

# *Curriculum vitae*

## **Onur Guven Apul, PhD, PE**

Assistant Professor of Environmental Engineering  
University of Maine  
Civil and Environmental Engineering

5711 Boardman Hall, Room 306, Orono, ME 04469  
(910) 200-6280 onurapul@gmail.com www.onurapul.com

---

### **TABLE OF CONTENT**

Last Update 11/29/2022

EDUCATION, APPOINTMENTS, OTHER AFFILIATIONS	2
EXTERNALLY FUNDED RESEARCH PROJECTS	3
PUBLICATIONS	6
TEACHING AND MENTORSHIP EXPERIENCE	17
AWARDS AND HONORS	19
PATENT APPLICATIONS	20
PROFESSIONAL SERVICE AND INVOLVEMENT	21

## EDUCATION AND PROFESSIONAL TRAINING

---

- Ph.D.**            **Environmental Engineering, Clemson University, Clemson, SC, Aug. 2014.**  
Dissertation: Predictive model development for adsorption of organic contaminants by carbon nanotubes.  
Advisor: Tanju Karanfil
- M.S.**            **Environmental Engineering, Middle East Technical University, Ankara, Turkey, 2009.**  
Thesis: Municipal sludge minimization: Evaluation of ultrasonic and acidic pretreatment methods and their subsequent effects on anaerobic digestion.  
Advisor: Dilek Sanin
- B.S.**            **Environmental Engineering, Middle East Technical University, Ankara, Turkey, 2006.**  
Capstone Project: Trabzon municipality slaughterhouse wastewater treatment plant design.

## APPOINTMENTS

---

- Asst. Prof.**        **Civil and Environmental Engineering, University of Maine, Orono, ME**  
Sept. 2020 – present
- Asst. Prof.**        **Civil and Environmental Engineering, University of Massachusetts Lowell, Lowell, MA**  
Sept. 2017 – Aug. 2020
- Post-Doc**         **Environmental Engineering and Earth Sciences, Clemson University, Clemson, SC**  
Feb. 2015 – Aug. 2017
- Post-Doc**         **Environmental Engineering, and Earth Sciences Clemson University, Clemson, SC**  
Sept. 2014 – Jan. 2015
- Grad. Asst.**       **Environmental Engineering and Earth Sciences, Clemson University, Clemson, SC**  
Aug. 2009. - Aug. 2014
- Grad. Asst.**       **Environmental Engineering, Middle East Technical University, Ankara, Turkey**  
Dec. 2006. - Aug. 2009

## OTHER AFFILIATIONS

---

- Science Lead**     **University of Maine PFAS+ Initiative**  
Jan. 2023 - present
- Associate**         **Frontier Institute for Research in Sensor Technologies, University of Maine, Orono, ME**  
Sept. 2021 – present
- Associate**         **Aquaculture Research Institute, University of Maine, Orono, ME**  
Sept. 2021 - present
- Fellow**             **Senator George J. Mitchell Center for Sustainability Solutions, University of Maine, Orono, ME**  
Dec. 2020 – present
- Assoc. Faculty**   **Environmental Engineering, Clemson University, Clemson, SC**  
Sept. 2020 - present

## FUNDED RESEARCH PROJECTS

---

### Ongoing Projects as PI/co-I

1. **O. Apul (PI, 50%)**, D. Hanigan. PFAS ERASE: Thermal Regeneration of PFAS-laden Granular Activated Carbon presents an Opportunity to Break the Forever PFAS Cycle. NSF CBET Environmental Engineering (\$500,000). Ongoing. 2023-2026.
2. **O. Apul (PI, 50%)**. Art for the Environment: UMaine Community Challenge. University of Maine Internal Seed Grant (\$10,000). Ongoing. 2022-2023.
3. **O. Apul (PI, 100%)**. Conference: Supporting Students and Early Career Researchers as Participants in the 11<sup>th</sup> SNO Workshop and Conference 2022. NSF CBET Nanoscale Interactions (\$15,000). Ongoing. 2022-2023.
4. **O. Apul (PI, 100%)**. RII Track-IV: Superparamagnetic Iron Oxide Nanoparticles (SPIONs) as Recoverable Microwave Susceptors for Pre-hydrolysis of Waste Activated Sludge Prior to Anaerobic Digestion. NSF EPSCoR (\$133,664). Ongoing (Host Institution: *Yale University*). 2022-2024.
5. F. Perreault, J. Oswald, **O. Apul (co-I, 33%)**. CAS-MNP: Understand and Predict the Adsorption of Organic Contaminants by Aging Microplastics. NSF ECS (\$242,000). Ongoing. 2020-2023.
6. **O. Apul (PI, 79%)**, A. Abedi, S. Garcia-Segura. Metastable Oxygen Nanobubbles to Advance Life Support Systems in Space Exploration. NASA EPSCoR (\$1,010,741 includes \$375,000 cost share). Ongoing. 2022-2025.
7. D. Hart, C. Noblet, **O. Apul (co-I, 35%)**, D. Kopec, J. MacRae. Developing and Deploying a Risk framework for PFAS Management in Rural America: Connecting Predictive Models of PFAS Contamination with Risk Perceptions to Guide Management Decisions. USGS 104g (2021) (\$507,394 includes \$250,000 cost share). Ongoing. 2022-2025.
8. **O. Apul (PI, 100%)**. PFAS Release for Spent Granular Activate Carbons in Solid Waste Management Facilities. Environmental Research and Education Foundation – EREF (\$150,000). Ongoing. 2023-2025.
9. **O. Apul (PI, 55%)**, L. Ross, S. Smith. Interpreting the Extent and Characteristics of Microplastics Pollution in Maine Freshwater Streams to Guide a Holistic Mitigation Strategy. USGS 104b (\$68,000 includes \$34,000 cost share). Ongoing. 2022-2023.
10. **O. Apul (PI, 100%)**, Characterization of a novel catalyst for CO oxidation in fire cartridges of gas masks. NASA JSC (\$120,000). Ongoing. 2022-2023.
11. M. Estapa, **O. Apul (co-I, 10%)**, L. Ross Do biological particles scavenge and remove microplastic fibers from the ocean? MARINE Seed Grant (\$34,970). Ongoing. 2022-2023.
12. N. Yarayan, **O. Apul (co-I, 10%)**, S. Garcia. Investigation of Market Potential and Collaboration Opportunities for Mainstreaming Nanobubble Technologies in Turkish Water/Wastewater Recycling Industry. DOS U.S. Mission to Turkey's Grants Program (\$50,000). Ongoing. 2021-2022.

### Completed Projects as PI or co-I

13. **O. Apul (PI, 80%)**, S. Garcia. Evaluating Fundamental Properties of Metastable Nanobubbles towards their Integration into Water Processor Assembly of International Space Station. Maine Space Grant Consortium Seed Grant (\$100,000, includes \$60,000 cost share). Completed. 2021-2022.
14. **O. Apul (PI, 100%)**. Use of nanobubbles to improve the performance of recirculating aquaculture systems. Aquaculture Research Institute (\$5,000). Completed. 2021-2022.
15. D. Kopec, **O. Apul (co-I, 35%)**, C. Noblet, J. MacRae, J. Peckenham. Integrated assessment of alternative management strategies for PFAS-contaminated wastewater residuals. USGS Maine WRRl Grant (\$94,258, includes 1:1 cost share). Completed. 2021-2022.
16. **O. Apul (PI, 100%)**. Girl Scouts of Maine are Learning Nanotechnology Crayon Drawing Contest. Association of Environmental Engineering and Science Professors (AEESP) Outreach Grant (\$2,000). Completed. 2019-2020.

17. J. Reuther, **O. Apul (co-I, 50%)**. Oxime-Modified Activated Carbon Composites for Adsorption and Detoxification of Nerve Agents. U.S. Army, HEROES Center for Advanced Materials (\$196,529). Completed. 2019-2020.
18. D. Reckhow, J. Tobiason, **O. Apul (co-I, 33%)**. Statewide Per- and Polyfluoroalkyl Substances Sampling Campaign. Massachusetts Department of Environmental Protection (\$1,100,000) \*transferred the project in 2020 to X. Zhang at UMass Lowell because of my transition to UMaine.
19. **O. Apul (PI, 100%)**. Thermal Regeneration Technologies for Granular Activated Carbons Laden with Per- and Polyfluoroalkyl Substances. USGS Water Resources Research Institute at UMass Amherst (2020) (\$50,000 + \$100,000 cost share) \*transferred the project in 2020 to J. Reuther at UMass Lowell because of my transition to UMaine.
20. **O. Apul (PI, 50%)**, H. Mack. Carbon Nanomaterial Enabled Combustion of Natural Gas in Constant Volume Isothermal Chambers. Industry Sponsor (\$150,000). Completed in 2020.
21. J. Reuther, **O. Apul (co-I)**. Self-Healable, Regenerable Polymer Adsorbents for Low-Energy, Reusable Water Filters. Massachusetts Office of Technology Commercialization and Ventures (\$19,400). Completed in 2019.
22. **O. Apul (PI, 100%)**. Repeated Use of Carbon Additives during Microwave Remediation for Targeted Heating of Petroleum Hydrocarbons. Industry Sponsor (\$16,000). Completed in 2019.
23. **O. Apul (PI, 100%)**. Nitrogen Gas Adsorption for Detecting the Specific Surface Area of Novel Biopolymers. Industry Sponsor (\$7,000). Completed in 2019.
24. J. Reuther, **O. Apul (co-I)**. Self-Healable, Regenerable Nanoporous Membranes for Low-Energy, Reusable Water Filters. University of Massachusetts Internal Seed Grant (\$10,000). Completed in 2019.
25. **O. Apul (PI)**, J. Reuther. Modular Polymer-Immobilized Nano-Enabled Device for Lead Capture from Drinking Water Distribution Systems. Massachusetts Office of Technology Commercialization and Ventures (\$15,000). Completed in 2019.
26. **O. Apul (PI)**, X. Zhang. Increasing Biogas Production from Wastewater Residual Sludge by a Novel, Single-Step Nano-Enabled Thermal Pretreatment Method. Massachusetts Clean Energy Center Catalyst Program (\$65,000). Completed in 2018.
27. **O. Apul (PI, 100%)**, Nitrogen Adsorption for Detecting the Specific Surface Area of Hybrid Metal Oxides. Industry Sponsor (\$2,000). Completed in 2018.
28. **O. Apul (PI, 100%)**, The Value of Lead-Free Water for Lowell General Public. University of Massachusetts Lowell Community Engaged Research Program (\$1,500). Completed in 2017.
29. P. Dahlen, **O. Apul (co-I, 18%)**, P. Westerhoff. Additive-Augmented Microwave Remediation of Soils Containing Heavy-Hydrocarbons. Industry Sponsor (\$100,000). Completed in 2018.
30. E. Agar, **O. Apul (co-I)**, S. Pagsuyoin. High-Resolution Capacitive Deionization for Selective PFAS Removal, University of Massachusetts Internal Seed Grant (\$10,000). Completed in 2018.

#### **Past Projects as Senior Personnel**

31. **O. Apul**, P. Dahlen, P. Westerhoff. Additive Augmented, Ex-Situ Microwave Treatment for Remediation of Soils Containing Heavy Hydrocarbons. Industry sponsor (\$50,000). Completed in 2017.
32. **O. Apul**, P. Westerhoff, T. Reid. Experimental Investigation of 2-Methylisoborneol (MIB) and Geosmin Removal by Powdered Activated Carbon for Spartanburg Regional Joint Water System – Spartanburg, SC. Industry sponsor (\$22,000). Completed in 2016
33. P. Dahlen, **O. Apul**, Y. Guo. Microwave-Enabled Thermal Remediation of Organic Chemical Contaminated Soils using Dielectric Nanomaterials as Additives. School of Sustainable Engineering and the Built Environment at Arizona State University (\$5,000). Completed in 2016.
34. P. Westerhoff, **O. Apul**, S. Sinha. Removal of Perfluorinated Compounds (PFC) by Carbonaceous Nano-Adsorbents Coupled with Pre-Filtration Membranes. Industry sponsor (\$15,000). Completed in 2016

35. **O. Apul** (Coordinator & Founder), Biomimicry Initiative for Graduate Students at ASU. Biomimicry Center at Arizona State University. Completed in 2016.
36. P. Westerhoff, **O. Apul**. Evaluation of oxidant/surfactant/solvent cocktails for washing soils containing heavy hydrocarbons. Industry Sponsor (\$70,000). Completed in 2016.
37. **O. Apul**, N. Fischer, P. Westerhoff. In-Situ Remediation of Spent Granular Activated Carbon using Iron Oxide Nanoparticles and Hydrogen Peroxide, Industry sponsor (\$10,000). Completed in 2016.

#### **Pending Proposals**

38. S. Mukhopadhyay, **O. Apul (co-I)**, T. Marangoni, T. Schwartz, B. Frederick. Advanced nanocatalyst and nanosensor technologies for detection and degradation of persistent environmental pollutants. US EPA, (\$1.5M).
39. K. Varahramyan (VPR), H. Carter (Dean of Cooperative Extension), **O. Apul (co-I, science lead)**, J. Bolton. PFAS Research and Analysis Center at UMaine. Maine Earmark Congressional Delegation, (\$8M). Advanced to federal level approval.

## PUBLICATIONS

---

List of Publications (underlined names indicate students/post-docs directly advised by Dr. Apul, \* indicates corresponding author)

### University of Maine

69. Yaparathne, S., McCarthy, M., Nicoloso, L., Fisher, N., **Apul, O.G.\***, Graf, J., Barrett, L., George, O. (**submitted**). Evaluation of a new commercial catalyst for CO oxidation for environmental control and life support applications. *52<sup>nd</sup> International Conference on Environmental Systems – ICES 2023 (peer-reviewed proceeding)*.
68. Zhang, Y., Thomas, A., **Apul, O.G.**, Venkatesan, A. (**submitted**). Coexisting cations and long chain per- and polyfluoroalkyl substances (PFAS) inhibit the adsorption of short chain PFAS by granular activated carbon. *Journal of Hazardous Materials*.
67. Hatinoglu, D., Fortner J., **Apul, O.G.\*** (**submitted**). Superparamagnetic iron oxide nanoparticles as additives for microwave-based sludge pre-hydrolysis: A perspective. *Environmental Science and Technology*.
66. Sonmez, B., Biswas, P., Moavenzadeh Ghaznavi, S., Frederick, B., Reuther, J., **Apul, O.G.\*** (**2023**). Accessibility of adsorption sites for superfine powdered activated carbon incorporated into electrospun polystyrene fibers. *Chemical Engineering Journal*. 461: 142009.
65. Ersan, G., Brienza, M., Mulchandani, A., **Apul, O.G.**, Garcia-Segura, S. (**accepted with revisions**). Trends on arsenic species removal by metal-based nanoadsorbents. *Current Opinion in Environmental Science & Health*.
64. Biswas, P., Shuster, D., Sonmez-Baghirzade, B., Scanga, R., Harris, S., Tran, C., **Apul, O.G.\***, Reuther, J.\* (**2023**). Oxime-Functionalized, Non-Woven Nanofabrics for Rapid, Inexpensive Nerve-Agent Decontamination. *ACS Applied Nano Materials*. 6: 3425-3434.
63. Hatinoglu, D., Adan, A., Perreault, F., Imamoglu, I., **Apul, O.G.\*** (**submitted**). Predictive model development for adsorption of aromatic compounds by microplastics. *Chemical Engineering Journal*.
62. Barrios, A., **Apul, O.G.**, Perreault, F. (**accepted with revisions**). Increasing bromide removal by graphene-silver composites: nanoparticulate silver enhances bromide selectivity through direct surface interactions. *Chemosphere*.
61. Hatinoglu, D., Perreault, F., **Apul, O.G.\*** **2023**. Modified linear solvation energy relationships for adsorption of perfluorocarboxylic acids by microplastics. *Science of the Total Environment*. 860: 160524.
60. Collins, A., Ateia, M., Bhagat, K., Ohno, T., Perreault, F., **Apul, O.G.\*** **2023**. Emerging Investigator Series: Microplastic-based Leachate Formation under UV Irradiation: The Extent, Characteristics and Mechanisms. *Environmental Science: Water Research and Technology*. 9: 363-374.
59. **Apul, O.G.**, Arrowsmith, S., Hall, C., Miranda, E., Alam, F., Dahlen, P., Sra, K., Kamath, R., McMillen, S., Sihota, N., Westerhoff, P., Krajalnik-Brown, R., Delgado, A. **2022**. Biodegradation of petroleum hydrocarbons in a weathered, unsaturated soil is inhibited by peroxide oxidants. *Journal of Hazardous Materials*. 433: 128770.
58. **Apul, O.G.\***, Garcia-Segura, S., Qian, J. **2022**. Editorial - Advanced materials and novel processes for safe and sustainable water treatment. *Chemical Engineering Journal Advances*. 100403.
57. McAlexander, B., **Apul, O.G.**, MacRae, J., Olson, M. **2022**. Greenhouse Gas Emissions Estimates for Activated Carbon Treatment of PFAS in Maine Drinking Water. *Maine Policy Review*. 31: 39-47.
56. Egitto, J., Latayan, J., Pagsuyoin, S., **Apul, O.G.\***, Agar, E. **2022**. Towards Selective Removal of Bromide from Drinking Water Resources using Electrochemical Desalination. *Chemical Engineering Journal Advances*. 12: 100369.
55. Costigan, E., Collins, A., Hatinoglu, M.D., Bhagat, K., MacRae, J., Perreault, F., **Apul, O.G.\*** **2022**. Adsorption of Organic Pollutants by Microplastics: Overview of A Dissonant Literature. *Journal of Hazardous Materials Advances*. 6: 100091.

54. [Yaparathne, S., Doherty, Z.](#), Matula, E., Macrae, J., Garcia-Segura, S., **Apul, O.G.\* 2022**. Effect of air nanobubbles on oxygen transfer, oxygen uptake and, diversity of aerobic microbial consortium in activated sludge reactors. *Bioresource Technology*. 351: 127090.
53. Bhagat, K., Barrios, A., Rajwade, K., Kumar, A., Oswald, J., **Apul, O.G.**, Perreault, F. **2022**. Aging of microplastics increases their adsorption affinity towards organic contaminants. *Chemosphere*. 298: 134238.
52. Shahrokhinia, A., Rijal, S., Sonmez Baghirzade, B., Scanga, R., Biswas, P., Tafazoli, S., **Apul, O.G.**, Reuther, J. **2022**. Chain extensions in photoATRP-induced self-assembly (photoATR-pisa): A route to ultra-high solids concentrations and click nanoparticle networks as adsorbents for water treatment. *ACS Macromolecules*. 55: 3699-3710 (**cover article**).
51. Yildirim, T., [Yaparathne, S.](#), Graf, J., Garcia-Segura, S., **Apul, O.G.\* 2022**. Electrostatic forces and higher order curvature terms of Young-Laplace equation for stability of nanobubbles in water *npj Clean Water*. 5: 1-3.
50. Areeb, H., Sonmez-Baghirzade, B., **Apul, O.G.**, Kirisits, M.J., Dev, S., Das, S., Islam, S., Lai, Y., Huntington, H., Umanzor, S., Wan-Ting, C., Aggarwal, S., Saleh, N. **2022**. A symbiotic engineering approach for microplastic remediation in mariculture systems. *ACS ES&T Engineering*. 2: 606-616.
49. Hoogesteijn von Reitzenstein, N., [Sonmez Baghirzade, B.](#), Pruitt, E., Hristovski, K., Westerhoff, P., **Apul, O.G.\* 2022**. Comparing the morphologies and adsorption behavior of electrospun polystyrene composite fibers with 0D fullerenes, 1D multiwalled carbon nanotubes and 2D graphene oxides. *Chemical Engineering Journal Advances*. 9: 100199.
48. Cerron-Calle, G., Magdaleno, A., Graf, J., **Apul, O.G.**, Garcia-Segura, S. **2022**. Elucidating CO<sub>2</sub> nanobubble interfacial reactivity and impacts on water chemistry. *Journal of Colloid and Interface Science*. 607: 720-728.
47. Tang, Y., Lee, C.S., Walker, H., Gobler C., **Apul, O.G.**, Venkatesan, A., Mai, X. **2021**. Effect of residual H<sub>2</sub>O<sub>2</sub> on the removal of advanced oxidation byproducts by two types of granular activated carbon. *Journal of Environmental Chemical Engineering*. 9: 106838.
46. Bakkaloglu, S., Ersan, M., Karanfil, T., **Apul, O.G.\* 2021**. Effect of superfine pulverization of powdered activated carbon on adsorption of carbamazepine in natural source waters. *Science of the Total Environment*. 793: 148473.
45. [Lafaille, R.](#), [Bozkurt, Y.](#), Pruitt, E., Lewis, J., Bernier, R., Kong, D., Westerhoff, P., Dahlen, P., **Apul, O.G.\* 2021**. Repeatable use assessment of silicon carbide as permanent susceptor bed in ex situ microwave remediation of petroleum-impacted soils. *Case Studies in Chemical and Environmental Engineering*. 4: 100116.
44. **Apul, O.G.\***, Grissom, R., Damali, U., Toof, R. **2021**. Response to the Comment "Closing America's racial gap around drinking water quality perceptions and the role of the environmental engineering and science academic community". *Environment Science and Technology Water*. 1:461.
43. [Sonmez, B.](#), Zhang, Y., Reuther, J., Saleh, N. B., Venkatesan, A., **Apul, O.G.\* 2021**. Thermal regeneration of spent granular activated carbon presents an opportunity to break the forever PFAS cycle. *Environmental Science and Technology*. 55: 5608-5619.
42. Sabo-Attwood, T., **Apul, O.G.**, Bisesi Jr., J.H., Kane, A.S., Saleh, N., **2021**. Nano-scale applications in aquaculture: Opportunities for improved production and disease control. *Journal of Fish Disease*. 44: 359-370. (Top cited article between Jan. 21 – 15 Dec. 22)
41. [Bozkurt, Y.](#), [Lafaille, R.](#), Lu, D., Zhang, X., Giles, R., **Apul, O.G.\* 2021**. Effects of carbonaceous susceptors during microwave pretreatment of waste activated sludge and subsequent anaerobic digestion. *Bioresource Technology Reports* 13: 100641.
40. **Apul, O.G.\***, Grissom, R., Damali, U., Toof, R. **2021**. Divided perception of drinking water safety: another manifestation of America's racial gap. *Environment Science and Technology Water* 2: 6-7.
39. **Apul, O.G.\***, Perreault, F., Ersan, G., Karanfil, T. **2020**. Predictive model development for adsorption of synthetic organic compounds by carbon nanomaterials: an overview of the last decade from ground up. *Environmental Science: Water Research and Technology*. 6: 2949-2957.
38. Ramirez-Sanchez, I., **Apul, O.G.**, Saleh, N. **2020**. Microplastic particle versus fiber generation during photo-transformation in simulated seawater. *Royal Society of Chemistry Advances*. 10: 39931-39942.

37. Naik, R., Rowles, L., Hossain, A., Yen, M., Aldossary, R., **Apul, O.G.**, Conkle, J., Saleh, N. **2020**. Microplastic particle versus fiber generation during photo-transformation in simulated seawater. *Science of the Total Environment*. 736: 139690.
36. Partlan, E., Ren, Y., **Apul, O.G.**, Ladner, D., Karanfil, T. **2020**. Adsorption kinetics of synthetic organic contaminants onto superfine powdered activated carbon. *Chemosphere*. 253: 126628.
35. **Apul, O.G.**, Khalid, A., Rowles, L.S., Karanfil, T., Richardson, S., Saleh, N. **2020**. Transformation potential of 11-Nor-9-Carboxy- $\Delta^9$ -tetrahydrocannabinol during its passage through engineered water treatment systems: A perspective. *Environment International*. 137: 105586.
34. Khalid, A., Rowles, L.S., Ateia, M., Xiao, M., Moses, I., Bello, D., Karanfil, T., Saleh, N., **Apul, O.G.\* 2020**. Mesoporous activated carbon shows superior adsorption affinity for 11-nor-9-carboxy- $\Delta^9$ -tetrahydrocannabinol in water. *Clean Water (Nature Partner Journal)*. 3: 1-5.
33. Bozkurt, Y., **Apul, O.G.\* 2020**. Critical review for microwave pretreatment of waste activated sludge prior to anaerobic digestion. *Current Opinion in Environmental Science and Health*. 14: 1-9.
32. Saleh, N., Khalid, A., Tian, Y. Ayres, C., Sabaraya, I., Pietari, J., Hanigan, D., Chowdhury, I., **Apul, O.G.\* 2019**. Degradation and removal of poly- and per-fluoroalkyl substances from aqueous systems by nano-enabled water treatment technologies. *Environmental Science: Water Research and Technology*. 5: 198-208. **(cover article, best articles of 2019 collection)**.
31. Saleh, N., **Apul, O.G.\***, Karanfil, T. **2019**. The genesis of a critical environmental concern: Cannabinoids in our water systems. *Environmental Science and Technology*. 53: 1746-1747 (scientific opinion, not peer-reviewed).
30. Lu, D., Liu, X., **Apul, O.G.**, Zhang, L., Ryan, D., Zhang, X. **2019**. Optimization of biomethane production from anaerobic co-digestion of microalgae and septic tank sludge. *Biomass and Bioenergy*. 127: 105266.
29. Atkinson, A., **Apul, O.G.**, Schneider, O., Garcia-Segura, S., Westerhoff, P. **2019**. Nanobubble technologies offer opportunities to improve water treatment. *Accounts of Chemical Research*. 52: 1196-1205.
28. Ersan, G., Kaya, Y., Ersan, M., **Apul, O.G.**, Karanfil, T. **2019**. Adsorption kinetics and aggregation for three classes of carbonaceous adsorbents in the presence of natural organic matter. *Chemosphere*. 229: 515-524.
27. Ersan, G., **Apul, O.G.**, Karanfil, T. **2019**. Predictive models for adsorption of organic compounds by graphene nanosheets. *Science of the Total Environment*. 5: 198-208.
26. Kidd, J., Barrios, A., **Apul, O.G.**, Westerhoff, P. Perreault, F. **2018**. Removal of bromide from surface water: A comparison between silver-impregnated graphene oxide and silver-impregnated powdered activated carbon. *Environmental Engineering Science*, 35: 988-995.
25. Gan, W., Venkatesan, A., **Apul, O.G.**, Perreault, F., Yang, X., Westerhoff, P. **2018**. Bromide removal from drinking waters by silver amended coagulation. *Journal of American Water Works Association*, 110: 13-24 **(cover article)**.
24. Ersan G., **Apul, O.G.**, Perreault, F., Karanfil, T. **2017**. Adsorption of organic compounds by graphene nanosheets and comparison with carbon nanotubes: A review. *Water Research*, 126: 385-398.
23. Linard, E., **Apul, O.G.**, Karanfil, T., van der Hurk, P., Klaine, S. **2017**. Bioavailability of carbon nanomaterial-adsorbed polycyclic aromatic hydrocarbons to *P. promelas*: influences of adsorbate molecular size and configuration. *Environmental Science and Technology*, 51: 9288-9296.
22. Ateia, M., **Apul, O.G.**, Shimizu, Y., Muflihah, A., Yoshimura, C., Karanfil, T. **2017**. Elucidating adsorptive fractions of natural organic matter on carbon nanotubes. *Environmental Science and Technology*, 51:7101-7110.

**Arizona State University**



21. **Apul, O.G.\***, Hoogesteijn von Reitzenstein, N., Schoepf, J., Ladner, D. Hristovski, K., Westerhoff, P. **2017**. Superfine powdered activated carbon incorporated into electrospun polystyrene fibers preserve adsorption capacity. *Science of the Total Environment*, 592:458-464.
20. Garcia, J., Markovski, J., Gifford, J.M.K., **Apul, O.G.**, Hristovski, K.D. **2017**. The effect of metal (hydro)oxide nano-enabling on intraparticle mass transport of organic contaminants in hybrid granular activated carbon. *Science of the Total Environment*, 586: 1219-1227.
19. **Apul, O.G.\***, Delgado, A., Kidd, J., Alam, F., Dahlen P., Westerhoff, P. **2017**. Carbonaceous nano-additives augment microwave-enabled thermal remediation of soils containing petroleum hydrocarbons. *Environmental Science: Nano*, 3:997-1002.
18. **Apul, O.G.\***, Dahlen, P., Delgado, A., Sharif, F., Westerhoff, P. **2016**. Treatment of heavy, long-chain petroleum-hydrocarbon impacted soils using chemical oxidation, *Journal of Environmental Engineering-ASCE*, 040160065.
17. Ersan, G., Kaya, Y., **Apul, O.G.**, Karanfil, T. **2016**. Adsorption of organic contaminants by graphene nanosheets, carbon nanotubes and granular activated carbons under different natural organic matter preloading conditions, *Science of the Total Environment*, 565: 811-817.
16. Ersan, G., **Apul, O.G.**, Karanfil, T. **2016**. Linear solvation energy development for adsorption of organic contaminants by carbon nanotubes, *Water Research*, 98: 28-38.

### Clemson University

15. Chen, C., **Apul, O.G.**, Karanfil, T. **2017**. Removal of bromide from surface waters using silver impregnated activated carbon. *Water Research*, 113: 223-230
14. Partlan, E., Davis, K., Ren, Y., **Apul, O.G.**, Mefford, T.M., Karanfil, T., Ladner, D. **2016**. Effect of bead milling on chemical and physical characteristics of activated carbons pulverized to superfine sizes. *Water Research*, 89: 161-170.
13. Zhou, Y., **Apul, O.G.**, Karanfil, T. **2015**. Adsorption of halogenated aliphatic contaminants by graphene nanomaterials. *Water Research*, 79: 57-67.
12. **Apul, O.G.**, Zhou, Y., Karanfil, T. **2015**. Mechanisms and modeling of halogenated aliphatic contaminant adsorption by carbon nanotubes. *Journal of Hazardous Materials*, 295: 138-144.
11. Linard, E., Van den Hurk, P., Karanfil, T., **Apul, O.G.**, Klaine, S. **2015**. Influence of carbon nanotubes on the bioavailability of fluoranthene. *Environmental Toxicology and Chemistry*, 34: 658-666.
10. Bliznyuk, V., Duval, C., **Apul, O.G.**, Seliman, A., Husson, S., DeVol, T. **2015**. High porosity scintillating polymer resins for ionizing radiation sensor applications. *Polymer*, 56: 271-279.
9. **Apul, O.G.**, Karanfil, T. **2015**. Adsorption of synthetic organic contaminants by carbon nanotubes: A critical review. *Water Research*, 68: 34-55.
8. Wang, Q.L., **Apul, O.G.**, Xuan, P., Luo, F., Karanfil, T. **2013**. Development of 3D QSPR model for adsorption of aromatic compounds by carbon nanotubes: Comparison among multiple linear regression, artificial neural network and support vector machine. *Royal Society of Chemistry Advances*, 3: 23924-23934.
7. Ellerie, J.R., **Apul, O.G.**, Karanfil, T., Ladner, D.A. **2013**. Comparing graphene, carbon nanotube, and superfine powdered activated carbon as adsorptive coating materials for ultrafiltration membranes. *Journal of Hazardous Materials*, 261: 91-98.
6. **Apul, O.G.**, Wang, Q., Shao, T., Rieck J., Karanfil, T. **2013**. Predictive model development for adsorption of aromatic contaminants by multi-walled carbon nanotubes. *Environmental Science and Technology*, 47(5): 2295-2303.
5. **Apul, O.G.**, Wang, Q., Zhou, Y., Karanfil, T. **2013**. Adsorption of aromatic organic contaminants by graphene nanosheets: Comparison with carbon nanotubes and activated carbon. *Water Research*, 47(4): 1648-1654.

4. **Apul, O.G.**, Shao, T., Zhang, S., Karanfil, T. **2012**. The impact of carbon nanotube morphology on phenanthrene adsorption. *Environmental Toxicology and Chemistry*, 31(1): 73-78.

### **Middle East Technical University**

3. **Apul, O.G.** and Sanin, F.D. **2010**. Ultrasonic pretreatment and subsequent anaerobic digestion under different operational conditions. *Bioresource Technology*, 101(23): 8984-8992.
2. **Apul, O.G.**, Atalar, I., Zorba, G.T. and Sanin, F.D. **2010**. The dewaterability of disintegrated sludge samples before and after anaerobic digestion. *Drying Technology*, 28(7): 901-909.
1. **Apul, O.G.**, Dogan, I. and Sanin, F.D. **2009**. Can capillary suction time be an indicator for sludge disintegration? *Journal of Residual Science and Technology*, 6(3): 99-104.

## **OTHER PUBLICATIONS AND PRESENTATIONS**

---

### **Thesis and Dissertation**

1. **Apul, O.G.** Predictive Model Development for Adsorption of Organic Contaminants by Carbon Nanotubes. Clemson University, August 2014, Ph.D. Dissertation, Clemson, SC.
2. **Apul, O.G.** Municipal Sludge Minimization: Evaluation of Ultrasonic and Acidic Pretreatment Methods and Their Subsequent Effects on Anaerobic Digestion. Middle East Technical University, February 2009, M.S. Thesis, Ankara, Turkey.

### **Invited Keynote and Plenary Presentations**

1. **Apul, O.G.** Carbon Nanomaterial Applications in Drinking Water Treatment. November 2022, The 5<sup>th</sup> International Congress of Nanoscience and Nanotechnology, Virtual Talk.
2. **Apul, O.G.** En Route to Pragmatic and Responsible Use of Carbon Nanomaterials for Drinking Water Treatment. November **2021**, Sustainable Nanotechnology Organization Conference Emerging Investigator Plenary Lecture, Virtual Event.
3. **Apul, O.G.** Adsorption of Organic Contaminant by Carbonaceous Adsorbents: Engineered and Natural Applications. December **2016**, Academy of Co-Creative Education of Environment and Energy Science Forum, San Diego, CA.

### **Other Invited Presentations**

4. **Apul, O.G.** Thermal Regeneration of Spent Granular Activated Carbon to Break the Forever PFAS Cycle. February **2023**. The Maine Water Utilities Association Annual Meeting. Augusta, ME.
5. **Apul, O.G.** Carbon Nanomaterials for Drinking Water Treatment January **2023**. University of Maine, Chemistry Department Graduate Research Seminar Series. Orono, ME
6. **Apul, O.G.** Microplastics: The Elephant in the Room. December **2022**. Bangor Area Stormwater Group Monthly Meeting. Virtual Presentation.
7. **Apul, O.G.** Carbon-based Nanomaterials for Advanced Water Treatment Technologies. November **2022**. Middle East Technical University, Environmental Engineering Seminar. Virtual Presentation.
8. **Apul, O.G.** Pushing the Envelope of Carbon Nanomaterial Applications in Drinking Water Treatment. September **2022**, Georgia Institute of Technology Environmental Engineering Virtual Seminar Series.
9. Kopec, D., **Apul, O.G.**, Peckenham, J., Noblet, C. The Forever Chemicals: PFAS in Maine, April **2022**, University of Maine, Senator George J. Mitchell Center for Sustainability Solutions Seminar Series, Orono, ME.

10. **Apul, O.G.** Adsorption of PFAS by Microplastics: One Water, Two Crises, March **2022**, Water Environment Federation, Public Health, and Water Conference & Wastewater Disease Surveillance Summit - Status Update on PFAS Challenges and Opportunities: Looking Beyond Documented Occurrence Session. Virtual Presentation
11. **Apul, O.G.** An Overview of Nano-Scale Opportunities for Water Treatment Applications. March **2022**. University of Massachusetts Amherst, Department of Environmental Engineering Seminar Series. Virtual Seminar.
12. **Apul, O.G.** Nanotechnology and Responsible Water Treatment. April **2021**. University of Florida, Department of Environmental & Global Health Seminar Series, Virtual Seminar.
13. **Apul, O.G.** Water Treatment: An Overview of Modern-day Challenges and Technological Opportunities. April **2021**. University of Maine, Department of Chemical and Biomedical Engineering Seminar Series, Virtual Seminar.
14. **Apul, O.G.** Sustainable Water Treatment – Moving from Victorian Era Technology to Nanotechnology, November **2020**, University of Maine, Senator George J. Mitchell Center for Sustainability Solutions Seminar Series, Orono, ME.
15. **Apul, O.G.** Sustainable Water Treatment and Remediation Session: Chair’s Talk, November **2020**, Sustainable Nanotechnology Organization, Virtual Conference.
16. **Apul, O.G.** Carbon Nanomaterials for Innovations in Drinking Water Treatment, February **2020**, University of Maine, Environmental Engineering Seminar Series, Orono, ME.
17. **Apul, O.G.** Sewage Sludge for Biogas Production, February **2020**, Massachusetts Institute of Technology, Massachusetts Cleantech Landscape, Boston, MA.
18. **Apul, O.G.** Predictive Model Development for Adsorption of Synthetic Organic Contaminants by Carbon Nanomaterials, April **2019**, McGill University, Environmental Engineering Seminar, Montreal, QB, Canada.
19. **Apul, O.G.** Carbon Nanomaterials for Innovations in Drinking Water Treatment, February **2019**, Stony Brook University, NYS Center for Clean Water Technology Seminar, Stony Brook, NY.
20. **Apul, O.G.** Carbon-based Nanomaterials for Innovations in Drinking Water Treatment, March **2018**, University of Florida, Environmental Engineering Seminar, Gainesville, FL.
21. **Apul, O.G.,** Pruitt, E., Dahlen, P., Westerhoff, P. Nanoparticle-Augmented Microwave Remediation of Soils, January **2018**, Chevron HHSRG Year-End Meeting, Houston, TX.
22. **Apul, O.G.,** Zeng, C., Delgado, A., Westerhoff, P., Dahlen, P. Krajalnik-Brown, R., Surfactant and Oxidant Enhanced Bioremediation, January **2018**, Chevron HHSRG Year-End Meeting, Houston, TX.
23. **Apul, O.G.,** Adsorption of synthetic organic compounds by carbon nanomaterials. Plastics Engineering Presentation at University of Massachusetts Lowell. December **2017**. Lowell, MA.
24. **Apul, O.G.** Adsorption of Organic Compounds by Carbon Nanomaterials: Exploring Intermolecular Interactions to Advance in Water Treatment Technologies. November **2017**, University of Massachusetts Amherst Environmental Engineering Seminar, Amherst, MA.
25. **Apul, O.G.,** Reid, T., Westerhoff, P. Experimental Investigation of 2-Methylisoborneol (MIB) and Geosmin Removal by Powdered Activated Carbon for Spartanburg Regional Joint Water System, September **2016**, ASU Regional Water Quality Workshop, Tempe, AZ.
26. **Apul, O.G.,** Predictive model development for adsorption of organic contaminants by carbon nanotubes. Environmental Engineering Seminar at Arizona State University, February **2015**, Tempe, AZ.
27. **Apul, O.G.** Turkey’s Water Perspective, American Water Works Association Annual Conference, June **2012**, Dallas, TX.
28. **Apul, O.G.** Evaluation of Acidic and Ultrasonic Sludge Pretreatment Methods. Environmental Engineering Seminar at Middle East Technical University, April **2008**, Ankara, Turkey.

### Oral and Poster Presentations (Advisees are underlined)

29. Zollitsch, B., Johnson, G., Hatinoglu, D., Ross, L., Smith, S., Noblet, C., **Apul, O.G.** Exploring the Relationship Between Stormwater and Microplastics Pollution. Maine Stormwater Conference, November **2022** (Oral Presentation).
30. Sonmez Baghirzade, B., Biswas, P., Frederick, B., Reuther, J.F., **Apul, O.G.** A study for understanding the accessibility of sorption sites for superfine powdered activated carbon particles that are embedded in non-woven electrospun polystyrene fibers. Sustainable Nanotechnology Organization Conference, November **2022** (Oral Presentation).
31. Yaparathne, S., Salem, S.E., Doherty, Z.E., Bouchard, D., Magdaleno, A., Garcia-Segura, S., **Apul, O.G.** Case studies for nanobubble-enabled oxygen mass transfer and pollutant removal. Sustainable Nanotechnology Organization Conference, November **2022** (Poster presentation).
32. **Apul, O.G.**, Yaparathne, S., Doherty, Z. Nanobubble facilitated mass transfer to remove persistent organic pollutants from unconventional drinking water sources for space exploration Maine Space Grant Consortium Ideas Lab, September **2022** (Oral Presentation).
33. Moavenzadeh, S., Kopec, D., **Apul, O.G.** The interaction of per- and polyfluoroalkyl substances (PFAS) with landfill geomembrane and impact of liner integrity on PFAS seepage. EREF Intercontinental Landfill Research Symposium, September **2022** (Oral Presentation).
34. Collins, A., Ateia, M., Bhagat, K., Ohno, T., Perreault, F., **Apul, O.G.** Microplastic leachate formation under UV irradiation: extent, characteristics, and mechanisms. AEESP Research and Education Conference, June **2022** (Poster Presentation).
35. Yaparathne, S., Doherty, Z.E., Magdaleno, A.L., Matula, E.E., MacRae, J.D., Garcia-Segura, S., **Apul, O.G.** Effect of air nanobubbles on oxygen transfer, oxygen uptake and diversity of aerobic microbial consortium in activated sludge reactors, AEESP Research and Education Conference, June **2022** (Oral Presentation).
36. Perreault, F., Bhagat, K., **Apul, O.G.**, Oswald, J. Weathering of microplastics in the environment affects their adsorption affinity for organic contaminants, AEESP Research and Education Conference, June **2022** (Oral Presentation).
37. Liggiero, J., Bailey, T., Hatinoglu, M.D., Ross, L., **Apul, O.G.** Identifying the Magnitude and Character of Microplastic Pollution in Frenchman Bay, Maine. UMaine Student Symposium, April **2022** (Poster Presentation).
38. Doherty, Z.E., Yaparathne, S., Bouchard, D., **Apul, O.G.** Taste and Odor Degradation in Water by Nanobubble-Facilitated Ultrasonication. UMaine Student Symposium, April **2022** (Poster Presentation).
39. Hatinoglu, M.D., **Apul, O.G.** Predictive Statistical Model Development for Adsorption of Forever Chemicals (PFAS) by Microplastics. 2022 Maine Sustainability & Water Conference, March **2022** (Poster Presentation).
40. Moavenzadeh-Ghaznavi, S., **Apul, O.G.** Partitioning of Per- and Polyfluoroalkyl Substances (PFAS) onto Landfill Geomembrane Liners: Are Landfills their Final Destination? 2022 Maine Sustainability & Water Conference, March **2022** (Poster Presentation).
41. Sonmez Baghirzade, B., Biswas, P., Reuther, J., **Apul, O.G.** Adsorption Capacity Enhanced by Tuning Carbon Size of Superfine Powdered Activated Carbon Electrospun Fiber. 2021 Sustainable Nanotechnology Organization Conference, November **2021** (Oral Presentation).
42. Bhagat, K., **Apul, O.G.**, Perreault, F. Aging of microplastics increases its sorption affinity towards organic contaminants. 259th American Chemical Society National Conference, August **2021** (Oral Presentation).
43. Collins, A., Adams, A., Ateia, M., Perreault, F., **Apul, O.G.** Determination of organic matter leaching from microplastics during ultraviolet weathering. 95<sup>th</sup> ACS Colloid and Surface Science Symposium (Virtual), June **2021** (Poster Presentation).

44. Collins, A., Costigan, E., Bhagat, K., Oswald, J., Perreault, F. **Apul, O.G.** Adsorption of synthetic organic compounds by microplastics: A cacophonous literature. Maine Sustainability & Water Symposium (Virtual), March **2021** (Poster Presentation).
45. Kopec, D., **Apul, O.G.**, MacRae, J., Noblet, C., Peckenham, J. PFAS? Yes, PFAS – A Serious Problem in Need of a Sustainable Solution. Maine Sustainability & Water Symposium (Virtual), March **2021** (Oral Presentation).
46. **Apul, O.G.**, Sonmez, B.B., Zhang, Y., Reuther, J., Saleh, N. B., Venkatesan, A. Thermal Regeneration of Spent Granular Activated Carbon Presents an Opportunity to Break the Forever PFAS Cycle Maine Sustainability & Water Symposium (Virtual), March **2021** (Oral Presentation).
47. Sonmez, B., Zhang, Y., Reuther, J., Saleh, N. B., Venkatesan, A., **Apul, O.G.** Regeneration of Spent Granular Activated Carbon Presents an Opportunity to Break the Forever PFAS Cycle. SERDP & ESTCP (Virtual) Symposium, December **2020** (Poster Presentation).
48. Reuther, J., **Apul, O.G.**, Shahrokhinia, A., Sonmez, B. Dynamic nanosphere networks: A novel platform for regenerable adsorbents for point-of-use water treatment systems. American Chemical Society National Meeting, August **2020**, Virtual Conference (Oral Presentation).
49. Sonmez, B., Wei, J., Wong, H.W., **Apul, O.G.** Breaking the Cycle of Forever Chemicals, Per- And Polyfluorinated Alkyl Substances (PFAS) in Water Treatment Systems. UMass Lowell Student Research & Community Engagement Symposium, April **2020**, Lowell, MA (Poster Presentation).
50. Bozkurt, Y., Lu, D., Zhang, X., Giles, R., **Apul, O.G.** Nano-enabled Pretreatment of Waste Activated Sludge prior to Anaerobic Digestion. Sustainable Nanotechnology Organization Conference, November **2019**, San Diego, CA (Oral Presentation).
51. Ashani, H., **Apul, O.G.** Removal of Perfluorinated Chemicals from an Arizona Groundwater Well by Various Adsorbents. American Water Works Association California-Nevada Section Annual Fall Conference, October **2019**, San Diego, CA (Oral Presentation).
52. LaFaille, R., Pruitt, E., Lewis, J., Bernier, R., Dahlen, P., **Apul, O.G.** Repeatable Use of Susceptors in Microwave Remediation of Petroleum Contaminated Soils. New England Graduate Student Water Symposium, September **2019**, Amherst, MA (Poster Presentation).
53. Rowles, S., **Apul, O.G.**, Karanfil, T., Saleh, N. Transformation and Removal Efficacy of Common Cannabinoids in Engineered Aquatic Systems. American Chemical Society National Meeting, Cannabis Chemistry Subdivision, August **2019**, San Diego, CA (Oral Presentation).
54. Bozkurt, Y., LaFaille, R., Zhang, X., Yu, T., Giles, R., **Apul, O.G.** Nano-Enabled Pretreatment of Waste Activated Sludge Prior to Anaerobic Digestion. Gordon Research Conference: Environmental Nanotechnology, June **2019**, Newry, ME (Poster Presentation).
55. LaFaille, R., Zhang, X., Giles, R., **Apul, O.G.** Nano-Enabled Microwave Pretreatment of Waste Activated Sludge. New England Graduate Student Water Symposium, September **2018**, Amherst, MA (Poster Presentation).
56. Egitto, J., Latayan, J., Pagsuyoin, S., **Apul, O.G.**, Agar, E. Selective Bromide Removal from Surface Waters using Capacitive Deionization. New England Graduate Student Water Symposium, September **2018**, Amherst, MA (Poster Presentation).
57. Barrios, A., Kidd, J., **Apul, O.G.**, Westerhoff, P., Perreault, F. Comparison of Graphene Oxide Impregnated with Ionic or Nano Silver for Bromide Removal from Surface Waters. American Chemical Society 256<sup>th</sup> National Meeting and Exhibition, August **2018**, Boston, MA (Oral Presentation).
58. Atkinson, A., **Apul, O.G.**, Schneider, O., Garcia-Segura, S., Westerhoff P. Implementation of Nanobubble Based Technologies in Water Treatment. 256<sup>th</sup> American Chemical National Meeting and Exhibition. August **2018**, Boston, MA (Oral Presentation)
59. Khalid, A., Pagsuyoin, S., Bello, D., Karanfil, T., **Apul, O.G.** Adsorption of  $\Delta^9$ -tetrahydrocannabinol by Carbon-Based Nano Adsorbents. 256<sup>th</sup> American Chemical Society National Meeting and Exhibition. August **2018**, Boston, MA (Oral Presentation)

60. Ashani, H., Khalid, A., **Apul, O.G.**, Sinha, S., Westerhoff, P. Removal of Perfluorinated Chemicals (PFCs) from Arizona Groundwater by Carbonaceous Nanomaterials. Arizona Water 91<sup>st</sup> Annual Conference. May **2018**. Phoenix, AZ (Oral Presentation).
61. Khalid, A., Tian, Y., Ayres, C., Sabaraya, I.V., Pietari, J., Chowdhury, I., Saleh, N.B., **Apul, O.G.** Removal of Poly- and Per-fluoroalkyl Substances (PFAS) from Natural Waters. Cabot Corporation, Student Material Research Symposium. May **2018**. Billerica, MA (Poster Presentation).
62. Dooley, K., Belanger, N., Gannon, O., Giles, R., Barrington, L., **Apul, O.G.** Sanitation Solutions for Housing Units of an Orphanage in Les Cayes, Haiti. University of Massachusetts Lowell, Student Symposium. May **2018**. Lowell, MA (Poster Presentation).
63. Khalid, A., Rowles, L.S., **Apul, O.G.**, Saleh, N. Readily Deployable Electrospun Polymer/Nanocomposite Cartridge for Lead Removal from Drinking Water Distribution Pipelines. University of Massachusetts Lowell, Francis College of Engineering Prototyping Competition. December **2017**. Lowell, MA (Poster Presentation/Best Poster Acc. to Crowd Voting).
64. Pruitt, E, **Apul, O.G.**, Dahlen, P., Westerhoff, P., Kamath, R., Kong, K. Nano-augmented microwave irradiation of soils containing heavy and long-chain petroleum-hydrocarbons. Pan American Congress of Nanotechnology Fundamentals and Applications to Shape the Future. November **2017**. Guarujá, SP, Brazil (Poster Presentation).
65. **Apul, O.G.**, Innovations in Drinking Water Treatment Technologies: Nanoscale Solutions to Macroscale Problems. 2017-2018 Faculty Symposium at University of Massachusetts Lowell. November **2017**. Lowell, MA (90-Second Flash Oral Presentation).
66. **Apul, O.G.**, Innovations in Drinking Water Treatment Technologies. Industry Advisory Board Meeting, September **2017**. Lowell, MA (Short Introductory Oral Presentation).
67. **Apul, O.G.**, Delgado, A., Miranda, E., Krajmalnik-Brown, R., Westerhoff, P., Sihota, N, Kamath, R., Sra, K., McMillen, S. Enhancing the biodegradation of heavy-hydrocarbons in soil. Chevron Mid-Year Meeting, August **2017**, Project Meeting, Houston, TX (Oral Presentation).
68. Pruitt, E., **Apul, O.G.**, Dahlen, P., Westerhoff, P., Kamath, R., Kong, K. Additive augmented, ex-situ microwave treatment for remediation of soils containing heavy hydrocarbons. Chevron Mid-Year Meeting, August **2017**, Project Meeting, Houston, TX (Oral Presentation).
69. Kidd, J., Barrios, A., **Apul, O.G.**, Perreault, F., Westerhoff, P. Silver impregnated graphene oxide removes bromide from surface waters. Gordon Research Conference (GRC) on Environmental Nanotechnology. June **2017**. Stowe, VT (Poster Presentation & Oral Presentation in Gordon Research Seminar Series).
70. Barrios, A.C., Kidd, J., **Apul, O.G.**, Westerhoff, P., and Perreault, F. Silver impregnated graphene oxide for bromide removal from surface water: ionic silver versus nano-silver. Gordon Research Conference (GRC) on Environmental Nanotechnology. June **2017**. Stowe, VT (Poster Presentation).
71. Linard, E., **Apul, O.G.**, Karanfil, T., van den Hurk, P., Klaine, S. Application of a bioavailability index to assess fish exposure to carbon nanomaterial-adsorbed PAHs. Gordon Research Conference (GRC) on Environmental Nanotechnology. June **2017**. Stowe, VT (Poster Presentation).
72. Delgado, A.G., **Apul, O.G.**, Chen, T., Yavuz, B.M., Rittmann, B.E., Westerhoff, P., Krajmalnik-Brown, R. Lifting the weight off crude oils: Potentials and limitations of combined chemical oxidation and biodegradation. Association of Environmental Engineering and Science Professors (AEESP) Research and Education Conference, June **2017**, Ann Arbor, MI (Poster Presentation).
73. Barrios, A.C., Kidd, J., **Apul, O.G.**, Westerhoff, P., and Perreault, F. Silver impregnated graphene oxide for bromide removal from surface water: ionic silver versus nano-silver. May **2017**. Phoenix, AZ, Arizona Water 90th Annual Conference. Phoenix, AZ (Oral Presentation).
74. Barrios, A.C., Kidd, J., **Apul, O.G.**, Westerhoff, P., and Perreault, F. Silver impregnated graphene oxide for bromide removal from surface water: ionic silver versus nano-silver. May **2017**. Houston, TX, NEWT 2nd Annual Site Visit. Houston, TX (Poster Presentation).

75. **Apul, O.G.**, Nano-Environment Interconnections: Applications and Implications of Nano in Natural and Built Environments. October **2016**, Translating Graduate Nano-Experience to an Academic Career: Integrating Social Aspects in Engineering Education through Active Learning Workshop. Austin TX (Flash Oral Presentation).
76. **Apul, O.G.**, von Reitzenstein, N.H., Ladner, D., Hristovski, K., Westerhoff, P. Development of Novel Non-Woven Fabrics by co-Spinning of Superfine Powdered Activated Carbon and Polystyrene. American Chemical Society (ACS) National Meeting and Exhibition, August **2016**, Philadelphia, PA (Oral Presentation).
77. **Apul, O.G.**, Alam, F., Mouti, A., Arrowsmith, S., Dahlen, P., Delgado, P., Westerhoff, P., Krajmalnik-Brown, R., Kamath, R. and McMillen, S. Enhancing the Biodegradation of Heavy Hydrocarbons in Soil. Chevron Mid-Year Meeting, August **2016**, Project Meeting at Rice University, Houston, TX.
78. von Reitzenstein, N.H., **Apul, O.G.**, Hristovski, K., Westerhoff, P. Engineering Polymer-Supported Nanomaterial Networks for Water Treatment via Electrospinning. AZ Water 89<sup>th</sup> Annual Conference, May **2016**, Tempe, AZ (Oral Presentation).
79. **Apul, O.G.**, Westerhoff, P. and Sihota, N. Heavy Hydrocarbon Soil Remediation Group: Summary of Results for Surf-Ox Team. Chevron End-of-Year Meeting, November **2015**, Project Meeting at Arizona State University, Tempe, AZ.
80. **Apul, O.G.**, Westerhoff, P., Sihota, N. and Zuo, Y. Evaluation of oxidant/surfactant/solvent cocktails for washing soils containing heavy hydrocarbons. Excavation and off-site management. Chevron Mid-Year Technology Deployment Meeting, May **2015**, Miami, FL.
81. Fischer, N., **Apul, O.G.**, Hristovski, Westerhoff, P. and Nowack, K. In situ regeneration of granular activated carbon saturated with natural organic matter and micropollutants. American Water Works Association (AWWA) Water Quality Technology Conference (WQTC), November **2015**, Salt Lake City, UT (Poster Presentation).
82. Kidd, J.M., **Apul, O.G.**, Hanigan, D., Hristovski, K. Reed, R., Herckes, P. and Westerhoff, P. Comparison of the material properties of eight unique nanoparticles using nano-metrological functional assays. Fourth Annual Conference, Sustainable Nanotechnology Organization, November **2015**, Portland, OR (Poster Presentation).
83. Partlan, E., Davis, K., Ren, Y., **Apul, O.G.**, Mefford, O.T., Karanfil, T. and Ladner, D.A. Effects of Bead Milling on Activated Carbon Characteristics: Trends in Superfine PAC. American Water Works Association (AWWA) Water Quality Technology Conference (WQTC), November **2015**, Salt Lake City, UT (Oral Presentation).
84. Delgado, A.G., Kamath, R., **Apul, O.G.**, Chen, T., Rittmann, B., Westerhoff, B. and Krajmalnik-Brown, R. Chemical oxidants application for remediation of petroleum hydrocarbons. LAPI-ITB Workshop, August **2015**, Bandung, West Java, Indonesia (Oral Presentation).
85. Delgado, A.G., Kamath, R., **Apul, O.G.**, Westerhoff, B. and Krajmalnik-Brown, R. Surfactant-enhanced remediation of petroleum hydrocarbons. LAPI-ITB Workshop, August **2015**, Bandung, West Java, Indonesia (Oral Presentation).
86. Westerhoff, P., **Apul, O.G.** and Sihota, N. Evaluation of oxidant/surfactant/solvent cocktails for washing soils containing heavy hydrocarbons. Chevron Annual Meeting, January **2015**, San Ramon, CA (Oral Presentation).
87. Partlan E., Ren, Y., **Apul, O.G.**, Karanfil, T., and Ladner, D.A. Variations of superfine activated carbon produced by bead milling for trace organic contaminant adsorption, American Water Works Association (AWWA) Water Quality Technology Conference (WQTC), November **2014**, New Orleans, LA (Poster presentation).
88. **Apul, O.G.**, Zhou, Y. and Karanfil, T. Adsorption of halogenated aliphatic contaminants by graphene nanosheets. American Chemical Society (ACS) National Meeting and Exhibition, August **2014**, San Francisco, CA (Oral Presentation).
89. **Apul, O.G.** and Karanfil, T. Adsorption of synthetic organic contaminants by carbonaceous nanomaterials. Association of Environmental Engineering and Science Professors (AEESP) 50th Anniversary Conference, July **2013**, Golden, CO (Poster Presentation).
90. **Apul, O.G.** and Karanfil, T. Evaluation of carbonaceous nanoadsorbents for adsorption of synthetic organic contaminants. Gordon Research Conference: Environmental Nanotechnology, June **2013**, Stowe, VT (Poster Presentation).

91. **Apul, O.G.** and Karanfil, T. Evaluation of alternative carbon adsorbents for water treatment: A comparison of activated carbon, carbon nanotubes and graphene nanosheets. 23rd Annual South Carolina Environmental Conference, March **2013**, Myrtle Beach, SC (Poster Presentation).
92. **Apul, O.G.** and Karanfil, T. Quantitative structure-adsorbability relationships for the adsorption of organic chemicals by carbon nanotubes. NSF Nanoscale Science and Engineering Grantees Conference, December **2012**. Arlington, VA (Poster Presentation).
93. **Apul, O.G.** and Karanfil, T. Predictive model development for adsorption of synthetic organic contaminants by carbon nanotubes. American Water Works Association Annual Conference, June **2012**, Dallas, TX (Oral Presentation).
94. **Apul, O.G.**, Rieck, J.R. and Karanfil, T. QSAR & LSER model development for adsorption of organic contaminants by carbon nanotubes. 243<sup>rd</sup> Annual American Chemical Society Meeting & Expo, March **2012**, San Diego, CA (Poster Presentation).
95. Wang, Q., **Apul, O.G.**, Xuan, P., Luo, F., Rieck, J.R. and Karanfil, T. Statistical analysis in 3D QSPR model development for organic compounds adsorption onto CNTs. 243<sup>rd</sup> Annual American Chemical Society Meeting & Expo, March **2012**, San Diego, CA (Poster Presentation).
96. **Apul, O.G.**, Rieck, J.R. and Karanfil T. A predictive model development for adsorption of organic contaminants by carbon nanotubes. Symposium/Workshop: Carbons for Energy Applications, March **2012**, Stone Mountain, GA (Poster Presentation).
97. **Apul, O.G.**, Rieck, J.R. and Karanfil T. Treating drinking water with carbon nanotubes: comparison of two modeling approaches. 22nd Annual South Carolina Environmental Conference, March **2012**, Myrtle Beach, SC (Poster Presentation).
98. **Apul, O.G.**, Rieck, J.R. and Karanfil T. Adsorption of organic contaminants by carbon nanotubes. 21st Annual South Carolina Environmental Conference, March **2011**, Myrtle Beach, SC (Poster Presentation).
99. Zorba G.T., Atalar I., **Apul O.G.** and Sanin F. D. Enhancement of sludge reduction and methane production rates using different pretreatment methods applied prior to small scale laboratory anaerobic digesters. WEF Conference Residuals and Biosolids. May **2010**, Savannah, GA (Poster Presentation).
100. **Apul O.G.** and Sanin F.D. Examination of sludge minimization potential and associated costs by ultrasonic pretreatment. 8<sup>th</sup> National Environmental Engineering Congress. November **2009**, Antalya, Turkey (Oral Presentation).
101. **Apul O. G.**, Dogan I. and Sanin F. D. Can capillary suction time be an indicator for sludge disintegration? IWA Specialist Conference Sustainable Management of Water and Wastewater Sludges. August **2009**, Harbin, China (Oral Presentation).
102. **Apul, O.G.** and Sanin, F.D. Minimization of sludge by ultrasonic pretreatment. 6th Symposium of Environmental Pollution Priorities in Turkey. May **2009**, Gebze, Turkey (Oral Presentation).
103. Koksoy G.T., Dogan I., **Apul O.G.** and Sanin F. D. Effect of digester F/M ratio on gas production of ultrasonically treated sludge. International Water Association (IWA) World Water Congress and Exhibition. September **2008**, Vienna, Austria (Oral Presentation).
104. **Apul O.G.**, Doğan I., Köksoy G.T. and Sanin F.D. Effects of chemical and thermo-chemical pretreatment methods of sludge on anaerobic digestion. 7<sup>th</sup> National Environmental Engineering Congress. October **2007**, Izmir, Turkey (Oral Presentation).



## TEACHING AND MENTORSHIP EXPERIENCE

---

### Student Theses Conducted as Primary Advisor

Ashton M. Collins, **2022**, MS Thesis, University of Maine. Role of microplastics on the release and adsorption of organic compounds in natural waters.

Yigit C. Bozkurt, **2020**, MS Thesis, University of Massachusetts Lowell. Nano-enabled microwave pretreatment of waste activated sludge prior to anaerobic digestion using carbon nanofibers.

Ritchie K. Lafaille, **2020**, MS Thesis, University of Massachusetts Lowell. Repeatable use assessment of microwave susceptors as permanent bed in *ex situ* remediation of petroleum-contaminated soils.

Arsalan Khalid, **2019**, MS Thesis, University of Massachusetts Lowell. Removal of organic contaminants of incipient concern from water by graphitic adsorbents.

### Student Theses as Committee Member

Eliza M. Costigan, **2022**, MS Thesis, University of Maine. Nutrient Removal from Recirculating Aquaculture System Water.

Mahnazossadat Seyednourani, **2020**, PhD Dissertation, University of Massachusetts Lowell. Understanding Critical Factors Underpinning Electrode Degradation in Vanadium Redox Flow Batteries.

Dingnan Lu, **2018**, PhD Dissertation, University of Massachusetts Lowell. Anaerobic Codigestion of Microalgae and Septic Tank Sludge - Feasibility Determination, Performance Evaluation and Sustainability Exploration.

### Ongoing and Past Mentorship Activities

#### University of Maine, Orono, ME

- Advisor, Ph.D. student (Ms. Sonia Moavenzadeh, Ms. Dilara Hatinoglu, Mr. Ashton Collins, Mr. Kenneth Mensah)
- Advisor, M.S. students (Mr. Ashton Collings '22, Ms. Grace Johnson, Zach Doherty)
- Advisor, Postdoctoral researchers (Dr. Sudheera Yaparathne, Dr. Seif Eldien Salem '22, Dr. Manisha Choudhary)
- Advisor, High School Student (Ms. Samantha Ismail)
- Advisor, Undergraduate researcher (Ms. Madi McCarthy, Ms. Jess Liggerio '22, Mr. Zach Doherty '22, Mr. Louis Nicoloso '22)
- PhD committee member, (Ms. Meryem Soyluoglu @ Clemson University, Ms. Eliza Costigan @ UMaine, Ms. Taylor Bailey @UMaine, Ms. Lisa White @ UMaine)
- Instructor of Undergraduate Level Course, CIE 430 – Water Treatment.
- Instructor of Graduate Level Course CIE 598 – Environmental Nanotechnology.

#### University of Massachusetts Lowell, Lowell, MA

- Advisor, M.S. students (Mr. Yigit Bozkurt '20, Mr. Ritchie Lafaille '20, Mr. Arsalan Khalid '19)
- Advisor, Undergraduate researchers (Ms. Jana Latayan '20, Mr. Miles Cramer '20, Mr. Joseph Egitto '20, Ms. Sara Vargas '20, Ms. Philie Ngaippe '20, Mr. Tyler L'Bassi '20).
- Advisor, High School Student (Mr. Matt Tengtrakool '20)
- Committee member, (Dr. Dingnan Liu '18, Dr. Mahnaz Seyednourani '20).
- Primary Lecturer of Graduate Level Course, CIVE 5660 – Environmental Applications and Implications of Nanomaterials, Spring 2018, Spring 2020.
- Primary Lecturer of Undergraduate Level Course, CIVE 4850 – Senior Year Capstone Design for Environmental Engineers, Spring 2018.
- Primary Lecturer of Undergraduate Level Course, CIVE 3010 – Fluid Mechanics, Fall 2018, Spring 2019.
- Primary Lecturer of Graduate Level Course, CIVE 5610 – Physicochemical Processes in Water Treatment, Fall 2019.
- Coordinator, CIVE 5050 – Graduate Research Seminar Series.

#### Arizona State University, Tempe, AZ

- Guest Lecturer, Physical-Chemical Treatment of Water and Wastewater, Fall 2015.
- Coordinator, Sponsored Lecture Series, Biomimicry Initiative for Graduate Students at Biomimicry Center at Arizona State University.

#### Clemson University, Clemson, SC

- Guest Lecturer, Water and Wastewater Treatment Systems, Spring 2014.
- Teaching Assistant & Lecturer, Environmental Organic Chemistry, Spring 2014.
- Teaching Assistant & Lecturer, Chemistry of Aqueous Systems, Spring 2014.
- Guest Lecturer, Physicochemical Operations in Water and Wastewater Treatment Systems, Spring 2013.
- Mentor of Graduate Students, Mr. Yang Zhou, Mr. Chen Chen, Ms. Gamze Ersan, Ms. Yiran Ren, Ms. Erica Linard.

**Middle East Technical University**, Ankara, Turkey

- Teaching Assistant & Lecturer, Environmental Engineering Capstone Design-I, Fall 2008 & 2009.
- Teaching Assistant & Lecturer, Environmental Engineering Capstone Design-II, Spring 2008 & 2009.
- Teaching Assistant & Lecturer, Water Supply Engineering (with lab), Spring 2007.

## AWARDS AND HONORS

---

1. Early Career Research Award, University of Maine, College of Engineering, **2023**
2. Mitchell Center for Sustainability Solutions Award for Outstanding contribution toward the development of a solution by a research team, **2022**
3. 40 Under 40 The Rising Stars in Environmental Engineering and Science American Academy of Environmental Engineers and Scientists, **2022**
4. University of Maine, Best Postdoctoral Researcher, Honorable Mention (Advisee Dr. Sudheera Yaparathne), **2022**
5. Susan J. Hunter Presidential Research Impact Award, (Advisee Mr. Zach Doherty), **2022**
6. Mitchell Center Sustainability and Water Conference, Student Poster (Advisee Ms. Dilara Hatinoglu), Honorable Mention, **2022**
7. Sustainable Nanotechnology Organization Emerging Investigator Award, **2021**
8. Israel F2F Faculty Fellow, **2021**
9. American Society of Civil Engineers (ASCE) Student Chapter, Outstanding Teacher Award, **2019**
10. New England Graduate Student Water Symposium, Poster Presentation Competition 3<sup>rd</sup> Place, **2019** (Advisee Mr. Ritchie Lafaille)
11. Gordon Research Conference Environmental Nanotechnology, Travel Award Recipient, **2019**
12. University of Massachusetts Lowell, Recognition of Most Published Faculty Members in College of Engineering, **2018**
13. University of Massachusetts Lowell, Recognition by Chancellor for Highest Number of Peer-Reviewed Publications and Creative Works, **2017**
14. University of Massachusetts Lowell, Difference Maker Idea Challenge Winner, **2018** (Advisee Mr. Arsalan Khalid)
15. University of Massachusetts Lowell, Francis College of Engineering Prototype Competition Best Project Award Recipient, **2017** (Advisee Mr. Arsalan Khalid)
16. 1<sup>st</sup> Pan American Congress of Nanotechnology, International Travel Award Recipient, **2017**
17. Journal of Soils and Sediments, Outstanding Reviewer Recognition, **2016**
18. Elsevier, Highly Cited Paper Recognition in Water Research, **2015**
19. Clemson University Student Government, Professional Enrichment Grant Recipient, **2014**
20. The Water Environment Association of South Carolina, L.G. Rich Fellowship Recipient, **2013**
21. The 23<sup>rd</sup> Annual South Carolina Environmental Conference, Student Poster Award, 3<sup>rd</sup> place, **2013**
22. The Carbon for Energy Applications Symposium/Workshop, Elsevier Student Poster Award, **2012**
23. Clemson University Student Government, Professional Enrichment Grant Recipient, **2012**
24. Middle East Technical University, Senior Year Honor Roll, **2006**.
25. Middle East Technical University Senior Year Design Project, Best Project Award, 2<sup>nd</sup> place, **2006**

## PATENT APPLICATIONS

---

1. **O.G. Apul**, D. Bouchard, J. Graf, S. Garcia-Segura **2021**. (Invention Disclosure Filed) Nanobubbles for Rapid Aeration of Waste Activated Sludge Reactors and Recirculating Aquaculture Systems
2. **O.G. Apul**, J. Reuther, B. B. Sonmez **2021**. (Invention Disclosure Filed) Electrospinning Partially Encapsulated Superfine Powdered Activated Carbon for Water and Air Purification
3. J. Reuther, **O.G. Apul**, **2019**. (Invention Disclosure Filed). Self-Healable, Regenerable Polymer Adsorbents for Low-Energy, Reusable Water Filters
4. **O.G. Apul**, P. Westerhoff, P. Dahlen, **2018**. (Fully filed US patent, no 10,590,020). Additive-amplified microwave pretreatment of wastewater sludge
5. F. Perrault, P. Westerhoff, **O.G. Apul**, S. Sinha, **2017**. (Fully filed US patent, no: 10,787,374). Silver-Impregnated Two-Dimensional Structures for Bromide Removal.
6. P. Westerhoff, S. Sinha, **O.G. Apul**, F. Perreault, **2017** (Provisionally filed US patent application, no:62/515,660). Halide Removal from Water using Silver Salts and Coagulants.
7. P. Westerhoff, P. Dahlen, **O.G. Apul**, **2016**. (Fully filed US patent, no:62/400,735). Microwave-Enabled Thermal Remediation of Organic Chemical Contaminated Soils using Dielectric Nanomaterials as Additives.

## SERVICE & PROFESSIONAL INVOLVEMENT

---

**Editor** - Chemical Engineering Science (2023-present).

**Conference Co-Chair** – 11<sup>th</sup> Sustainable Nanotechnology Organization Annual Conference (2022).

**Organizing Committee Member** - Association of Environmental Engineering and Science Professors Research and Education Conference, Northeastern University (2022-present).

**Early Career Editorial Board Member** - Chemical Engineering Journal Advances, (2021-present).

**Organizing Committee Member** - American Water Works Association PFAS Virtual Symposium, handled 60+ abstracts (2020-present).

**Guest Co-Editor for Biointerphases Journal** – Special issue on “PFAS at the Interface of Biological and Environmental Systems (2022-2023).

**Guest Co-Editor for Nanomaterials Journal** - Special issue on “Sustainable and Safe Nano-Enabled Water Treatment Applications”. Edited special issue and published 13 articles in the special issue (2019).

**Session Co-Chair** – Sustainable Nanotechnology Organization Virtual Conference (2020, 2021).

**Session Co-Chair** – American Chemical Society Virtual Fall Symposium (2020, 2021).

**Panelist at Environmental Protection Agency** – People, Planet, Prosperity Program (2020).

**Panelist at National Science Foundation** - CBET Biological and Environmental Interactions of Nanoscale Materials (2019).

**Participant at National Science Foundation** - Science Board Listening Session (2019).

**Committee Member** - Provost’s Office in College of Engineering University Level Faculty Website Development (2019 – present).

**Search Committee Member** - Civil and Environmental Engineering Department (2018).

**Faculty Senator** - representing Civil and Environmental Engineering at Faculty Senate (2018-present).

**Committee Member** - University of Massachusetts Lowell Institutional Biosafety Committee (2018-present).

**Host for 2018 Summer Sustainability Camp** for female high school students to provide hands-on research experience.

**Reviewer** for more than 90 articles in last four years mainly in journals: PNAS, Environmental Science and Technology, Chemical Engineering Journal, Chemical Engineering Journal Advances, Water Research, Environmental Toxicology and Chemistry, Science of the Total Environment, Water Science and Technology, ACS ES&T Engineering, Environmental Engineering Science, Environmental Science: Nano, Journal of Soils and Sediments, SAR and QSAR in Environmental Research, Process Safety and Environmental Protection, Resource Efficient Technologies, Journal of Renewable Materials, Nanotoxicology, Nanomaterials.

**Professional Member** - American Chemical Society (Environmental Chemistry Division), Association of Environmental Engineering and Science Professors (AEESP), Sustainable Nanotechnology Organization (SNO).