

Teaching and Supervision

- Teaches graduate and undergraduate courses
- Supervises and co-supervises graduate research and internship projects
- Co-Supervise PhD students and serves in PhD examination committees

Services

- Director of the Sustainable Water Concentrations in the graduate program in Global Sustainability
- Member of the USF Faculty Senate
- Coordinator of Academic and Administrative Assessment of PCGS
- Member of the Student Green Energy Fund council
- Reviewer in Internal USF research proposals

2014–2018: Visiting Assistant Professor, University of South Florida

Research Activities

- Gray to Green Infrastructure Transitioning (Initially Co-PI and currently PI, \$300,000)

- USF Campus Tree Mapping (PI, \$31, 750)
- Biological filtration for water treatment,
- Nutrient and pathogen removal from onsite wastewater systems
- Low cost adsorbents for fluoride removal,
- Integrated Urban Water Management
- Green infrastructure for sustainable storm water management

Teaching and Supervision

- Teaches graduate and undergraduate courses (Systems Thinking, Sustainable Water Resources Management, Green Infrastructure for Sustainable Communities, Introduction to Global Sustainability, Water Resources Planning, Water Sensitive Urban Design)
- Supervises and co supervises graduate research and internship projects
- Serves in PhD examination committees

Services

- Director of the Sustainable Water Concentrations in the MA program in Global Sustainability
- Coordinator of Academic and Administrative Assessment of PCGS
- Member of the Florida Climate Institute Board
- Member of the Student Green Energy Fund council

2012-2016: Director, Office of Sustainability, USF

- Coordinated sustainability initiatives at USF Tampa Campus
- Chaired sustainability initiatives steering committee and campus tree care plan committee
- Prepared university wide sustainability reports such as STARS, Green House Gas Emission, Climate Action Plan and Tree Care Plan
- Managed student green energy fund.
- Member of the campus development committee,
- Board member of the New North Transportation Alliance (NNTA)

2011–2014: Research Fellow, University of South Florida, USF, Tampa

Projects:

- Integrated Urban Water management Strategy development for three Cities in Africa (\$249,553, Co-PI)
- Integrated Urban Water management Tool development (\$200, 000, Co-PI)

Teaching, research and services

- Taught graduate courses and conducted research
- Supervised several graduate research projects
- Served as a task force member for the Tampa Bay Clean Cities Coalition

2005–2011: Senior Lecturer in water supply at UNESCO-IHE, The Netherlands

a) Research and consultancy projects:

- Completed several research projects:
 - Low Cost Drinking Water Treatment (\$450,000, 2008-2013, PI)
 - Delft Cluster Water Quality in the 21st century and Total Systems Analysis (\$750, 000, 2006-2010 Co-PI)
 - Community water supply project in the Middle East (\$2M total project budget, 2005-2011, Co-PI)
 - Short refresher course on small scale water supply and sanitation for water professionals, Bolivia (\$100,000, 2011, PI)
 - Short course on decentralized water supply and sanitation for water professionals, Uganda (\$100,000, 2008, PI)
 - Tailor made training in water supply and sanitation for Addis Ababa Water and Sewerage Authority, Ethiopia (\$450,000, 2007, PI)
- Supervised more than 20 MSc and a PhD research projects

b) Teaching:

- Developed, taught and coordinated several water and wastewater courses: conventional surface water treatment, water treatment plants and processes design; unit operations in water and wastewater treatment, decentralized water supply and wastewater systems, biological and natural treatment technologies

c) Services

- Academic advisor of MSc Programme
- Coordinator of graduate programme
- Administrator of educational platform (online course materials of the department)
- Served as a member of advisory group for Waternet (A network of 30+ partner institutions in southern and eastern Africa)
- Served as a member of graduate programme committee

2000-2005: PhD candidate, Royal Institute of Technology, Stockholm, Sweden

- Conducted research on low cost water treatment based on renewable resources
- Published a number of peer reviewed journal and conference papers
- Involved in post graduate teaching and supervision of MSc projects
- Worked as one of the founding members of the KTH-Direct; a Center of Excellence for Disaster Management
- Mentored visiting researchers

1993-2000: Department of Civil Engineering, University of Asmara, Eritrea**Administration:**

- Head of Civil Engineering Department (1997-2000)
- Head of physical planning and maintenance department (1993-1995)
- Member of program committee

Teaching:

- Developed and taught undergraduate courses in water supply and treatment, wastewater engineering, solid waste management, environmental engineering, statics, surveying, civil engineering design and construction management
- Supervised senior research projects

1992-2000: Consultancy

- Designed water supply, wastewater and storm water collection, treatment and disposal systems of small towns.
- Supervised construction of water supply projects
- Designed and supervised sanitary installations of several residential, industrial, commercial and institutional buildings.
- Designed and supervised structural civil engineering projects.

Professional service:

- PhD & MS co-major supervisor, Michelle Henderson, Civil and Environmental Engineering, USF (2017-present)
- PhD co Major professor, Yoel Gebrai, Civil and Environmental Engineering (2020-present)
- MS co- major supervisor, Madison Rice, Civil and Environmental Engineering, USF (2018- present)
- PhD examination chair, Wen Zhao, Chemical and Biomedical Engineering, USF (2017)
- PhD examination chair, Fei Guo, Chemical and Biomedical Engineering, USF, (2019)
- PhD examination commettee, Nodjidoumde Mbaigoto, School of Geosciences, USF (2018-present)
- PhD examination commettee, Umar Mubarak School of Geosciences, USF (2019-present)
- MS examination commettee, Justine Stocks, Civil and Environmental Engineering, USF (2017)
- PhD examination commettee, Jesus Sanchez-Martin, Universidade de Extremadura, Spain (2010)

- Panel member on integrated urban water management discussion at the '6th Urban Research and Knowledge Symposium: Rethinking Cities: framing the future' October 2012, Barcelona, Spain
- Keynote speaker on integrated urban water management at the Leadership and Change Summit December 2011, Kampala, Uganda
- Editorial board member of the Journal of Sustainable Development (2009-2012)
- Member of the International Program committee for the 'International Conference on Slow Sand and Alternative Biological Filtration 2014'
- Member of advisory group to WaterNet (consortium of higher education institutions in southern and eastern Africa, 2006-2011)
- Member of the International Programme Committee of IASTED conference in Water Resources Management- Africa WRM since 2008
- Session chairman, WEDC international conference 2006, Colombo, Sri Lanka
- Member of the Association of Environmental Engineering Science Professors (AEESP), International Water Association (IWA, 2006-2011), Member of African Water Association (AfWA, 2009-2011)
- NSF review Panel for Environmental Engineering Program (2017 –present)
- NSF review panel for the Graduate Research Fellowship Program (GRFP) (2017-present)
- Reviewer panel Makerere University research proposals (209-Present)
- Reviewer USF Internal grant proposals
- Reviewer in several international journals: Water Research, Journal of Environmental Science and Technology, Water Science and Technology, Journal of Water Supply: Research and Technology- AQUA, Desalination, Journal of Physics and Chemistry of the Earth, Journal of Environmental Management, Journal of Hazardous Materials, Journal of Chemical Engineering, several IWA and IASTED conferences,

PUBLICATIONS

BOOKS

Kebreab Ghebremichael, (2009). Moringa seed and pumice: natural materials for drinking water treatment. Renewable resources as alternatives to industrial products. VDM publisher.

BOOK CHAPTERS

Jayantha Obeysekera, J., Graham, W., Sukop, M., Asefa, T., Wang, D., **Ghebremichael, K.** and Mwashote, B. (2017) Implications of Climate Change on Florida's Water Resources: In Jones et al., Ed. *Florida's Climate: Changes, Variations & Impacts*, Florida Climate Institute, ISBN 13-978-1979091046.

Ghebremichael, K., Eckart, J., Khatri, K. and Vairavamoorthy, K. (2015) Integrated Water Resources Management: In Bartram, J. ed. *Routledge Handbook of Water and Health*. Routledge

Vairavamoorthy, K., Eckart J., **Ghebremichael K** and Tsegaye, S. (2015) Integrated Urban Water Management: In Bartram, J. ed. *Routledge Handbook of Water and Health*. Routledge

Vairavamoorthy, K., Eckart J., Tsegaye, S., **Ghebremichael K.** and Khatri, K (2015) A Paradigm Shift in Urban Water management: An Imperative to Achieve Sustainability: In Setegn and Donoso Ed. *Sustainability of Integrated Water Resources Management: Water Governance, Climate and Ecohydrology*. Springer.

Vairavamoorthy, K., **Ghebremichael, K.**, Eckart, J., Tsegaye, S and Khatri, K (2012) An Integrated Perspective to Urban Water Management: In The Future of Water In African Cities: Why Waste Water (Eds) Jacobson, M., Webster, M. and Vairavamoorthy, K. World Bank Group, Washington DC

JOURNAL ARTICLES

1. Henderson, M. Ergas, S., Ghebremichael, K., Ronen, Z., and Gross, A (2020) Antibiotic Resistant Bacteria and antibiotic resistant genes in greywater reuse (Under preparation for submission to the special issue of *Water Journal*)
2. Authentic Science and Engineering with Biosand Filters for Water Purification (2020). *Journal of The Science Teacher* (Under review).

3. Rojacques Mompremier; Óscar Arturo Fuentes Mariles; José Elías Becerril Bravo; **Kebreab Ghebremichael** (2019). Study of the variation of haloacetic acids in a simulated water distribution network, *Journal of Water Science and Technology: Water Supply*,19(1):88-96
4. Laura Rodriguez-Gonzalez, Amulya Miriyal, Madison Rice, Daniel Delgado, Justine Marshall, Michelle Henderson, **Kebreab Ghebremichael**, James R. Mihelcic, Sarina J. Ergas (2019) A Pilot-Scale Hybrid Adsorption Biological Treatment System (HABiTS) for Nitrogen Removal in Onsite Wastewater Treatment, *Journal of Sustainable Water in the Built Environment*, 6(1): 04019014.
5. Tsegaye, S., Singleton, T., Koeser, A., Lamb, D., Landry, S. Lue, S., Barber, J., Hilbert, D., Hamilton, K., Northrop, R. and **Ghebremichael, K** (2017) Transitioning from Gray to Green (G2G) – A Green Infrastructure Planning Tool for the Urban Forest, *Urban Forestry and Urban Greening Journal*, 40:204-214.
6. Mompremier. R., Fuentes Mariles O.A., **Ghebremichael, K**, Silva Martínez, A.E., Becerril Bravo, J.E (2018). Study of the effect of pipe materials and mixing phenomenon on trihalomethanes formation and diffusion in a laboratory-scale water distribution network, *Journal of Water Science and Technology: Water Supply* 18(1) 183-192
7. Yassin, M., Mahmoud, N., **Ghebremichael, K** and Petrusovski, B (2017). Assessment of a roughing filtration as a pre-treatment for slow sand filtration of canal water with highly variable feed water turbidity, *Desalination and Water Treatment*, 79: 221-227
8. Mompremier, R., Fuentes, O.A., Yamanaka, VHA and **Ghebremichael, K** (2017). The influence of the variation of water quality parameters on the overall reaction coefficient rate, *Journal of Water Supply and Technology- AQUA* (Submitted for review)
9. Mompremier. R., Fuentes Mariles O.A., Silva Martínez, A.E., Becerril Bravo, J.E and **Ghebremichael K** (2017). Impact of mixing phenomenon at cross junctions on the variation of total coliform and *E. coli* in water distribution systems: Experimental study. *Journal of Water Supply: Research and Technology- AQUA*, 66 (5) 308-318.
10. Salifu, A., Petrusovski, P., Mwampashia, E.S., Pazia, I.A., **Ghebremichael, K.**, Buamah, R., Aubryd, C., Amy, G.L. and Kennedy, M.D (2016) Defluoridation of groundwater using granular aluminum-coated bauxite: Optimization of synthesis process conditions and equilibrium study. *Journal of Environmental Management*, 181:108-117
11. Mompremier. R; Fuentes Mariles O.A., Pelletier G., **Ghebremichael K.** (2015) Impact of incomplete mixing in the prediction of chlorine residuals in municipal water distribution systems, *Journal of Water Supply: Research and Technology- AQUA*, 64(8):904-914
12. Salifu, A., Petrusovski, B., **Ghebremichael, K.**, Modestus, L., Buamah, R., Aubry, C. And Amy, GL (2013) Aluminum (hydr)oxide coated pumice for fluoride removal from drinking water: Synthesis, equilibrium, kinetics and mechanism, *Chemical Engineering Journal*, 228: 63-73
13. Salifu, A., Petrusovski, B., **Ghebremichael, K.**, Buamah, R. and Amy G (2012) Multivariate statistical analysis for fluoride occurrence in groundwater in the Northern region of Ghana, *Journal of Contaminant Hydrology*, 140–141: 34–44
14. **Ghebremichael, K.**, Wassala, L., Kennedy, M. and Graham, N (2012) Comparative treatment performance and hydraulic characteristics of pumice and sand biofilters for point-of-use water treatment *Journal of Water Supply: Research and Technology- AQUA*, 61(4):201–209
15. Karin Lekkerkerker-Teunissen, E.T. Chekol, Sung Kyu Andrew Maeng, **K. Ghebremichael**, C.J. Houtman, Arne Verliefde, Jasper Verberk, G.L. Amy, J.C. van Dijk (2012) Pharmaceutical removal during managed aquifer recharge with pretreatment by advanced oxidation, *Water Science and Technology: Water Supply*, 12(6): 755–767
16. Radhakrishnan, M., Pathirana, A., **Ghebremichael, K.** and Amy, G (2012) Modelling Formation of Disinfection By-Products in Water Distribution: Optimisation Using a Multi-Objective Evolutionary Algorithm. *Journal of Water Supply: Research and Technology-AQUA*, 61(3): 176 -188
17. **Ghebremichael, K.**, Muchelemba, E., Petrusovski, B. and Amy, G (2011) Electrochemically Activated Water as an Alternative to Chlorine for Decentralized Disinfection. *Journal of Water Supply: Research and Technology- AQUA*, 60(4): 210–218
18. Sánchez-Martín, J., **Ghebremichael, K.** and Beltrán-Heredia, J. (2010) Comparison of single-step and two-step purified coagulants from *Moringa oleifera* seed for turbidity and DOC removal. *Bioresource Technology* 101:6259–6261
19. **Ghebremichael K.**, Gebremedhin, N. and Amy G (2010) Performance of *Moringa oleifera* as a biosorbent for chromium removal. *Water Science Technology* 62 5:1106-1111

20. **Ghebremichael K.**, Abaliwano, J. and Amy, G (2009). Combined natural organic and synthetic inorganic coagulants for surface water treatment. *Journal of Water Supply: Research and Technology—AQUA* 58(4):267–276
21. **Ghebremichael K.**, Gebremeskel A, Trifunovic N and Amy G (2008). Modeling disinfection by-products: coupling hydraulic and chemical models. *Water Science and Technology: water supply*, 8(3): 289-295.
22. **Ghebremichael K.** (2007). Overcoming the drawbacks of natural coagulants for drinking water treatment. *Water Science and Technology: Water supply*, 7(4): PP
23. **Ghebremichael K.**, Gunaratna, K. R., and Dalhammar, G. (2006). Single-step ion exchange purification of the coagulant protein from *Moringa oleifera* seed. *Applied Microbiology and Biotechnology*, 70(5):526-532.
24. **Ghebremichael K.**, Gunaratna, K. R., Henriksson, H., Brumer, H. and Dalhammar, G. (2005). A simple purification and activity assay of the coagulant protein from *Moringa oleifera* seed. *Water Research*, 39(11): 2338-2344
25. **Ghebremichael, K.** and Hultman, B. (2004). Alum sludge dewatering using *Moringa oleifera* as a conditioner. *Water Air and Soil Pollution*, 158: 153-167
26. **Ghebremichael, K.** and Hultman, B. (2003). Low cost water treatment using natural materials: a case study for Asmara. *Vatten* 59 (2) 81-87.

CONFERENCE PAPERS

1. Madison Rice, Xia Yang, Sarina Ergas and **Kebreab Ghebremichael** (2019). Enhancing performance of Biosand Filters: Use of modified filter media and design. SWE 19 (Society of Women Engineers) conference, November 7 m 2019, Anaheim, California
2. Allan Feldman, Sarina Ergas, **Kebreab Ghebremichael**, Madison Rice (2019) Authentic STEM Rresearch in Schools with Biosand Filters. 2019 Tampa Bay STEM Network Leading and Learning Academy, Tampa, Florida, July 23-24, 2019.
3. Henderson, M., Ergas, S.J., **Ghebremichael, K.**, (2019) Assessment of Onsite Greywater Treatment Systems for the Removal of Antibiotic Resistant Genes McKnight Doctoral Mid-Year Meeting, Tampa FL, February 23-24, 2019.
4. Henderson, M., Miriyala, A. Stocks, J.L., Rice, M., Thomas, D., Rodriguez-Gonzalez, L.C., **Ghebremichael, K.**, Mihelcic, J.R., Ergas, S.J. (2018) Passive Hybrid Adsorption and Biological Onsite Wastewater Treatment Systems for Removal of E. coli and Nitrogen, Proc. 15th IWA Specialized Conference on Small Water and Wastewater Systems, Oct. 14-18, 2018, Haifa, Israel.
5. Henderson, M., Ergas, S.J., **Ghebremichael, K.**, (2018) Can Passive Nitrogen Removal Systems Reduce E. coli Concentrations for Irrigation Reuse? McKnight Doctoral Mid-Year Meeting, Tampa FL, February 23-24, 2018.
6. Henderson, M.; Thomas, D.; Rice, M; Ergas, S., **Ghebremichael, K.** (2018) The Fate of E. coli in a Hybrid Adsorption Biological Treatment System: A Wastewater Treatment Approach. UNC Water Microbiology Conference, Chapel Hill, North Carolina, May 2018
7. **Ghebremichael K.**, Ergas S., and Alcantar, N (2016) Enhancement of the Performance of a Biosand Filter Using Pumice Media and Natural Coagulant Dosing. World Environmental & Water Resources Congress, May 22-26, 2016, West Palm Beach, FL.
8. Vairavamoorthy, K., Eckart, J., Tsegaye, S., **Ghebremichael, K.** (2014) Enabling Urban Water Management Through Systems Thinking, U.S. Water Partnership, 'Partnership for the Management of Global Water Systems', at NEXUS 2014: Water, Food, Climate and Energy Conference March 5th – 8th 2014, University of North Carolina at Chapel Hill
9. Adin A. **Ghebremichael, K** and Vairavamoorthy, K (2012). Electrocoagulation-flocculation for water reuse. Proceedings, IWA World Water Congress and Exhibition, September 14-19, Busan, South Korea
10. Salifu, A., Petrusevski, B., **Ghebremichael, K.**, Buamah, R. Amy, G. (2011) Fluoride occurrence in groundwater in the Northern region of Ghana. Proceedings of IWA Groundwater Specialist Group Conference, 08-10 September 2011, Belgrade, Serbia.
11. **Ghebremichael, K.**, Katusabe C and Schippers J (2011) Biosand Filter: Enhancement of the Hydraulic Performance Using Alternative Filter Medium. IWA conference on Decentralized Water and Wastewater systems, Venice, Italy 17-21 April 2011.
12. **Ghebremichael K.**, Kraemer V, Sharma D and Brdjanovic D (2011) Coagulation of municipal wastewater using bio-coagulant in combination with alum. IWA conference on Decentralized Water and Wastewater systems, Venice, Italy, 17-21 April 2011
13. **Ghebremichael K.**, Gebremedhin, N. and Amy G (2009) Performance of *Moringa oleifera* as a biosorbent for chromium removal. Proceedings of the IWA 1st Development congress, Mexico City 15-19 November 2009.

14. **Ghebremichael K.**, Gelagay, T., Gebremedhin, N. and Amy G., (2008) *Moringa oleifera* as a coagulant, adsorbent and filter aid (accepted for the WQTC conference proceedings to be held in Cincinnati, Ohio.)
15. **Ghebremichael K.** Natural Resources for Appropriate Water Treatment. Proceedings of the 32nd WEDC International Conference, Colombo, Sri Lanka (13 – 17 November 2006), 516-521.
16. **Ghebremichael K.**, Gunaratna, K. R., and Dalhammar, G. (2004). *Moringa oleifera* for simultaneous coagulation and disinfection in water purification. In: Proceedings of the Canadian Water Resources Association 57th annual conference, Montreal, Canada, June 16-18, 2004, (CD-ROM). (Awarded the Bill Stolte student prize for 'best student paper and presentation')

REPORTS:

1. Integrated Urban Water Management in Africa (2011) report for the World Bank
2. Integrated Urban Water Management in Asia (2011) report for the East-West Center