Mohamed Ateia, Ph.D.

Research Associate, Department of Chemistry, Northwestern University, USA

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PROFESSIONAL PREPARATION

Research Associate	[11/2019 – Current] – Department of Chemistry.
	Northwestern University, IL, USA.
	PI: Prof. William Dichtel
Post-doc.	[11/2017 – 10/2019] – Environmental Engineering and Earth Sciences.
	Clemson University, SC, USA. [Distinguished Postdoctoral Award ★]
	PI: Prof. Tanju Karanfil
Ph.D.	[10/2014 – 09/2017] – Environmental Engineering (Minor in Material Science Engineering).
	Tokyo Institute of Technology, Tokyo, Japan. [Best Ph.D. Dissertation Award ★]
	Advisor: Prof. Chihiro Yoshimura
	[06/2015 - 10/2015 - 07/2016 - 10/2016] - Environmental Chemistry (Visiting Researcher)
	Department of Chemistry, University of Copenhagen, Denmark.
	Host: Prof. Matthew S. Johnson
M.S.	[10/2012 – 09/2014] – Environmental Engineering (Minor in Material Science Engineering).
	Tokyo Institute of Technology, Tokyo, Japan.
	Advisor: Prof. Chihiro Yoshimura
	[08/2013 – 09/2013] – Science Communication for Global Scientists (Intern)
	The Royal Society and Parliamentary Office of Science and Technology (POST), London, UK.
	Host: Prof. Michael Norton
B.S.	[09/2005 – 06/2009] – Environmental and Agricultural Engineering.
	Alexandria University, Alexandria, Egypt.

AWARDS AND HONORS

- 1. 08/2019: 2019 Clemson University Distinguished Postdoctoral Award, Clemson University, USA.
- 2. 06/2019: Certificate of Merit, Division of Environmental Chemistry, American Chemical Society.
- 3. **04/2019: Outstanding Presentation Award**, American Chemical Society (ACS) 257th National Meeting and Exhibition, April 2019, Orlando, FL, USA.
- 4. 12/2017: The Best Ph.D. Dissertation Award. First Place Prize. Kikkawa-Yamaguchi Award 2017, Tokyo Institute of Technology, Japan.
- 5. 11/2015: The First Place Prize. Honda Young-Engineers-Scientists (Y-E-S) Forum, Tokyo, Japan.

- 6. 12/2014: Best Presentation Award, ACEEES Third International Educational Forum on Environment and Energy Sciences, Perth, Australia.
- 7. 11/2014: Best Presentation Award for Young Researchers, 9th IWA International Symposium on Waste Management Problems in Agro-Industries, International Water Association (IWA), Kochi, Japan.
- 8. 10/2014 09/2017: Japanese Government Scholarship (MEXT).
- 9. 10/2013: Certificate of Excellence Best Presentation Award, Tokyo Tech-KU joint seminar, Tokyo, Japan.
- 10.10/2012 09/2014: Japanese Government Scholarship (MEXT).

PUBLICATIONS

Peer Reviewed Publications (*: Corresponding author, θ : Equal contribution with first author)

2020

- 1. Ateia M.*, Zheng T., Calace S., Tharayil N., Srikanth P., and Karanfil T. (2020) Sorption Behavior of Real Microplastics (MPs): Insights for Organic Micropollutants Adsorption on a Large Set of Well-characterized MPs. *Science of the Total Environment*.
- 2. Awfa D., Ateia M.*, Fujii M., and Yoshimura C. (2020). Photocatalytic degradation of organic micropollutants: Inhibition mechanisms by different fractions of natural organic matter. *Water Research*.
- 3. Bravo I., Figueroa F., Swasy M., Ateia M., Attia M. F., et al., (2020). Cellulose particles capture aldehyde VOC pollutants. *RSC Advances*.
- Khalid A., Rowles L., Ateia M., Minhao X., Moses I., Bello D., Karanfil T., Saleh N., and Apul O. (2020). Mesoporous Activated Carbon Shows Superior Adsorption Affinity for 11-Nor-9-Carboxy-Δ9-Tetrahydrocannabinol in Water. NPJ Clean Water.
- 5. Attia M., Swasy S., Ateia M., Whithead D., and Alexis F. (2020). Periodic mesoporous organosilica nanomaterials for rapid capture of VOCs. *RSC ChemComm*.
- 6. Soyluoglu M., Ersan M., Ateia M., and Karanfil T (2020) Removal of Bromide from Natural Waters using a Bromide-Selective Ion Exchange Resin. *Chemosphere*.
- 7. Ateia M.*, Kanan A., Karanfil T. (Under Review) Microplastics Release Precursors of Chlorinated and Brominated Disinfection Byproducts in Water. *Chemosphere*.
- 8. Heu R., Ateia M.*, Awfa D., Punyapalakul P., and Yoshimura C. (Under Review). Zirconium-based metal-organic framework/graphene oxide nanocomposite for photocatalytic degradation of carbamazepine. *Chemical Engineering Journal*.
- 9. Mousa H., Alfadhel H., **Ateia M.**, Gomaa A., Abdel-Jaber G. (**Under Review**). Novel Polysulfone-Iron Acetate-Polyamide Nanocomposite for High-Flux Oil-Water Membrane Separation. *Industrial & Engineering Chemistry Research*.

2019

- 10. Ateia M.*, Alsbaiee A., Karanfil T., and Dichtel W. (2019). Efficient PFAS Removal by Amine-functionalized Sorbents: Critical Review of the Current Literature. *Environmental Science & Technology Letters*.
- 11. Ateia M.*, Gar Alalm M., Awfa D., Johnson M., Yoshimura C. (2019) Modeling the Degradation and Disinfection of Water Pollutants by Photocatalysts and Composites: A Critical Review. *Science of the Total Environment*.
- 12. Ateia M., Arifuzzaman MD., Pellizzeri S., Attia M. F., Tharayil N., Anker J. N., and Karanfil T. (2019). Cationic Polymer

for Selective Removal of GenX and Short-chain PFAS from Surface Waters and Wastewaters at ng/L Levels. *Water Research*.

- 13. Shimizu Y., Ateia M.*, Wang M., Awfa D., Yoshimura C. (2019) Disinfection Mechanism of E. Coli by CNT-TiO2 Composites: Photocatalytic Inactivation vs. Physical Separation. *Chemosphere*.
- 14. Awfa D., Ateia M.*, Fujii M., and Yoshimura C. (2019) A Novel Magnetic Carbon Nanotube-TiO2 Composites for Solar Light Photocatalytic Degradation of Pharmaceuticals in the Presence of Natural Organic Matter. *Journal of Water Process Engineering*.
- 15. Ateia M., Cagri U., Ersan M., Ceccato M., and Karanfil T. (2019) Selective Removal of Bromide and Iodide from Natural Waters using a Novel AgCI-SPAC Composite at Environmentally Relevant Conditions. *Water Research*.
- 16. Ateia M., Maroli A., Thiraly N., and Karanfil T. (2019) The Overlooked Short- and Ultrashort-Chain Poly- and Perfluorinated Substances: A Review. *Chemosphere*.

2018

- 17. Ateia M.*, Attia M., Maroli A., Thiraly N., Whithead D., Alexis F., and Karanfil T. (2018) Rapid Removal of Poly- and Perfluorinated Alkyl Substances by Polyethylenimine-functionalized Cellulose Microcrystals at Environmentally Relevant Conditions. *Environmental Science & Technology Letters*.
- Sahu, S.P., Qanbarzadeh, M., Ateia, M., Torkzadeh, H., Maroli, A.S. and Cates, E.L. (2018). Rapid Degradation and Mineralization of Perfluorooctanoic Acid by a New Petitjeanite Bi₃O (OH)(PO₄)₂ Microparticle Ultraviolet Photocatalyst. *Environmental Science & Technology Letters*, 5(8), pp.533-538.
- Awfa, D., Ateia, M.*,^θ, Fujii, M., Johnson, M. S., Yoshimura, C. (2018). Photodegradation of Pharmaceuticals and Personal Care Products in Water Treatment Using Carbonaceous-TiO₂ Composites: A Critical Review of Recent Literature. *Water Research*.
- 20. Shimizu, Y., Ateia, M.*.⁰, & Yoshimura, C. (2018). Natural organic matter undergoes different molecular sieving by adsorption on activated carbon nanotubes. *Chemosphere*, 203, pp.345-352.
- Ateia M.*, Ceccato M., Ataman E., Akin B., Yoshimura C., Johnson M. S. (2018) Ozone-assisted Regeneration of Magnetic Carbon Nanotubes to Remove Organic Pollutants from Aqueous Solutions. *Chemical Engineering Journal*, 335, 384-391.

2017

- 22. Ateia M.*, Koch C., Jelavic S., Quinson J., Hirt A., Yoshimura C., Johnson M. S. (2017) Magnetic Carbon Nanotubes: Facile, Green and Scalable Preparation for Use in Water Treatment. *PLOS ONE*.
- 23. Ateia M.*, Apul O., Shimizu Y., Muflihah A., Yoshimura C., and Karanfil T. (2017) Elucidating Adsorptive Fractions of Natural Organic Matter on Carbon Nanotubes. *Environmental Science & Technology*.
- 24. Ateia M., Ran J., Fujii M., & Yoshimura C. (2017) The Relationship between Molecular Composition and Fluorescence Properties of Humic Substances. *Int. J. Environ. Sci. Technol.* doi:10.3390/w8100461
- 25. Nasr M., Ateia M., & Hassan K. (2017). Modeling the Effects of Operational Parameters on Algae Growth. In Algal Biofuels (pp. 127-139). Springer International Publishing. DOI: 10.1007/978-3-319-51010-1_7

2016

- 26. Ateia M.*, Nasr, M.; Ikeda, A.; Okada, H.; Fujii, M.; Natsuike, M.; Yoshimura, C. (2016) Nonlinear Relationship of Nearbed Velocity and Growth of Riverbed Periphyton. *Water*, 8: 461.
- 27. Ateia M.*, Yoshimura C., and Nasr M. (2016) In-situ Biological Water Treatment Technologies for Environmental Remediation: A Review. *J Bioremediation & Biodegradation* 7: 348.

2015

- 28. Ateia M.*, Nasr, M., Yoshimura, C., & Fujii, M. (2015). Organic matter removal from saline agricultural drainage wastewater using a moving bed biofilm reactor. *Water Science & Technology*.
- 29. Nasr, M., Ateia M., & Hassan, K. (2015). Artificial intelligence for greywater treatment using electrocoagulation process. *Separation Science and Technology*.

2014

30. Al-Amoud, A., Mattar, M., & Ateia M. (2014). Impact of water temperature and structural parameters on the hydraulic labyrinth-channel emitter performance. *Spanish Journal of Agricultural Research*.

Journal Papers (Drafted)

- 31. Ersan G., Ateia, M., and Karanfil, T. (Drafted) Adsorption of contaminants on microplastics under various environmental conditions: A critical review. To be submitted to Science of the Total Environment.
- 32. Qanbarzadeh M., Ateia M., Sahu S., Cates E. L. (**Drafted**) Degradation Mechanism of PFOA in BOHP/UV photocatalytic system and Effect of Groundwater Matrix Components. To be submitted to Environmental Science & Technology.
- 33. Erdem C. U., Ateia M., Liu C., Park M., Karanfil T. (Drafted) Removal mechanism of DBP precursor by GAC with/without pre-chlorination: Effect of activated carbon characteristic. To be submitted to Water Research.

Oral Presentations / Invited Talks

- 1. Ateia M. Emerging Water Pollutants Need Innovative & Yet Practical Solutions. Environmental Engineering and Sciences, Eastern Illinois University, Feb. 2020. [Invited Talk★]
- 2. Ateia M. Efficient PFAS Removal by Amine-functionalized Sorbents: Promises & Challenges. Environmental Engineering and Sciences, Northwestern University, Jan. 2020. [Invited Talk★]
- Kananizadeh N., Lindsay S., Childress A., Ateia M., Naguib M., Rao A., Popat S. Carbon-Based Air-Cathodes for Hydrogen Peroxide Production in Microbial Fuel Cells. 236th ECS Meeting, Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry, October 13-17, 2019, Atlanta, GA, USA.
- 4. Ateia M., Attia M., Thiraly N., Whithead D., Alexis F., and Karanfil T. Near-instant removal of poly- and perfluorinated alkyl substances by polyethylenimine-functionalized cellulose microcrystals. American Chemical Society (ACS) 257th National Meeting and Exhibition, April 2019, Orlando, FL, USA. [Awarded ★]
- 5. Cates E., Qanbardazeh M., Wang D., Ateia M., Torkzadeh H. Degradation of PFAS using the BOHP/UV process: Photocatalysis mechanisms and pilot study results. American Chemical Society (ACS) 257th National Meeting and Exhibition, April 2019, Orlando, FL, USA.
- 6. Soyluoglu M., Ateia M., Ersan M., Karanfil T. Removal of Bromide from Natural Waters: Bromide-Selective vs. Conventional Ion Exchange Resins. South Carolina Environmental Conference (SCEC), March 2019, Myrtle Beach, SC.
- Khalid, A., Ateia, M., Karanfil, T., Pagsuyoin, S., Bello, D., Apul, O. Adsorption of Δ9-tetrahydrocannabinol by Carbonbased Adsorbents. American Chemical Society (ACS) 256th National Meeting and Exhibition, August 2018, Boston, MA.
- 8. Ateia M., Johnson M S., and Yoshimura C. Ethylene Glycol Improve the Performance of Oxidized Carbon Nanotubes to Remove Organic Pollutants from Aqueous Solutions. The Fifth international education forum on environment and energy science, San Diego, USA. Dec. 2016.
- 9. Ateia M., Johnson M S., and Yoshimura C. Magnetic Carbon Nanotubes for Organic Dye Removal from Aqueous Solution.

The Fourth international education forum on environment and energy science, Hawaii, USA. Dec. 2015.

- Saavedra O., Yoshimura C., Negm A., Ateia M., et al. A Platform for Integrated Water Resources Management for Mega Deltas Under Climate Change JSPS Mega Delta Project. International Water Technology Conference (IWTC), Sharm El-Sheikh, Egypt, 12-14 March 2015.
- 11. Ateia M. & C. Yoshimura. In-situ Biological Water Treatment Technologies for Environmental Remediation: A Review. International Water Technology Conference (IWTC), Sharm El-Sheikh, Egypt, 12-14 March 2015.
- Ateia M., C. Yoshimura and M. Fujii. Organic Matter Removal from Saline Agricultural Drainage Water by Moving Bed Biofilm Reactor. The Third international education forum on environment and energy science, Perth, Australia. Dec. 2014. [Awarded ★]
- Ateia M., M. Nasr C. Yoshimura, and M. Fujii. Effect of Salinity on Organic Matter Removal from Polluted Agriculture Drainage Water by Moving Bed Biofilm Reactor. 9th IWA International Symposium on Waste Management Problems in Agro-Industries, Kochi, Japan. 24-26 November 2014. [Awarded ★]
- Ateia M., P. Sui,C. Yoshimura and M. Fujii. Floating Plastic Media for Removal of Organic Pollutants In Agricultural Drainage Water. The second international education forum on environment and energy science, California, USA. Dec. 2013.
- 15. C. Yoshimura and Ateia M. Development of In-situ Wastewater Treatment Systems and its Application to Agricultural Drainage Water. Project meeting of JSPS Core-to-Core Program (Mega Delta Project), Alexandria, Egypt. Nov. 2013.
- 16. Ateia M., P. Sui, C. Yoshimura and M. Fujii. Floating Plastic Media for Removal of Organic Pollutants in Agricultural Drainage Water. International Water Technology Conference (IWTC), Istanbul, Turkey. Nov. 2013.
- 17. Ateia M., P. Sui,C. Yoshimura and M. Fujii. Application of Suspended Bed Biofilm Reactor to Remove Organic Matter from Agricultural Drainage Water. Tokyo Tech-KU joint seminar, Tokyo, Japan. Oct. 2013. [Awarded ★]

Poster Presentations

- 1. Ateia M., Yoshimura C., and Johnson M S. Ozone Recycling of Spent Carbon Nanotubes for Water Treatment Applications. CARBONHAGEN, Copenhagen, Denmark, 17-18 August 2016.
- 2. Ateia M., Johnson M S., and Yoshimura C. Magnetic Carbon Nanotubes: Regeneration Methods and Perspective for Removal of Chemical Substances in Wastewater. Honda Y-E-S Forum, Tokyo, Japan, 18 November 2015. [Awarded ★]
- 3. Ateia M., O. Saavedra, C. Yoshimura, K. Nadaoka and S. Kanae. Integrated Water Resources and Environmental Management for Asian and African Mega Deltas Under Climate Change Effects. GEOSS Joint Asia-Africa Water Cycle Symposium, The University of Tokyo, Tokyo, Japan. Nov. 2013.
- Ateia M., P. Sui,C. Yoshimura and M. Fujii. A Packed-Bed Reactor For Removal of Organic Pollutants in Agricultural Drainage Water. Joint Seminar of JSPS Core-to-Core Program (Mega Delta Project), Ho Chi Minh City, Vientam. Aug. 2013.

RESEARCH INTERESTS AND EXPERIENCES

• Research Interests:

Advanced Materials for Environmental Remediation:

- Development of next-generation adsorbents (metal-impregnated carbonaceous materials, graphene-based nanomaterials, covalent-organic frameworks (COFs), metal-organic frameworks (MOFs), new polymeric hybrids) for physicochemical water treatment applications.

- Development of new catalysts for the efficient degradation of legacy and emerging water contaminants.
- Implications of new 2-D nanomaterials (graphene and MXenes) for the disinfection of microbes in water.
- Development of new sensors for emerging water contaminants.

Detection and Removal of Emerging Water Contaminants

- Assessment of conventional treatment technologies and the development of practical treatment approaches for the removal/degradation of:
 - Per- and Polyfluoroalkyl Substances (PFAS).
 - Pharmaceuticals and Illicit drugs.
 - Nano- and Microplastics.

• Research Experiences:

Research Associate. Department of Chemistry, Northwestern University, IL (11/2019 - Present).

CycloPure Company, IL (11/2019 – Present).

- Development of **reactive electrochemical membranes** using metal carbides and metal oxides for the degradation of micropollutants.
- Development of **new covalent organic framewors (COFs) composites** for the selective adsorption of U(VI) from seawater.
- Development tandem treatment trains for the degradation of PFAS in regeneration solutions.
- Elucidating the interactions between real microplastics and toxic chemicals in water environments.

Post-Doctoral Fellow. Environmental Engineering and Earth Sciences, Clemson University, SC (11/2017 – 10/2019).

- Development of novel polymeric materials for the efficient removal of PFAS.
- Development of new catalysts for the degradation of micropollutants (i.e., PFAS and PPCPs).
- Development silver-based carbonaceous composites for the selective removal of bromide and iodide.
- Elucidating the interactions between real microplastics and toxic chemicals in water environments.
- Applications of ion exchange resins for wastewater treatment and disinfection byproducts control.
- Removal of illicit drugs from water using carbonaceous adsorbents.
- Leading a **two-year project to monitor the water quality** for a local water utility in SC (monthly sampling from five lakes and one river).
- Writing grant proposals for national and international funding agencies; including Water Research Foundation, US EPA, National Science Foundation (NSF), Environmental Research & Education Foundation (EREF), JSPS International Collaboration Grant, Saudi Arabia International Collaboration Grant, US-AID PEER (Egypt), US-AID PEER (Iraq), NPRP (Qatar).
- Initiating, leading and coordinating several research collaborations within the department (with Dr. Ezra Cates, Dr. Sudeep Popat, and Dr. Brian Powell), with other departments (Dr. Nishanth Tharail, Plant and Environmental Sciences Department and Dr. Daniel Whitehead, Department of Chemistry), and with other national and international universities (Dr. Onur Apul, UMass Lowell; Dr. Chihiro Yoshimura, Tokyo Institute of Technology; Dr. Matthew Johnson, University of Copenhagen; and Dr. Michael Naguib, Tulane University; Dr. Marcel Ceccato, Aarhus University).

Graduate Research Assistant. Environmental Engineering, Tokyo Institute of Technology, Tokyo (10/2012 - 09/2017).

- Development of a novel and facile method to prepare magnetic carbon nanotubes (MCNT).
- Adsorption of micropollutants (i.e., pesticides) and natural organic matter on CNT and activated carbon.
- Development of an efficient regeneration method for recycling spent carbonaceous adsorbents.
- Design and test moving bed biofilm reactor (MBBR) for reuse of agricultural wastewater.

TEACHING INTERESTS AND EXPERIENCES

• **Teaching Interests:** Environmental Engineering Processes, Water and Wastewater Quality, Physicochemical Processes in Water and Wastewater Treatment, Environmental Engineering Design, Water Resources Engineering, Environmental Nanotechnology: Applications and Implications of Nano Biomimicry in Environmental Engineering

• Teaching Experiences:

Clemson University, Clemson, USA.

- <u>Mentor of total 13 graduate students</u>: Mr. Cagri Utku Erdem, Ms. Meryem Soyluoglu, Mr. Esat Ariturk, Ms. Stefania Calace [Ref.: Dr. Tanju Karanfil], Ms. Paige Taber [Ref.: Dr. Sudeep Popat], Mr. Mojtaba Qanbarzadeh [Ref.: Dr. Ezra Cates], Mr. Dion Awfa, Ms. Rina Heu, Mr. Yuta Shimiza, Ms. Sayako Shoda, Ms. Astri Muflihah, Ms. Dilini Kodikara, and Ms. Manna Wang [Ref.: Dr. Yoshimura Chihiro].
- Completed ESED-8210: 'Teaching Undergraduate Science' [Ref.: Dr. Cindy Lee].
- Guest Lecturer-EES 8030: 'Physiochemical Water Treatment Systems' [Ref.: Dr. Ezra Cates].
- Guest Lecturer-EEES Seminar: [Ref.: Dr. Sudeep Popat].

Tokyo Institute of Technology, Tokyo, Japan.

- Guest Lecturer 'Aquatic Environmental Science': [Ref.: Dr. Yoshimura Chihiro].
- Guest Lecturer 'Water Quality Modelling': [Ref.: Dr. Yoshimura Chihiro].
- Teaching Assistant and Guest Lecturer 'Environmental Statistics': [Ref.: Dr. Yoshimura Chihiro].

University of Copenhagen, Copenhagen, Denmark.

- Guest Lecturer 'Environmental Chemistry': [Ref.: Dr. Matthew Johnson].

SERVICES AND PROFESSIONAL ACTIVITIES

President, Clemson University Postdoc Association (CUPDA) (02/2019 – 10/2019).

Vice President, Clemson University Postdoc Association (CUPDA) (08/2018 – 02/2019).

Co-Founder, BENAA Association, NGO based in Egypt/Switzerland [benaa-global.org] (10/2015 – Present).

Discussion Leader, 'The Graduate School Experience: What to Expect' Workshop, Spring ACS National Meeting, Orlando, FL (04/2019).

Trainer, 'Tips for Effective Communications & Collaborations' Workshop, GRAD360, Clemson University (02/2019).

Judge, '6th Annual Summer Undergraduate Research Symposium', Clemson University (06/2018).

Trainer, 'Life After Ph.D.' Workshop, GRAD360 Program, Clemson University (03/2018).

Speaker: TED*Titech. Title: (Pause .. Rethink), Tokyo, Japan (01/2017).

Professional Memberships: Holding memberships of:

- American Chemical Society (Environmental Chemistry Division).

- Association of Environmental Engineering and Science Professors (AEESP).

- National Postdoc Association (NPA).

Journal Reviewer for Water Research, Environmental Science and Technology, ACS Applied NanoMaterials, Chemosphere, Science of the Total Environment, Environmental Chemistry Letters, Water Process Engineering, Journal of Environment and Health Science, Applied Water Science, Journal of Nanostructure in Chemistry, and Phycological Research.

REFERENCES

Prof. William Dichtel Department of Chemistry, Northwestern University USA Email: wdichtel@northwestern.edu **Prof. Tanju Karanfil** Department of Environmental Engineering and Earth Sciences, Clemson University USA Email: tkaranf@clemson.edu Prof. Chihiro Yoshimura Department of Civil and Environmental Engineering, Tokyo Institute of Technology Japan Email: yoshimura.c.aa@m.titech.ac.jp

Prof. Matthew S. Johnson Department of Chemistry, University of Copenhagen Denmark Email: msj@kiku.dk