

## *Curriculum vitae*

### **Onur Güven Apul, PhD, PE**

Associate Professor  
Pennsylvania State University  
Civil and Environmental Engineering

556 White Course Dr. ECoRE Room 216, University Park, PA 16801  
(910) 200-6280 oga5061@psu.edu www.onurapul.com

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## EDUCATION

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Ph.D.	<b>Environmental Engineering, Clemson University, Clemson, SC, 2014.</b> Dissertation: Predictive model development for adsorption of organic contaminants by carbon nanotubes. Advisor: Tanju Karanfil
M.S.	<b>Environmental Engineering, Middle East Technical University, Ankara, Turkey, 2009.</b> Thesis: Municipal sludge minimization: Evaluation of ultrasonic and acidic pretreatment methods and their subsequent effects on anaerobic digestion. Advisor: Dilek Sanin
B.S.	<b>Environmental Engineering, Middle East Technical University, Ankara, Turkey, 2006.</b>

## PROFESSIONAL APPOINTMENTS

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Assoc. Prof.	<b>Civil and Environmental Engineering, Penn State University, University Park, PA</b> Aug. 2025 - present
Assoc. Prof.	<b>Civil and Environmental Engineering, University of Maine, Orono, ME</b> Sept. 2024 – Aug. 2025
Director	<b>PFAS+ Research Initiative, University of Maine, Orono, ME</b> July 2024 – Aug. 2025
Asst. Prof.	<b>Civil and Environmental Engineering, University of Maine, Orono, ME</b> Sept. 2020 – Aug. 2024
Visit. Prof.	<b>Chemical and Environmental Engineering, Yale University, New Haven, CT</b> Summer 2023 – Summer 2024
Asst. Prof.	<b>Civil and Environmental Engineering, University of Massachusetts Lowell, Lowell, MA</b> Sept. 2017 – Aug. 2020
Post-Doc	<b>Environmental Engineering and Earth Sciences, Arizona State University, Tempe, AZ</b> Feb. 2015 – Aug. 2017
Post-Doc	<b>Environmental Engineering, and Earth Sciences Clemson University, Clemson, SC</b> Sept. 2014 – Jan. 2015
Grad. Asst.	<b>Environmental Engineering and Earth Sciences, Clemson University, Clemson, SC</b> Aug. 2009. - Aug. 2014
Grad. Asst.	<b>Environmental Engineering, Middle East Technical University, Ankara, Turkey</b> Dec. 2006. - Aug. 2009

## OTHER AFFILIATIONS

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Associate	<b>Frontier Institute for Research in Sensor Technologies, University of Maine</b> Sept. 2021 – Aug. 2025
Associate	<b>Aquaculture Research Institute, University of Maine</b> Sept. 2021 – Aug. 2025
Fellow	<b>Senator George J. Mitchell Center for Sustainability Solutions, University of Maine</b> Dec. 2020 – Aug. 2025
Adjunct Faculty	<b>Environmental Engineering, Clemson University</b> Oct. 2020 – June 2021

## FUNDED RESEARCH PROJECTS

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### Ongoing projects

1. **O. Apul (PI, 50%)**, A. Venkatesan, P. McKeown. Release Potential of PFAS from Biosolids. Environmental Research and Education Foundation (\$200,000) 2026 – 2028. Contracting to Penn State.
2. C. Alito, C. Lauderdale, S. Black, P. Kwan, K. Garufi, **O. Apul (5%)**. Available Options for Regeneration or Disposal of PFAS-Laden Drinking Water Residuals, Media, and Waste. Water Research Foundation (\$508,300 including 208,300 cost share). 2025-2027. Contracting to Penn State.
3. X. Zhao, M. Choudhary, **O. Apul (10%)**. Energy-efficient PFAS immobilization and degradation in soil using non-thermal plasma electrodes coated with activated carbon. Maine DACF (\$360,858 including \$75,989 cost share). 2025. Transferring from UMaine to Penn State.
4. L. Li., Y. Zhang, **O. Apul (10%)** K. Pennell. Effects of Biochar Aging, Application Ratio, and Low-Cost Modification on Reducing PFAS Uptake by Vegetables: Laboratory and Field Studies Maine DACF (\$593,581 including 93,581 cost share). 2025. Transferring from UMaine to Penn State.
5. **O. Apul (PI, 50%)**, A. Venkatesan. Collaborative Research: RAPID: Assessing the impact of firefighting foam spill on spatiotemporal distribution of PFAS in Brunswick Maine. **NSF CBET** (\$200,000). 2024-2025. Transferring from UMaine to Penn State.
6. **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** (\$500,000). 2023-2026. Transferring from UMaine to Penn State.
7. T. Hahmann, H. Palani, P. **O. Apul (co-I, 5%)**, Hitzler, G. Hettiarachchi. Safe Agricultural Products and Water Graph (SAWGraph): An Open Knowledge Network (OKN) to Monitor and Trace PFAS and Other Contaminants in the Nation's Food and Water Systems. **NSF** (\$1,500,000). 2024-2026. Transferring from UMaine to Penn State.
8. A. Venkatesan, **O. Apul (co-PI, 50%)**. Application of hydrophobic ion pairing to capture poorly adsorbed PFAS by granular activated carbon. **DOD SERDP** (\$150,000). 2025-2026. Contracting to Penn State.

### Completed projects as PI or co-I

9. S. Garcia, **O. Apul (co-I, 14%)**. Characterizing Production and Stability of Nanobubbles in Variable Gravity. **NASA** (\$437,555). 2024-2025. Completed.
10. D. Hart, C. Noblet, **O. Apul (co-I, 35%)**, J. Peckham, 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** (2021) (\$507,394 includes \$250,000 cost share). 2022-2026. Transferred to PI Hart during transition from UMaine.
11. R. Miller, **O. Apul (co-PI, 10%)**, J. MacRae. Guiding Sustainable Enhanced PFAS Drinking Water Treatment Options. **USGS** (\$80,000 including \$40,000 cost share). 2024-2025. Completed.
12. L. Li, K. Tilbury, V. Klein, J. Leahy, J. Zhang, **O. Apul (co-I, 5%)**, R. Schattman, W. Livingston Sustainable Engineering Leaders of the Future-Residential Summer Institute for Girls. **USDA** (\$261,000). 2024-2025. Completed.
13. **O. Apul (PI, 79%)**, A. Abedi, S. Garcia-Segura. Metastable Oxygen Nanobubbles to Advance Life Support Systems in Space Exploration. **NASA** (\$1,010,741 includes \$375,000 cost share). 2022-2025. Transferred to Aaron Gallant after moving to Penn State.
14. P. Veazie, **O. Apul (co-PI, 100%)**. LL Bean PFAS Research Solutions. **LL Bean** (\$150,000) 2023-2025. Completed.
15. **O. Apul (PI, 100%)**. PFAS Spill Response and Environmental Monitoring. **USDA ARS** (\$100,000). 2025. Completed.
16. **O. Apul (PI, 100%)**. PFAS Release for Spent Granular Activate Carbons in Solid Waste Management Facilities. **EREF** (\$150,000). 2023-2024. Completed.

17. **O. Apul (PI, 100%)**, M. Choudhary, S. Mukhopadhyay, W. Wang. Graphene-Enabled Water Treatment Technology for Targeted PFAS Removal from Natural Source Waters. **UMaine Foster Center for Innovation** (\$25,000) 2024. Completed.
18. **O. Apul (PI, 100%)**. Assessment of Thermal Issues Associated with Emergency Breathing Devices. **NASA** (\$62,832). 2023-2024. Completed.
19. **O. Apul (PI, 100%)**. Superparamagnetic Iron Oxide Nanoparticles (SPIONs) as Recoverable Microwave Susceptors for Pre-hydrolysis of Waste Activated Sludge Prior to Anaerobic Digestion. **NSF** (\$133,664). 2022-2024. Completed.
20. **O. Apul (PI, 100%)**. Nanobubble Production from Porous Metals. **Mott Corporation** (\$15,000) 2024. Completed.
21. **O. Apul (PI, 100%)**. Proof of Nanobubble Production and Cleaning Potential in Hot Tubs. **Jacuzzi** (\$27,000) 2023-2024. Completed.
22. F. Perreault, J. Oswald, **O. Apul (co-I, 33%)**. CAS-MNP: Understand and Predict the Adsorption of Organic Contaminants by Aging Microplastics. **NSF** (\$242,000). 2020-2023. Completed.
23. **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** (\$15,000). 2022-2023. Completed.
24. **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** (\$68,000 includes \$34,000 cost share). 2022-2023. Completed.
25. **O. Apul (PI, 100%)**. Exploration of physicochemical properties for commercial and novel CO oxidation catalysts that are employed in gas mask cannisters. **NASA** (\$57,286). 2023. Completed.
26. **O. Apul (PI, 50%)**, S. Smith. Art for the Environment: UMaine Community Challenge. **University of Maine** Internal Seed Grant (\$10,000). 2022-2023. Completed.
27. M. Estapa, **O. Apul (co-I, 10%)**, L. Ross Do biological particles scavenge and remove microplastic fibers from the ocean? **MARINE Sea Grant** (\$34,970). 2022-2023. Completed.
28. 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). 2021-2022. Completed.
29. **O. Apul (PI, 100%)**, Characterization of a novel catalyst for CO oxidation in fire cartridges of gas masks. **NASA** (\$120,000). 2022-2023. Completed.
30. **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** (\$100,000, includes \$60,000 cost share). 2021-2022. Completed.
31. **O. Apul (PI, 100%)**. Use of nanobubbles to improve the performance of recirculating aquaculture systems. **Aquaculture Research Institute** (\$5,000). 2021-2022. Completed.
32. D. Kopec, **O. Apul (co-I, 35%)**, C. Noblet, J. MacRae, J. Peckenhams. Integrated assessment of alternative management strategies for PFAS-contaminated wastewater residuals. **USGS WRI** (\$94,258, includes 1:1 cost share). 2021-2022. Completed.
33. **O. Apul (PI, 100%)**. Girl Scouts of Maine are Learning Nanotechnology Crayon Drawing Contest. Association of Environmental Engineering and Science Professors (AEESP) (\$2,000). 2019-2020. Completed.
34. 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). 2019-2020. Completed.
35. D. Reckhow, J. Tobiasson, **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.

36. **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.
37. **O. Apul (PI, 50%),** H. Mack. Carbon Nanomaterial Enabled Combustion of Natural Gas in Constant Volume Isothermal Chambers. **Industry Sponsor** (\$150,000). Completed.
38. 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.
39. **O. Apul (PI, 100%).** Repeated Use of Carbon Additives during Microwave Remediation for Targeted Heating of Petroleum Hydrocarbons. **Industry Sponsor** (\$16,000). Completed.
40. **O. Apul (PI, 100%).** Nitrogen Gas Adsorption for Detecting the Specific Surface Area of Novel Biopolymers. **Industry Sponsor** (\$7,000). Completed.
41. J. Reuther, **O. Apul (co-I).** Self-Healable, Regenerable Nanoporous Membranes for Low-Energy, Reusable Water Filters. **University of Massachusetts Lowell** (\$10,000). Completed.
42. **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.
43. **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** (\$65,000). Completed.
44. **O. Apul (PI, 100%),** Nitrogen Adsorption for Detecting the Specific Surface Area of Hybrid Metal Oxides. **Industry Sponsor** (\$2,000). Completed.
45. **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.
46. P. Dahlen, **O. Apul (co-I, 18%),** P. Westerhoff. Additive-Augmented Microwave Remediation of Soils Containing Heavy-Hydrocarbons. **Industry Sponsor** (\$100,000). Completed.
47. E. Agar, **O. Apul (co-I, 33%),** S. Pagsuyoin. High-Resolution Capacitive Deionization for Selective PFAS Removal, **University of Massachusetts Lowell** (\$10,000). Completed.

#### Past Projects as Senior Personnel and Senior Researcher

48. H. Carter, J. Bolton, **O. Apul (SP, 20%).** PFAS Analytical and Research Center. **NIST.** (\$5M) 2024-2027. Transferred to co-PI Bolton during transition from UMaine.
49. R. Smith, S. Collins, M. Mason, T. Ghomian, **O. Apul (SP, 10%),** T. Marangoni, M. Tajvidi, A. Battigelli. Equipment: MRI: Track I Nanoparticle DLS Analysis Instrument Acquisition. **NSF** (\$165,367). 2024-2027. Transferred to PI Smith during transition from UMaine.
50. P. Dahlen, P. Westerhoff, **O. Apul.** Additive Augmented, *Ex Situ* Microwave Treatment for Remediation of Soils Containing Heavy Hydrocarbons. **Industry sponsor** (\$50,000). Completed.
51. P. Westerhoff, T. Reid, **O. Apul.** 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.
52. 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.
53. 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.

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

## PUBLICATIONS

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List of Publications (underlined names indicate students and post docs directly advised by Onur Apul, \*indicates corresponding author)

99. Kidd, J., Hatinoglu, D., Mensah, K., Ochoa, L., Nguyen, K., Yan, B., Fahrenfeld, N., **Apul, O.**, Stapleton P. **2026**. Differential morphological and physicochemical responses of polyvinyl chloride and Polyamide-12 micro- and nanoplastics to Fenton oxidation. *Science of the Total Environment*. 1012: 181214.
98. Choudhary, M., Martin, A., Alulema-Pullupaxi, P., Hatinoglu, D., Mensah, K., Moavenzadeh Ghaznavi, S., Smith, S., **Apul, O. G.\*** (under review). An archetypal pedagogical convergence framework for art and engineering to address communication challenges of environmental pollution. *Science Communications*.
97. Arias-Sanchez, A.; Cerrón-Calle, G.; Morón-López, J.; **Apul, O.G.** **2026**. Unraveling the behavior of highly-concentrated nanobubble solutions: The influence of colloidal nature on their generation and stability. *Journal of Colloid and Interface Science*. 703: 139134.
96. Alulema-Pullupaxi, P., Evrendilek, F., Hatinoglu, D., Moavenzadeh Ghaznavi, S., Mensah, K., Choudhary, M., Ortiz, S., **Apul, O.G.\*** (under review). Molecular Connectivity Indices and Soil Properties to Predict Sorption of Per- and Polyfluoroalkyl Substances. *Environmental Science: Processes and Impacts*.
95. Naveira, L., Potocki, M., Korotkikh, E., Introne, D., Larramendi, R., Mangia, A., **Apul, O.G.**, Mayewski, P. (under review). Widespread presence of per- and polyfluoroalkyl substances in Greenland. *Nature Communications: Earth & Environment*
94. Hannan, M., Hatinoglu, D., Blaney, L., Vikesland, P., Knappe, D., Miller, R., **Apul, O.G.\***, **2025**. Protecting the Environment Pays Off for the U.S. Economy and Public Health. *Nature Water*. 1-3.
93. Thapa, S., Li, L., LaScala, J., **Apul, O.G.**, Searce, A., Holt, K., Schattman, R., Fernandez, I., Zhang, Y. (under review). Biochar reduces per- and polyfluoroalkyl substances (PFAS) uptake by two vegetable crops: A controlled greenhouse study. *Biochar*.
92. Morón-López, J., Varela, A., Montenegro-Ayo, R., Maya, A., Hernandez-Molina, M., Flores, K., Matula, E., Graf, J., **Apul, O.G.**, Garcia-Segura, S. (under review). Precision Nanobubble Irrigation Tailors Plant Physiology to Drive Sustainable Lettuce Growth with Water Savings. *Agricultural Water Management*.
91. Hatinoglu, D., Lee, S., Choudhary, M., Lee, J., Attanayake, S., Hwang, K.Y., Detellem, D., Phan, M., Fortner, J., **Apul, O.G.\*** **2025**. Microwave Heating of Superparamagnetic Iron-Oxide Nanoparticles Towards Environmental Hyperthermia-based Applications. *ACS Applied Materials and Interfaces*. 17: 49775-49783.
90. Moavenzadeh Ghazavi, S. Choudhary, M., Hettiarachchi, G., **Apul, O.G.\*** **2025**. Critical review for adsorption of per- and polyfluoroalkyl substances by soil. *Journal of Hazardous Materials Organics*. 1: 100001.
89. Abouhend, A., Djebbari Sr., K., Burke-Wells, J., Butler, C., **Apul, O.G.**, Mouser, P., Muller, C., McCutcheon, J., Valla, J., MacRae, J., Miller, R., Li, B., Lichtensteiger, J. (under review). From waste to resource: leveraging the circular economy framework to tackle the U.S. biosolids crisis. *Environmental Science and Technology*.
88. Mensah, K., Ference, C., Ovalle, L., Perreault, F., Morón-López, J., Garcia-Segura, S., **Apul, O.G.\*** **2025**. Oxidative cleaning of surface fouling in heated sanitary systems at low ozone concentrations: Unveiling the role of nanobubbles in mass transfer. *Journal of Environmental Chemical Engineering*. 13: 117637.
87. Hatinoglu, D., Edwards, L., Turzo, P., Hanigan, D., **Apul, O.G.\*** **2025**. Interplay of surface oxygen content and pore water on thermal regeneration of PFAS-laden granular activated carbons. *Journal of Hazardous Materials*. 491: 137885.
86. Kamal, S., Carew, K., Qin, J., Hatinoglu, D., **Apul, O.G.**, Xiong, B. **2025**. Combined adsorption and Michaelis-Menten approach reveals predominant enzymatic depolymerization of crystalline poly(ethylene terephthalate) by *Humicola insolens* cutinase occur in solution phase. *ACS Sustainable Chemistry & Engineering*. 13: 2401-2410.

85. Chen, Z., Liu, J., Tao, L., Jia, D., Ke, G., Evrendilek, F., **Apul, O.G.**, Zhuang, P., He, Y., Li, W., Huang, W. **2025**. Interaction effects of feedstock and temperature on biogas production during torrefaction-coupled catalytic stepwise pyrolysis of phytoremediation biomass. *Renewable Energy*. 260: 125131.
84. Hannan, M., Evrendilek, F., Leclair, D., Choudhary, M., Mensah, K., Aeppli, C., Venkatesan, A., **Apul, O.G.** **2025**. Aftermath of a major firefighting foam spill in Brunswick, Maine: Spatiotemporal dynamics of per- and polyfluoroalkyl substances in the downstream aquatic environment. *Journal of Hazardous Materials Letters*. 6: 100150.
83. Alulema-Pullupaxi, P., Yi, Z., Saleh, N., Venkatesan, A., **Apul, O.G.** **2025**. Analyzing the release of per- and polyfluoroalkyl substances from spent granular activated carbons by standard leaching procedures. *Environmental Science and Technology*. 59: 8681-8693.
82. Ozen, O.Y., Ozdemir, M.C., Hatinoglu, D., **Apul, O.G.**, Imamoglu, I. **2024**. Mechanistic inferences from empirical and linear solvation energy relationship approaches concerning sorption of organics on pristine and aged microplastics. *Chemosphere*. 368: 143695.
81. Choudhary, M., Wang, W., Mensah, K., Mukhopadhyay, S., **Apul, O.G.** **2024**. Disruption of conjugated  $\pi$ -electron system of graphene oxides decreases their adsorption capacity and microwave reactivity. *Langmuir*. 40: 26824–26834. **(supplemental cover article)**.
80. Johnson, G., Bailey, T., Hatinoglu, D., Nwachukwu, O., Peller, J., Doudrick, K., Van Dam, B., Smith, S., Ross, L., **Apul, O.G.\*** **2024**. Land-sea connection of microplastic fiber pollution in Frenchman Bay, Maine. *Environmental Engineering Science*. 41: 584.
79. White, L., Miner, J., McKinney, L., Pierce, L., Folley, A., Larrabee, A., Scrapchansky, L., Fessler, W., Choudhary, M., Kamalanathan, M., Purina, R., Zare, S., Perry, E., Edalatpour, S., **Apul, O.G.**, Howell, C. **2024**. Large-area sensor permits near-continuous multi-point measurements of aqueous biological and chemical analytes. *ACS Industrial & Engineering Chemistry Research*. 64: 382-391.
78. Mensah, K., Magdaleno, A., Yaparathne, S., Garcia-Segura, S., **Apul, O.G.\*** **2024**. Suspended air nanobubbles in water can shuttle polystyrene nanoplastics to air-water interface. *Environmental Science: Nano*. 11: 3721-3728.
77. **Apul, O.G.\*** Choudhary, M. **2024**. Interplay of adsorptive properties, inner sheet distance and dielectric reactivity of graphenes upon edge functionalization *Chemical Engineering Science*. 296: 120274.
76. Bhagat, K., Doussiemo, D., Mushro, N., Rajwade, K., Kumar, A., **Apul, O.G.**, Perreault, F. **2024**. Effect of biofouling on organic contaminant adsorption by microplastics. *Environmental Toxicity and Chemistry*. 43: 1973-1981.
75. Yaparathne, S., Morón-López, J., Bouchard D., Garcia-Segura, S., **Apul O.G.\*** **2024**. Nanobubble applications in aquaculture industry for improving harvest yield, wastewater treatment, and disease control. *Science of the Total Environment*. 931: 172687.
74. Moavenzadeh, S., Flores, A., Kopec, D., Zambrano, L., **Apul, O.G.\*** **2024** Permeation of per- and polyfluoroalkyl substances in solid waste management facilities are linked to mechanical failures of high-density polyethylene geomembranes. *Environmental Pollution*. 363: 125234.
73. Shahrokhinia, A., Tafazoli, S., Rijal, S., Shuster, D., Scanga, R., Morefield, D., Garay, J., Rocheleau, R., Kashani, M., Nagarajan, R., **Apul, O.G.**, Reuther J. **2024**. Dynamic worm-gel materials as tunable, regenerable adsorbents for water treatment. *ACS Macromolecules*. 57: 628-639.
72. Moron-Lopez, J., Montenegro-Ayo, R., Maya, A., Yaparathne, S., Hernandez-Molina, M., Graf, J., **Apul, O.G.**, Garcia-Segura, S., Matula, E. **2023**. Incorporation of nanobubbles in spaceflight food production systems. *Journal of Plant Interactions*. 18: 2271492.
71. **Apul, O.G.\***, Howell, C., Hatinoglu, D. **2023**. Per- and polyfluoroalkyl substances (PFAS) at the interface of biological and environmental systems. *Biointerphases*. 18: 050201.
70. Magdaleno, A., Cerrón-Calle, G., dos Santos, A., Lanza, M., **Apul, O.G.**, Garcia-Segura, S. **2023**. Unlocking the potential of nanobubbles: achieving exceptional gas efficiency in electrogeneration of hydrogen peroxide. *Small*. 2023: 2304547. **(cover article)**.
69. Moavenzadeh Ghaznavi, S., Zimmerman, C., Shea, M.E., MacRae, J., Peckenham, J., Noblet, C., **Apul, O.G.**, Kopec, D. **2023**. Management of PFAS laden wastewater sludge in Maine: Perspectives on a wicked problem. *Biointerphases*. 18: 041004.
68. Zhang, Y., Thomas, A., **Apul, O.G.**, Venkatesan, A. **2023**. 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*: 460: 132378.



67. Hatinoglu, D., Lee, J., Fortner J., **Apul, O.G.\* 2023**. Superparamagnetic iron oxide nanoparticles as additives for microwave-based sludge pre-hydrolysis: A perspective. *Environmental Science and Technology*. 57: 12191-12200.
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. **2023**. Trends on arsenic species removal by metal-based nanoadsorbents. *Current Opinion in Environmental Science & Health*. 34: 100478.
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.\* 2023**. Linear solvation energy relationships for adsorption of aromatic organic compounds by microplastics. *Chemical Engineering Science*: 282: 119233.
62. Barrios, A., **Apul, O.G.**, Perreault, F. **2023**. Increasing bromide removal by graphene-silver composites: nanoparticulate silver enhances bromide selectivity through direct surface interactions. *Chemosphere*. 330: 138711.
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.
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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).
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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.

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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
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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.
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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.
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

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### 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.

### Peer-Reviewed Conference Papers

1. Kiani, A., Abedi, A., Mensah, K., **Apul, O.G.** **2024**. Characterizing stability of bulk nanobubbles in micro-gravity using dynamic light scattering. 2024 IEEE International Conference on Wireless for Space and Extreme Environments (WiSEE).
2. Yaparathne, S., McCarthy, M., Graf, J., Barrett, L., George, O., Nalette, T., Reichert, R., **Apul, O.G.\*** **2024**. Exploration of physicochemical properties for commercial and novel CO oxidation catalysts that are employed in life support applications. *53<sup>rd</sup> International Conference on Environmental Systems – ICES 20234 (peer-reviewed proceeding)*.
3. Yaparathne, S., McCarthy, M., Nicoloso, L., Fisher, N., **Apul, O.G.\***, Graf, J., Barrett, L., George, O. **2023**. 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)*.

### 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 Presentation.
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 Presentation.
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.** Nanobubble-enabled water treatment technologies: An outlook for transformative opportunities. June **2025**. Gordon Research Conferences – Environmental Nanotechnology. Platform Presentation. Newry, ME.
5. **Apul, O.G.** Water Treatment to Address Critical and Global Challenges in “the Anthropocene Epoch”. October **2024**. Beijing University of Chemical Technology – College of Chemical Engineering Webinar Series. Virtual Oral Presentation.
6. **Apul, O.G.** Modernization of Water Treatment to Embrace Critical Water Challenges In "The Anthropocene Epoch". May **2024**. Pennsylvania State University. Civil and Environmental Engineering Seminar Series. State College, PA.
7. **Apul, O.G.** Modernization of Water Treatment to Embrace Water Challenges In "The Anthropocene Epoch". April **2024**. University of Massachusetts Amherst. Stockbridge School of Agriculture. Stockbridge Seminar Series. Amherst, MA.
8. **Apul, O.G.** Modernization of Water Treatment Technologies in the “Anthropocene Epoch”. February **2024**. Virginia Tech University. Civil and Environmental Engineering. Blacksburg, VA.
9. **Apul, O.G.** Water Treatment in the “Anthropocene Epoch”. February **2024**. New York University. Civil and Urban Engineering. (Virtual Oral Presentation).
10. Hatinoglu, D., Alulema, P., Hanigan, D., **Apul, O.G.** Thermal regeneration of PFAS-laden granular activated carbon: An opportunity to break the forever PFAS cycle, Hacettepe University, Environmental Engineering Seminar, December **2023**. Oral Presentation.
11. **Apul, O.G.** Modernization of Water Treatment to Address Critical Global Water Challenges in the “Anthropocene Epoch”. November **2023**. Arizona State University. School of Sustainable Engineering and the Built Environment.
12. **Apul, O.G.** Water Treatment in the “Anthropocene Epoch”. September **2023**. Weston Lecture at University of Wisconsin Madison. Madison WI.

13. **Apul, O.G.** Pushing the Envelope for Carbon Nanomaterial Application in Drinking Water Treatment. May **2023**. Civil and Environmental Engineering Seminar at University of California Irvine. Virtual Oral Presentation.
14. **Apul, O.G.** Tiny Bubbles with Massive Potential: Overview of Nanobubble-Enabled Water and Wastewater Treatment Technologies. April **2023**. New York State Center for Clean Water Technology at Stony Brook University Research Seminar. Virtual Presentation.
15. **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.
16. **Apul, O.G.** Carbon Nanomaterials for Drinking Water Treatment January **2023**. University of Maine, Chemistry Department Graduate Research Seminar Series. Orono, ME
17. **Apul, O.G.** Microplastics: The Elephant in the Room. December **2022**. Bangor Area Stormwater Group Monthly Meeting. Virtual Presentation.
18. **Apul, O.G.** Carbon-based Nanomaterials for Advanced Water Treatment Technologies. November **2022**. Middle East Technical University, Environmental Engineering Seminar. Virtual Presentation.
19. **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.
20. 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.
21. **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
22. **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.
23. **Apul, O.G.** Nanotechnology and Responsible Water Treatment. April **2021**. University of Florida, Department of Environmental & Global Health Seminar Series, Virtual Seminar.
24. **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.
25. **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.
26. **Apul, O.G.** Sustainable Water Treatment and Remediation Session: Chair’s Talk, November **2020**, Sustainable Nanotechnology Organization, Virtual Conference.
27. **Apul, O.G.** Carbon Nanomaterials for Innovations in Drinking Water Treatment, February **2020**, University of Maine, Environmental Engineering Seminar Series, Orono, ME.
28. **Apul, O.G.** Sewage Sludge for Biogas Production, February **2020**, Massachusetts Institute of Technology, Massachusetts Cleantech Landscape, Boston, MA.
29. **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.
30. **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.

31. **Apul, O.G.** Carbon-based Nanomaterials for Innovations in Drinking Water Treatment, March **2018**, University of Florida, Environmental Engineering Seminar, Gainesville, FL.
32. **Apul, O.G.**, Pruitt, E., Dahlen, P., Westerhoff, P. Nanoparticle-Augmented Microwave Remediation of Soils, January **2018**, Chevron HHSRG Year-End Meeting, Houston, TX.
33. **Apul, O.G.**, Zeng, C., Delgado, A., Westerhoff, P., Dahlen, P. Krajmalnik-Brown, R., Surfactant and Oxidant Enhanced Bioremediation, January **2018**, Chevron HHSRG Year-End Meeting, Houston, TX.
34. **Apul, O.G.**, Adsorption of synthetic organic compounds by carbon nanomaterials. Plastics Engineering Presentation at University of Massachusetts Lowell. December **2017**. Lowell, MA.
35. **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.
36. **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.
37. **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.
38. **Apul, O.G.** Turkey's Water Perspective, American Water Works Association Annual Conference, June **2012**, Dallas, TX.
39. **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)

40. Norment, L., Adu-Gyamfi, J., **Apul, O.**, MacRae, J., Noblet, C., Miller, R. Maine Stakeholders' Preliminary Perspectives on PFAS Mitigation. 2025 Annual UCOWR/NIWR Conference, Minneapolis, MN. June 2025 (Poster Presentation).
41. Edwards, L., Hatinoglu, D., **Apul, O.**, Hanigan, D. Thermal Destruction of PFAS Sorbed to GAC: Byproducts and Mechanisms. AWWA 2025 Annual Conference & Expo, Denver, CO. June 2025. (Oral Presentation).
42. Choudhary, M., Wang, W., Mensah, K., Mukhopadhyay, S.M., **Apul, O.**, Oxidation of Graphene Disrupts Its Conjugated  $\pi$ -Electron Network Resulting in Reduced Microwave Reactivity, Environmental Nanotechnology, Gordon Research Seminar, May 31 - June 1, 2025. (Oral Presentation).
43. Choudhary, M., Wang, W., Mensah, K., Mukhopadhyay, S.M., **Apul, O.**, Oxidation of Graphene Disrupts Its Conjugated  $\pi$ -Electron Network Resulting in Reduced Microwave Reactivity, Environmental Nanotechnology, Gordon Research Conference. June 1 - 6, 2025. (Poster presentation).
44. Alulema-Pullupaxi, P., Moavenzadeh, S., Hatinoglu, D., Mensah, K., Ortiz, S., Evrendilek, F., & Apul, O. G. (2025, May). Predictive model development for adsorption of per- and polyfluoroalkyl substances (PFAS) by using molecular connectivity indices (MCIs) and soil properties. AEESP 2025 Research and Education Conference, Durham, NC. May 2025 (Poster Presentation).
45. Mensah K., Ference C., Ovalle L., Perreault F., Morón-López J., Garcia-Segura S., **Apul O.**, 2025. Oxidative cleaning of surface fouling in heated sanitary systems at low ozone concentrations: the role of nanobubbles in mass transfer, Association of Environmental Engineering and Science Professors (AEESP) Research and Education Conference, Durham, NC. May 2025 (Poster Presentation).
46. Hatinoglu, D., Turzo, P., Edwards, L., Hanigan, D., **Apul, O.** Interplay of Surface Oxygen Content and Pore Water During Thermal Regeneration of PFAS-laden Granular Activated Carbons. AEESP Research and Education Conference, Durham, NC. May 2025 (Oral Presentation).

47. Hatinoglu, D., Choudhary, M., Turzo, P., Loganathan, S., Hanigan, D., **Apul, O.G.** Understanding the Effect of Oxygen Content on Thermal Regeneration of Granular Activated Carbon as a Step Toward PFAS Destruction. AEESP Research and Education Conference, Durham, NC. May 2025 (Poster Presentation).
48. Moavenzadeh Ghaznavi, S., **Apul, O.** "Adsorption of Per- and Polyfluoroalkyl Substances in Biosolids-Applied Soils at Variable Depths", 2025 AEESP Research & Education Conference, Durham, North Carolina, May 2025 (Poster presentation). Best student poster award.
49. Hatinoglu, D., Turzo, P., Edwards, L., Hanigan, D., **Apul, O.** Thermal Regeneration of Spent Activated Carbon to Break the PFAS Cycle. NEWWA 27<sup>th</sup> Annual Water Quality Symposium, Devens, MA. May 2025 (Oral Presentation).
50. Hannan, M., Evrendilek, F., Chitthaluri, S., Venkatesan, A., **Apul, O.** Stakeholder Engagement for PFAS Sampling at an AFFF-impacted Site, AEESP Research & Education Conference, Durham, NC, May 2025 (Poster Presentation).
51. Edwards, L., Hatinoglu, D., **Apul, O.**, Hanigan, D., Alulema-Pullupaxi, N. Thermal Destruction of Perfluoroalkyl Substances Sorbed to Granular Activated Carbon: Byproducts and Mechanisms. 2025 ACE, Denver, CO June 2025 (Oral Presentation).
52. **McCarthy, M.**, Mensah, K., Choudhary, M., Moavenzadeh, S., **Apul, O.** "Nanobubble-enabled Adsorption of Organic Pollutants on Graphene Recent Developments of Novel Wastewater Treatment Strategy". University of Maine Student Symposium April 2025 (Poster Presentation).
53. Hatinoglu, D., Lee, S.S., Choudhary M., Lee J., Attanayake, S.B., Hwang, K.Y., Evrendilek, F., Phan, M.H., Fortner, J., **Apul, O.** Particle Size-Dependent Magnetic and Microwave Hyperreactivity in Superparamagnetic Iron-Oxide Nanoparticles. 2024 NSF Nanoscale Science and Engineering Grantees Conference, Alexandria, VA. December 2024. (Poster Presentation). Best student poster award.
54. Mensah, K., Magdaleno, A., Yaparathne, S., Garcia-Segura, S., **Apul, O.** Subduing coulombic forces actuates nanoplastic-nanobubble floc formation: An advancement in environmental nanoplastics remediation via flotation. 13th SNO Conference, Providence, RI. November 2024 (Oral Presentation).
55. Choudhary, M., Wang, W., Mensah, K., Mukhopadhyay, S., **Apul, O.** Disruption of Conjugated  $\pi$ -Electron System of Graphene Oxides Diminish their Microwave Reactivity. 13th SNO Conference, Providence, RI. November 2024 (Oral Presentation).
56. Moavenzadeh Ghaznavi, S., **Apul, O.** Partitioning of Per- and Polyfluoroalkyl Substances in Soil Horizons Impacted by Biosolids. Northeast Residuals & Biosolids Conference 2024, Providence, RI, November 2024 (Poster Presentation)
57. Hatinoglu, D., Edwards, L., Hanigan, D., **Apul, O.** Mechanistic insights into thermal regeneration of PFAS-laden granular activated carbons. RemTEC & Emerging Contaminants Summit, Westminster, CO. October 2024 (Flash Oral & Poster Presentation)
58. **McCarthy, M.**, Mensah, K., Moavenzadeh Ghaznavi, S., Choudhary, M., **Apul, O.G.** Nanobubble Applications in Graphene Adsorption of Hydrophobic Pollutants: Towards Wastewater Treatment on the International Space Station. AIChE Annual Meeting. San Diego, CA October 2024.
59. Moavenzadeh Ghaznavi, S., **Apul, O.** Partitioning of Per- and Polyfluoroalkyl Substances in the Soil Horizon: A Study to Understand Soils Impacted by PFAS-laden Biosolids in Maine. AEHS Foundation Conference, Amherst, MA. October 2024 (Poster presentation).
60. Zhang, Y., Barua, A., Kedrowski, D., Schweikert, K., Moavenzadeh Ghaznavi, S., Stephen, S., Palani, H., Kilaru, V., Williams, A., **Apul, O.**, Hettiarachchi, G., Hahmann, T., Hitzler, P., McGinty, H. Leveraging Knowledge Graphs for PFAS Monitoring and Decision-Making in SAWGraph. AI Symposium at K-State, Manhattan, KS. October 2024 (Poster presentation).
61. Alulema-Pullupaxi, P., Zhang, Y., Saleh, N., Venkatesan, A., **Apul, O.** Per- and Polyfluoroalkyl Substances (PFAS) Release from Spent Granular Activated Carbon in Landfills. American Chemical Society Conference (ACS Fall), Denver, CO. August 2024 (Oral presentation).



62. Moavenzadeh Ghaznavi, S., Choudhary, M., Apul, O. Partitioning of Per- and Polyfluoroalkyl Substances in Soil Horizons Impacted by Biosolids. American Chemical Society Conference (ACS Fall), Denver, CO. August **2024** (Oral presentation).
63. Hatinoglu, D., Edwards, L., Hanigan, D., **Apul, O.** Granular activated carbon catalyzes PFOS mineralization during thermal regeneration. American Chemical Society Conference (ACS Fall), Denver, CO. August **2024** (Oral presentation).
64. Hatinoglu, D., Perreault, F., **Apul, O.G.** Predictive Statistical Model Development for Adsorption of PFAS by Microplastics, 26th Annual NEWWA Water Quality Symposium, Deves, MA. May **2024** (Oral Presentation).
65. Houder, D., Hatinoglu, D., Apul, O.G. Physicochemical properties of granular activated carbon change after thermal regeneration: A study towards mitigation of PFAS pollution. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
66. James, H., Moavenzadeh Ghaznavi, S., Apul, O.G. Enhanced Permeation of Per- and Polyfluoroalkyl Substances (PFAS) Through Pinhole Defects in Landfill Geomembranes. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
67. McCarthy, M., Mensah, K., Moavenzadeh Ghaznavi, S., Choudhary, M., Apul, O.G. The Role of Nanobubbles in Phenanthrene Adsorption: Towards Removal of Dimethylsilanediol from Wastewater on the International Space Station. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
68. Alulema-Pullupaxi, P., Adu-Gyamfi, J., **Apul O.G.,** Miller, R. A Comparative Life Cycle Impact Assessment of Landfill Leachate Treatment Strategies for Per- and Polyfluoroalkyl Substances (PFAS) Removal. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
69. Alulema-Pullupaxi, P., Zhang, Y., Saleh, N., Venkatesan, A., **Apul, O.G.** Per- And Polyfluoroalkyl Substances Release from Spent Granular Activated Carbon: Standardized Test vs. Simulation of Typical Landfill Environment. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
70. Mensah K., Apul O.G., Miller, R. Ozone nanobubbles versus conventional ozonation: A life cycle assessment comparison of water disinfection processes. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
71. McCarthy M., Mensah K., Moavenzadeh Ghaznavi S., Choudhary M., Apul O.G. The Role of Nanobubbles in Phenanthrene Adsorption: Towards Removal of Dimethylsilanediol from Wastewater on the International Space Station. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
72. Kiani A., Mensah K., Abedi A., **Apul O.G.** Characterizing stability of bulk nanobubbles in microgravity using dynamic light scattering. University of Maine Student Symposium, Orono, Maine. April **2024** (Poster presentation).
73. Alulema-Pullupaxi, P., Zhang, Y., Venkatesan A., Saleh, N., **Apul, O.G.** Physicochemical factors influencing release of per- and polyfluoroalkyl substances from spent granular activated carbon in landfill environments. *Maine Sustainability and Water Conference*, Augusta, ME. March **2024** (Poster Presentation).
74. Moavenzadeh Ghaznavi, S., Choudhary, M., Apul, O.G. Investigation of per- and polyfluoroalkyl substances (PFAS) adsorption mechanisms onto soil with a history of sludge land application in Maine, *AEHS Foundation 33<sup>rd</sup> Annual International Conference on Soil, Water, Energy, and Air*, March **2024** (Poster Presentation).
75. Hatinoglu, D., Alulema, P., Hanigan, D., **Apul, O.G.** Thermal regeneration of PFAS-laden granular activated carbon: An opportunity to break the forever PFAS cycle, *American Water Works Association WQTC*, November **2023** (Oral Presentation).
76. Magdaleno, A. Cerrón-Calle, G.A., Graf, J.C., **Apul, O.G.,** Garcia-Segura, S. August **2023**. Understanding buffer capacity of CO<sub>2</sub> nanobubbles. *266<sup>th</sup> ACS National Meeting & Exposition*. (Oral Presentation).

77. Choudhary, M., Wang W., Mukhopadhyay S.M., **Apul, O.G.** Atomically Precise Tailoring of Graphene Nanosheets to Control Properties that are Expedient for Water Treatment, *Gordon Research Conference: Environmental Nanotechnology*, June **2023**, Newry, ME (Poster Presentation).
78. Moavenzadeh Ghaznavi, S., Flores Azua, A. J., Kopec, D., Zambrano Cruzatty, L., **Apul, O.G.** Integrity of HDPE geomembranes play a critical role on permeation of per- and polyfluoroalkyl substances (PFAS) in solid waste management facilities, *AEESP Research & Education Conference*, Boston, MA, June **2023** (Poster Presentation).
79. Choudhary, M., Wang W., Mukhopadhyay S.M., **Apul, O.G.** Synthesis of Edge-Tailored Graphene Oxide for Removal of Organic Contaminants from Water and its Regeneration Through Microwave Heating, *AEESP Research and Education Conference*, Boston, MA, June **2023** (Oral Presentation).
80. Hatinoglu, D., Lee, J., Fortner, J., **Apul, O.G.** Superparamagnetic iron oxide nanoparticles (SPIONs) as additives for microwave-based sludge pre-hydrolysis, *AEESP Research and Education Conference*, Boston, MA June **2023** (Poster Presentation).
81. Yaparathne, S., McCarthy, M., Nicoloso, L., Fisher, N., **Apul, O.G.**, Graf, J., Barrett, L., George, O. 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*, Calgary, Alberta, Canada July **2023** (Oral Presentation).
82. Bhagat, K., Barrios, A., Rajwade, K., **Apul, O.G.**, Oswald, J., Perreault, F. Weathering of microplastics in the environment affects their adsorption affinity for organic contaminants. *National Nanotechnology Coordinated Infrastructure*, (Virtual), April **2023** (Oral Presentation).
83. McCarthy, M., Yaparathne, S., Nicoloso, L., Fisher, N.R., Graf, J.C., Barret, L.W., George, O.N., **Apul, O.G.** Removal of carbon monoxide in environmental control and life support systems for space exploration, *The University of Maine Student Symposium*, Orono, ME. April **2023** (Poster Presentation).
84. Mensah, K., Yaparathne, S., Doherty, Z. E., **Apul, O. G.** Fundamental evaluation of nanobubble mobilization and generation via mild, Isothermal ultrasonic irradiation. *The University of Maine Student Symposium*, Orono, ME. April **2023** (Poster presentation).
85. Niu R., Mensah K., Walker B, Smith S., **Apul, O. G.** Ode to Nanobubble: A Fusion of Science, Music, and Art. *The University of Maine Student Symposium*, Orono, ME. April **2023** (Poster presentation).
86. Kiani A., Pratl J., Mensah K., **Apul O.G.**, Abedi A. Optical methods for image and processing of nanobubbles. University of Maine Student Symposium, Orono, Maine. April 2023 (Poster presentation).
87. Pratl J., Kiani A., Mensah K., **Apul O.G.**, Abedi A. Determining nanobubbles concentration through acoustic sensing. University of Maine Student Symposium, Orono, Maine. April 2023 (Poster presentation).
88. Doherty, Z.E., Salem, S., E., Yaparathne, S., Apul, O.G. Enhanced removal of 2-methylisoborneol and Geosmin through nanobubble facilitated sonication. *The University of Maine Student Symposium*, Orono, ME. April **2023** (Poster presentation).
89. McCarthy, M., Yaparathne, S., Nicoloso, L., Fisher, N.R., **Apul, O.G.** CO oxidation assessment of a new commercial catalyst for NASA environmental control and life support safety application, *AIChE Eckhardt Northeast Student Regional Conference*, Montreal, Canada April **2023** (Poster Presentation, 3<sup>rd</sup> place).
90. Johnson, G., Bailey, T., Hatinoglu, M.D., Smith, S., Ross, L., **Apul, O.G.** Interpreting the Extent and Characteristics of Microplastics Pollution in Maine Freshwater Streams, and Analyzing Nanoplastics and How they Differ from Microplastics. *University of Maine Student Symposium*, Orono, ME. April **2023** (Poster Presentation).
91. Moavenzadeh Ghaznavi, S., Choudhary, M., **Apul, O.G.**, Kopec D. Evaluating available options for sustainable management of PFAS in wastewater sludge in Maine: Searching for solutions to a wicked problem. *Maine Sustainability and Water Conference*, Augusta, ME. March **2023** (Poster Presentation).

92. Johnson, G., Bailey, T., Hatinoglu, M.D., Smith, S., Ross, L., **Apul, O.G.** Interpreting the Extent and Characteristics of Microplastics Pollution in Maine Freshwater Streams to Guide a Holistic Mitigation Strategy. *Maine Sustainability and Water Conference*, Augusta, ME. March **2023** (Poster Presentation, best graduate student poster award).
93. 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*, Bangor, ME. November **2022** (Oral Presentation).
94. 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*, Austin TX. November **2022** (Oral Presentation).
95. 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*, Austin TX, November **2022** (Poster presentation).
96. **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*, Bar Harbor, ME. September **2022** (Oral Presentation).
97. Moavenzadeh Ghaznavi, 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*, Charlotte, NC September **2022** (Oral Presentation).
98. 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*, St. Louis, MO June **2022** (Poster Presentation).
99. 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*, St. Louis MO, June **2022** (Oral Presentation).
100. 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*, St. Louis, MO. June **2022** (Oral Presentation).
101. Liggiero, J., Bailey, T., Hatinoglu, M.D., Ross, L., **Apul, O.G.** Identifying the Magnitude and Character of Microplastic Pollution in Frenchman Bay, Maine. *The University of Maine Student Symposium*, Orono, ME. April **2022** (Poster Presentation).
102. Doherty, Z.E., Yaparathne, S., Bouchard, D., **Apul, O.G.** Taste and Odor Degradation in Water by Nanobubble-Facilitated Ultrasonication. *The University of Maine Student Symposium*, Orono ME. April **2022** (Poster Presentation).
103. Hatinoglu, M.D., **Apul, O.G.** Predictive Statistical Model Development for Adsorption of Forever Chemicals (PFAS) by Microplastics. *Maine Sustainability & Water Conference*, Augusta ME. March **2022** (Poster Presentation).
104. Moavenzadeh Ghaznavi, S., **Apul, O.G.** Partitioning of Per- and Polyfluoroalkyl Substances (PFAS) onto Landfill Geomembrane Liners: Are Landfills their Final Destination? *Maine Sustainability & Water Conference*, Augusta ME. March **2022** (Poster Presentation).
105. Sonmez Baghirzade, B., Biswas, P., Reuther, J., **Apul, O.G.** Adsorption Capacity Enhanced by Tuning Carbon Size of Superfine Powdered Activated Carbon Electrospun Fiber. *Sustainable Nanotechnology Organization Conference*, (Virtual), November **2021** (Oral Presentation).
106. Bhagat, K., **Apul, O.G.**, Perreault, F. Aging of microplastics increases its sorption affinity towards organic contaminants. *259<sup>th</sup> American Chemical Society National Conference*, (Virtual), August **2021** (Oral Presentation).
107. 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).

108. 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).
109. 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).
110. **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).
111. 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).
112. 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*, (Virtual) August **2020**, (Oral Presentation).
113. 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. *University of Massachusetts Lowell Student Research & Community Engagement Symposium*, April **2020**, Lowell, MA (Poster Presentation).
114. 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).
115. Zeng, C., Atkinson, A., Sharma, N., Ashani, H., Hjelmstad, A., **Apul, O.G.**, Venkatesh, K., Westerhoff, P. Selective adsorption of perfluoroalkyl substances (PFAS) in groundwater by granular activated carbon and ion exchange resin. AEESP Research and Education Conference, May **2019**, Tempe, AZ.
116. Zeng, C., Atkinson, A., Sharma, N., Ashani, H., Hjelmstad, A., **Apul, O.G.**, Venkatesh, K., Westerhoff, P. Selective adsorption of perfluoroalkyl substances (PFAS) in groundwater by granular activated carbon and ion exchange resin. 258<sup>th</sup> ACS National Meeting, Aug. **2019**, San Diego, CA.
117. 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).
118. 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).
119. 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*, August **2019**, San Diego, CA (Oral Presentation).
120. 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).
121. 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).
122. 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).
123. 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).

124. 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)
125. 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)
126. 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).
127. 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).
128. 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).
129. 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).
130. 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**. Guaruja, SP, Brazil (Poster Presentation).
131. **Apul, O.G.**, Innovations in Drinking Water Treatment Technologiejohnas: Nanoscale Solutions to Macroscale Problems. 2017-2018 *Faculty Symposium at University of Massachusetts Lowell*. November **2017**. Lowell, MA (90-Second Flash Oral Presentation).
132. **Apul, O.G.**, Innovations in Drinking Water Treatment Technologies. *University of Massachusetts Lowell Civil and Environmental Engineerign Industry Advisory Board Meeting*, September **2017**. Lowell, MA (Short Introductory Oral Presentation).
133. **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**, Houston, TX (Oral Presentation).
134. 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**, Houston, TX (Oral Presentation).
135. 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).
136. 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).
137. 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).
138. 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).
139. 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 90<sup>th</sup> Annual Conference*. Phoenix, AZ (Oral Presentation).

140. 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 2<sup>nd</sup> Annual Site Visit*. Houston, TX (Poster Presentation).
141. **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. *Active Learning Workshop*. Austin TX (Flash Oral Presentation).
142. **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).
143. **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**, Rice University, Houston, TX.
144. 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).
145. **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**, Arizona State University, Tempe, AZ.
146. **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.
147. 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).
148. 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. *4<sup>th</sup> Annual Conference, Sustainable Nanotechnology Organization*, November **2015**, Portland, OR (Poster Presentation).
149. 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).
150. 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).
151. 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).
152. Westerhoff, P., **Apul, O.G.** and Sihota, N. Evaluation of oxidant/surfactant/solvent cocktails for washing soils containing heavy hydrocarbons. *Chevron Annual Research Group Meeting*, January **2015**, San Ramon, CA (Oral Presentation).
153. 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).
154. **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).
155. **Apul, O.G.** and Karanfil, T. Adsorption of synthetic organic contaminants by carbonaceous nanomaterials. *Association of Environmental Engineering and Science Professors (AEESP) 50<sup>th</sup> Anniversary Conference*, July **2013**, Golden, CO (Poster Presentation).

156. **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).
157. **Apul, O.G.** and Karanfil, T. Evaluation of alternative carbon adsorbents for water treatment: A comparison of activated carbon, carbon nanotubes and graphene nanosheets. *23<sup>rd</sup> Annual South Carolina Environmental Conference*, March **2013**, Myrtle Beach, SC (Poster Presentation).
158. **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).
159. **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).
160. **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).
161. 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).
162. **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).
163. **Apul, O.G.**, Rieck, J.R. and Karanfil T. Treating drinking water with carbon nanotubes: comparison of two modeling approaches. *22<sup>nd</sup> Annual South Carolina Environmental Conference*, March **2012**, Myrtle Beach, SC (Poster Presentation).
164. **Apul, O.G.**, Rieck, J.R. and Karanfil T. Adsorption of organic contaminants by carbon nanotubes. *21<sup>st</sup> Annual South Carolina Environmental Conference*, March **2011**, Myrtle Beach, SC (Poster Presentation).
165. 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).
166. **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).
167. **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).
168. **Apul, O.G.** and Sanin, F.D. Minimization of sludge by ultrasonic pretreatment. *6<sup>th</sup> Symposium of Environmental Pollution Priorities in Turkey*. May **2009**, Gebze, Turkey (Oral Presentation).
169. 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).
170. **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

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### *Current Members of the Research Group*

#### **PhD Students**

Ms. Lina Zhu, 8/2025 – present  
Ms. Paulina Alulema-Pullupaxi, 8/2025 – present  
Mr. Kenneth Mensah, 1/2023 – present  
Ms. Dilara Hatinoglu, 9/2022 – present

#### **MS Students**

Ms. Macy Hannan, 2024 – present

#### **Undergraduate Students**

Ms. Chritine Naessens, 12/2025 – present  
Mr. Mark Hinlo, 12/2025 -present

### *Former Members of the Research Group*

#### **Postdoctoral Researchers**

Dr. Manisha Choudhary, 10/2022- 8/2025  
Dr. Fatih Evrendilek, 8/2024 – 8/2025  
Dr. Sudheera Yaparathne, 10/2021- 9/2023  
Dr. Seif Eldien Salem, 3/2022 – 9/2022 (visiting postdoctoral researcher sponsored by US AID)

#### **Student Theses Conducted as Primary Advisor**

Sonia Moavenzadeh Ghaznavi **2025**, PhD Dissertation, University of Maine. Management of Per- and Polyfluoroalkyl Substances-Laden Biosolids: Implications on Natural and Engineered Environmental Systems.  
Paulina Alulema, **2025**, MS Thesis, University of Maine. Release Mechanisms of Per- and Polyfluoroalkyl Substances from Spent Granular Activated Carbons Using Standard Leaching Procedures.  
Grace A. Johnson, **2024**, MS Thesis, University of Maine. Land-Sea Connection of Microplastic Fiber Pollution in Frenchman Bay, Maine.  
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 Completed as Committee Member**

Josephine Adu-Gyamfi, **2025**, MS Thesis, University of Maine. Guiding Sustainable Enhanced PFAS Drinking Water Treatment Options.  
Sandesh Thapa, **2025**, MS Thesis, University of Maine. Biochar as an Amendment Material to Immobilize Per- and Polyfluoroalkyl Substances in Agricultural Land.  
Liza White, **2025**, PhD Dissertation, University of Maine. Engineered Textured Surfaces: Scalable Solutions for Next-Generation Technology.  
Taylor Spenser, **2025**, PhD Dissertation, University of Maine. Material Transport Around Complex Coastlines.  
Erin Bulson, **2024**, PhD Dissertation, University of Wisconsin Madison. Evaluation of Automotive Shredder Residue as an Input of Per- and Polyfluoroalkyl Substances to the Waste Management System.  
Meryem Soyuluoglu, **2023**, PhD Dissertation, Clemson University. Nanobubble Technology for the Removal of MIB and Geosmin from Drinking Water.  
Eliza M. Costigan, **2022**, MS Thesis, University of Maine. Nutrient Removal from Recirculating Aquaculture System Water.  
Dilara Hatinoglu, **2021**, MS Thesis, Middle East Technical University. Fate and Effects of Polyethylene Terephthalate Microplastics during Anaerobic Digestion of Disintegrated Sludge.



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.

### **Undergraduate Researchers**

*UMaine*: Ms. Jessica Liggeria 2022, Mr. Zach Doherty 2022, Mr. Louis Nicolero 2022, Mr. Samuel Robinson 2024, Mr. Daniel Houder 2024, Ms. Halle James 2024, Madi McCarthy 2023, 2024, 2025, Mr. Jack Dunning 2025.

*UMass Lowell*: Ms. Jana Latayan 2020, Mr. Miles Cramer 2020, Mr. Joseph Egitto 2020, Ms. Sara Vargas 2020, Ms. Philie Ngaippe 2020, Mr. Tyler L'Bassi 2020

### **High School Students as Visiting Researchers**

*UMaine*: Ms. Samanth Ismail 2022 (admitted to Notre Dame University).

*UMass Lowell*: Mr. Matt Tengtrakool, 2020 (admitted to Harvard University).

## ***Teaching Experience***

### **Pennsylvania State University**

- Instructor of Undergraduate Level Course, CE 370 – Introduction to Environmental Engineering, Fall 2025.
- Instructor of Graduate Level Course, CE 571 – Physical-Chemical Treatment Processes, Spring 2026.

### **University of Maine**

- Instructor of Graduate Level Course, CIE 536 – Environmental Organic Chemistry, Spring 2024.
- Instructor of Graduate Level Course, CIE 598 – Environmental Nanotechnology, Spring 2021, 2023, 2025.
- Instructor of Undergraduate Level Course, CIE 430 – Water Treatment (with lab), Fall 2020, 2021, 2022, 2023, 2024, 2025.

### **University of Massachusetts Lowell**

- Instructor of Graduate Level Course, CIVE 5660 – Environmental Applications and Implications of Nanomaterials, Spring 2018, 2020.
- Instructor of Undergraduate Level Course, CIVE 4850 – Capstone Design for Environmental Engineers, Spring 2018.
- Instructor of Undergraduate Level Course, CIVE 3010 – Fluid Mechanics, Fall 2018, Spring 2019.
- Instructor of Graduate Level Course, CIVE 5610 – Physicochemical Processes in Water Treatment, Fall 2019.
- Coordinator, CIVE 5050 – Graduate Research Seminar Series.

### **Arizona State University**

- 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.

### **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

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1. Endowed Libra Professorship, University of Maine, **2023-2025**
2. Gordon Research Conference Environmental Nanotechnology, Invited Speaker, **2025**
3. Early Career Research Award, University of Maine, College of Engineering, **2023**
4. Mitchell Center for Sustainability Solutions Award for outstanding contribution toward the development of a solution by a research team, **2022**
5. 40 Under 40 The Rising Stars in Environmental Engineering and Science, American Academy of Environmental Engineers and Scientists, **2022**
6. Sustainable Nanotechnology Organization Emerging Investigator Award, **2021**
7. Israel F2F Faculty Fellow, **2021**
8. American Society of Civil Engineers (ASCE) Student Chapter, Outstanding Teacher Award, **2019**
9. University of Massachusetts Lowell, Recognition of Most Published Faculty Members in College of Engineering, **2018**
10. University of Massachusetts Lowell, Recognition by Chancellor for Highest Number of Peer-Reviewed Publications and Creative Works, **2017**
11. 1<sup>st</sup> Pan American Congress of Nanotechnology, International Travel Award Recipient, **2017**
12. Journal of Soils and Sediments, Outstanding Reviewer Recognition, **2016**
13. Elsevier, Highly Cited Paper Recognition in Water Research, **2015**
14. Clemson University Student Government, Professional Enrichment Grant Recipient, **2014**
15. The Water Environment Association of South Carolina, L.G. Rich Fellowship Recipient, **2013**
16. The 23<sup>rd</sup> Annual South Carolina Environmental Conference, Student Poster Award, 3<sup>rd</sup> place, **2013**
17. The Carbon for Energy Applications Symposium/Workshop, Elsevier Student Poster Award, **2012**
18. Clemson University Student Government, Professional Enrichment Grant Recipient, **2012**
19. Middle East Technical University, Senior Year Honor Roll, **2006**.
20. Middle East Technical University Senior Year Design Project, Best Project Award, 2<sup>nd</sup> place, **2006**

## AWARDS AND HONORS OF ADVISEES

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21. Participant, Trailblazers in Engineering Program at Purdue University (Advisee Ms. Manisha Choudhary). **2025**
22. Best Poster Award, AEESP 2025 Research and Education Conference (Advisee Ms. Sonia Moavenzadeh). **2025**
23. WEF Fellowship \$25k PhD Student Scholarship (Advisee Mr. Kenneth Mensah). **2025**
24. Marshall Thurgood Full Tuition Fellowship (Advisee Mr. Ashton Collins, Ms. Paulina Alulema), **2021, 2024**
25. Harold Alfond Foundation Scholarship \$12k (Advisee Ms. Macy Hannan). **2024**
26. AWWA Abel Wolman \$30k PhD Student Scholarship (Advisee Ms. Dilara Hatinoglu). **2024**
27. Environmental Research and Education \$7.5k MS Scholarship, (Advisee Ms. Paulina Alulema), **2024**
28. Environmental Research and Education \$15k PhD Scholarship, (Advisee Ms. Simin Moavenzadeh Ghaznavi), **2023**
29. University of Maine, Best Postdoctoral Researcher, Honorable Mention (Advisee Dr. Sudheera Yaparathne), **2022**
30. Mitchell Center Sustainability and Water Conference, Student Poster (Advisee Ms. Dilara Hatinoglu), Honorable Mention, **2022**
31. Susan J. Hunter Presidential Research Impact Award, (Advisee Mr. Zach Doherty), **2022**
32. New England Graduate Student Water Symposium, Poster Presentation Competition 3<sup>rd</sup> Place, **2019** (Advisee Mr. Ritchie Lafaille)
33. University of Massachusetts Lowell, Difference Maker Idea Challenge Winner, **2018** (Advisee Mr. Arsalan Khalid)
34. University of Massachusetts Lowell, Francis College of Engineering Prototype Competition Best Project Award Recipient, **2017** (Advisee Mr. Arsalan Khalid)

## PATENTS

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1. **O.G. Apul**, P. Dahlen, P. Westerhoff. Fully filed US patent, no 10,590,020, filing date: 2019/01/18. Additive-amplified microwave pretreatment of wastewater sludge.
2. F. Perrault, P. Westerhoff, **O.G. Apul**, S. Sinha. US patent application, no: 20180319677, filing date: 2018/05/04. Silver-impregnated two-dimensional structures for bromide removal.
3. P. Westerhoff, P. Dahlen, **O.G. Apul**. Fully filed US patent, no:62/400,735, filing date: 2017/09/28. Microwave-enabled thermal remediation of organic chemical contaminated soils using dielectric nanomaterials as additives.

## SERVICE & PROFESSIONAL INVOLVEMENT

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**Associate Editor** – Water Research (2025 – present)

**Editor** - Chemical Engineering Science (2023-2025); npj Clean Water (2025)

**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 (2023).

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

**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 (2019, 2023, 2025).

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

**Committee Member** – UML Provost's Office in College of Engineering University Level Faculty Website Development (2019, 2020).

**Faculty Search Committee Member** – UML Civil and Environmental Engineering Department (2018).

**Faculty Senator** - Representing Civil and Environmental Engineering at UML Faculty Senate (2018-2020).

**Committee Member** - UML Institutional Biosafety Committee (2018-2020).

**Reviewer** for more than 90 articles in last four years mainly in journals: Nature Sustainability, Nature Water, 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).

## SELECTED MEDIA APPAERANCES

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1. Cited in **"The Atlantic"**, Maine Is a Warning for America's PFAS Future, April 11, 2024.
2. Interviewed by **"The Sustain University of Wisconsin"** "PFAS Pollution: Exploring Sources and Solutions with Dr. Onur Apul", September 14, 2023
3. Interviewed by **"NPR: Maine Calling"** PFAS in Maine's drinking water and aquatic environments, August 24, 2023.
4. Interviewed by **"The Maine Question"** S7E4: How can we eliminate PFAS? October 14, 2022
5. Story by **"WABI TV5"** UMaine scientists researching solution to PFAS pollution, September 2, 2022.