Glen Andrew de Vera, PhD

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EXPERIENCE

Research Scientist, Civil and Environmental Engineering, Massachusetts Institute of Technology; July 2023 – present
- Lab manager for the Plata Lab (Environmental Sustainability Lab)
- Collaborator for a US EPA Superfund project on nitrosamines in groundwater
- Serves as the Environmental, Health, and Safety Coordinator of the department

Principal Research Scientist, Vertex Pharmaceuticals; June 2022- July 2023
- Led analytical method development for development and clinical supply samples
- Conducts quantitative analyses and review of various pharmaceutical data

Assistant Director, Environmental Engineering, School of Engineering and Applied Sciences, Harvard University; Nov 2021-May 2022; Chemical/Environmental Engineer May 2020-Nov 2021
- Managed the environmental chemistry laboratory (equipped with HPLC, GC, ICP-OES) of the Active Learning Labs
- Led development of new particle and black carbon sensors and subsequent data analyses
- Developed lab curriculum for courses (e.g., CO_2 measurement, air pollution, soil chemistry) and served as instructor for senior design capstone project course.

Lecturer, Civil and Environmental Engineering, Massachusetts Institute of Technology; Spring 2020, 2022
- Taught environmental chemistry undergraduate course (CEE 1.080), focused on sustainability, biogeochemical cycles, fate and transport of pollutants

Postdoctoral Associate, Environmental Sustainability Lab, Civil and Environmental Engineering, MIT; Feb 2019-May 2020
- Developed LCMS method for ethanolamines in oil and gas wastewaters
- Preliminary evaluation of an electrochemical carbon nanotube filtration system for degradation of nitrosamines
- LCMS analysis of groundwaters in Pennsylvania near intense hydraulic fracturing activities

Postdoctoral Researcher, Applied Water Quality Research, Southern Nevada Water Authority; July 2017-Jan 2019
- Led research projects on urban water cycle (bench, pilot, full-scale). Example: lead corrosion mitigation, microbial regrowth monitoring using ATP
- Led projects on sustainable water treatment: catalytic nitrate removal, biological filtration optimization in collaboration with industry partners (WaterStart Nevada, HDR, Israel-based WellToDo Catalytic Approaches)

Postdoctoral Researcher, School of Engineering and Applied Science, Yale University; March 2017-July 2017
- Part of a team that developed a photocatalyst for treatment of perfluoroalkyl substances (PFAS) in water
- Characterized single-atom Pt on silicon carbide and conducted mechanistic analysis (HPLC, LCMS, IC, ICP-MS) and kinetic modelling.

Graduate Researcher, Advanced Water Management Centre, University of Queensland, Australia; Jan 2013-Dec 2016
- Managed a Water Research Foundation project for controlling nitrogen- and carbon-based disinfection byproducts
- Worked with water utilities to study the impacts of various treatment steps on formation of disinfection byproducts and associated toxicity/biological effects
- Characterized reactivity of organic matter using electrochemical mediated oxidation
- Managed laboratory analyses for quality assessment of drinking and wastewater samples (GC-ECD, GC-MS, HPLC-UV)

Visiting Researcher, Laboratory for Water Quality and Treatment, Swiss Federal Institute of Technology in Lausanne (EPFL); Aug 2015-Feb2016
- Studied reaction mechanisms of ozone and dissolved organic nitrogen in drinking and wastewater systems
- Conducted batch ozonation experiments, kinetics analysis and modelling (UV-Vis, HPLC, IC)

Visiting Researcher, Water Quality and Treatment Laboratory, Gwangju Institute of Science and Technology (GIST), South Korea; Aug 2011-Dec 2011
- Evaluated the use of sustainable oxidative technologies (high valent ferrate) for enhanced treatment of pharmaceuticals in wastewater (UV-Vis, HPLC-UV, LCMS)
- Studied reaction kinetics, transformation products and antibacterial activity changes of ferrate-treated wastewaters

Analytical Chemistry Instructor, University of the Philippines; June 2008-Dec 2012
- Taught laboratory chemistry courses such as general chemistry, quantitative inorganic analysis, advanced analytical chemistry, laboratory techniques for organic and analytical chemistry, instrumental methods of analysis

EDUCATION

Certificate in Data Science and Machine Learning, Massachusetts Institute of Technology Mar 2022 - Jun 2022
Program on machine learning, data analytics, recommendation systems, graph neural networks, and time series.
PhD (Chemical Engineering), University of Queensland, Australia Jan 2013-Dec 2016
Awarded the UQ International Scholarship, UQ Graduate School International Award, Australia Awards Scholarship
MSc (Chemistry, Analytical Chemistry concentration), University of the Philippines Jun 2008-Dec2012
Awarded GIST's International Program in Science and Technology Internship Award
BSc (Chemistry), University of the Philippines June 2004-April 2008
Awarded the Philippine Department of Science and Technology Merit Undergraduate Scholarship

PUBLICATIONS

de Vera, G.A., Brown, B.Y., Cortesa, S., Dai, M., Bruno, J., LaPier, J., Sule, N., Hancock, M., Yoon, B., Chalah, A., Sunderland, E.M., Wofsy, S.C. (2022) HazeL: A Low-Cost Learning Platform for Aerosol Measurements. *Journal of Chemical Education* 99(9), 3203-3210.

Xiong, B., Soriano, M.A., Gutchess, K.M., Hoffman, N., Clark, C.J., Siegel, H.G., **de Vera, G.A.,** Li, Y. Brenneis, R.J., Cox, A.J., Ryan, E.C., Sumner, A.J., Deziel, N.C., Saiers, J.E., and Plata, D.L. (2022) Groundwaters in Northeastern Pennsylvania near intense hydraulic fracturing activities exhibit few organic chemical impacts. *Environmental Science: Processes & Impacts* 24(2), 252-264.

de Vera, G.A. and Wert, E. (2019) Using discrete and online biomass measurements to evaluate regrowth potential of indigenous microbial community following ozonation and (non)biofiltration of drinking water. *Water Research* 154, 377-386.

de Vera, G.A., Lauderdale, C., Alito, C.L., Hooper, J., and Wert, E.C. (2019) Using upstream oxidants to minimize surface biofouling and improve hydraulic performance in GAC biofilters. *Water Research* 148, 526-534.

Huang, D., **de Vera, G.A.**, Chu, C., Stavitski, E., Zhu, Q., Spies, J., Niu, J., Haller, G., Schmuttenmaer, C.A., and Kim, J.H. (2018) Single atom Pt catalyst for effective C-F bond activation via hydrodefluorination. *ACS Catalysis*, 8, 9353-9358.

de Vera, G.A., Gerrity, D., Stoker, M., Frehner, W., and Wert, E.C. (2018) Impact of upstream chlorination on filter performance and microbial community structure of GAC and anthracite biofilters. *Environmental Science: Water Research and Technology*, 4, 1133-1144. (Selected as part of ESWRT Best Papers Collection).

de Vera, G.A., Gernjak, W., and Radjenovic, J. (2017) Predicting reactivity of model DOM compounds towards chlorine with mediated electrochemical oxidation. *Water Research* 114, 113-121.

de Vera, G.A., Farré, M.J., Weinberg, H.S., Gernjak, W., Keller, J., and von Gunten, U. (2017) Kinetics and mechanisms of nitrate and ammonium formation during ozonation of dissolved organic nitrogen. *Water Research* 108, 451-461.

de Vera, G.A. (2017) Reducing disinfection byproduct formation potential using ozonation and biological drinking water treatment. PhD Thesis, School of Chemical Engineering, The University of Queensland. Available at https://espace.library.uq.edu.au/view/UQ:511815.

Doederer, K., **de Vera, G.A.**, Espino, M.P., Pype, M.L., Gale, D., and Keller, J. (2017). MIB and geosmin removal during adsorption and biodegradation phases of GAC filtration. *Water Science and Technology: Water Supply*, 18(4): 1449-1455.

de Vera, G.A., Keller, J., Gernjak, W., Weinberg, H.S., and Farré, M.J. (2016) Biodegradability of DBP precursors after drinking water ozonation. *Water Research* 106, 550-561.

Farré, M.J., **de Vera, G.A.**, Lyon, B.A., Doederer, K., Weinberg, H.S., Gernjak, W., and Keller, J. (2016) Engineering solutions to minimize nitrogen-containing DBPs. *Water Research Foundation*, CO, USA. Available at http://www.waterrf.org/Pages/Projects.aspx?PID=4484.

Farré, M.J., Lyon, B., **de Vera, G.A.**, Stalter, D., and Gernjak, W. (2016) Assessing adsorbable organic halogen formation and precursor removal during drinking water production. *Journal of Environmental Engineering*, 142(3), 04015087.

de Vera, G.A., Stalter, D., Gernjak, W., Weinberg, H.S., Keller, J., and Farré, M.J. (2015) Towards reducing DBP formation potential of drinking water by favouring direct ozone over hydroxyl radical reactions during ozonation. *Water Research* 87, 49-58.

de Vera, G.A., Farré, M.J., Gernjak, W., and Keller, J. (2015) Changes in inorganic nitrogen ratio during ozonation of drinking water and its application for micropollutant removal prediction. Disinfection By-products in Drinking Water, Ch. 27, 228-235. DOI: 10.1039/9781782622710-00228.

Karlesa, A.*, **de Vera, G.A.*** (Co-primary author), Dodd, M.C., Espino, M.P.B., and Lee, Y. (2014) Ferrate(VI) oxidation of β-lactam antibiotics: reaction kinetics, antibacterial activity changes, and transformation products. *Environmental Science and Technology* 48 (17), 10380-10389.

Lyon, B.A., Farré, M.J., **de Vera, G.A.**, Keller, J., Roux, A., Weinberg, H.S., and Gernjak, W. (2014) Organic matter removal and disinfection byproduct management in South East Queensland's drinking water. *Water Science and Technology: Water Supply* 14 (4), 681–689.

de Vera, G.A. and Espino, M.P.B. (2011) Anions analysis in ground and tap waters by chemical and CO2-suppressed ion chromatography, *Science Diliman*, 23(1), 31-41.