Gamze ERSAN, Ph.D.

Teaching Assistant Professor

PERSONAL INFORMATION

Full Name	Gamze Ersan
Work Adress:	College of Engineering and Mines, University of North Dakota Collaborative Energy Center, Room 113B 243 Centennial Drive Stop 8155 Grand Fork, ND 58202, 8155
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EDUCATION

Ph.D. Department of Environmental Engineering, *Istanbul University,* Turkey, **2014**
Area of focus: Environmental Engineering and Science
Dissertation Title: The removal of organic contaminants by carbon nanomaterials in natural waters
Advisor: Prof. Dr. Yasemin Kaya
Co-Advisor: Prof. Dr. Tanju Karanfil

M.S. Department of Civil Engineering, *Kahramanmaras University,* Turkey, **2010**
Area of focus: Environmental Engineering
Thesis Title: Biodegradability of tetrachloroethylene by hydrogen-based membrane biofilm reactor
Advisor: Prof. Dr. Ozer Cinar
Co-Advisor: Prof. Dr. Halil Hasar

B.S. Department of Environmental Engineering, *Cukurova University,* Turkey, **2006**
Area of focus: Environmental Engineering
Capstone Project: Removal of vat green-4 textile dye with waste ferric sulfate sludge obtained from Coca-Cola factory

ACADEMIC EXPERIENCES

Teaching Assistant Professor	2025-Present	*University of North Dakota, U.S.*
Research Assistant Professor	2022-2025	*Arizona State University, U.S.*
Postdoctoral Researcher	2021-2022	*Arizona State University, U.S.*
Visiting Researcher (Parental Leave)	2017-2020	*Clemson University, U.S.*
International Postdoctoral Fellow	2015-2017	*Clemson University, U.S.*
International Research Fellow	2012-2014	*Clemson University, U.S.*
Graduate Research Assistant	2010-2014	*Istanbul University, Turkey*

RESEARCH/AREA OF INTERESTS

Computer Programming; Statistical Analysis; Nanotechnology; Adsorption; Electro-regeneration of spent media

AWARDS AND HONORS

1. ACS Publication Peer Reviewer of Recognition and Appreciation Honor, **2024.** American Chemical Society.
2. Annual Water Quality and Technology Conference, Poster Award, 1st place, **2024**
3. *e*Fellows Engineering Postdoctoral Fellowship, American Society for Engineering Education (ASEE) with funding provided by the National Science Foundation (NSF), **2022-2024.**
4. Scientific and Technological Research Council of Turkey (TUBITAK-Turkish NSF) 2219–International Research Scholarship Program, International Postdoctoral Fellow, **2015-2017.**
5. Scientific and Technological Research Council of Turkey (TUBITAK-Turkish NSF) 2214/A–International Research Fellowship Program, International Research Fellow, **2012-2014.**
6. Annual South Carolina Environmental Conference, Student Poster Award, 1st place, **2013**

PATENT

Ersan, G. François Perrault, Ersan, M.S., Garcia-Segura, S. **2025.** Electro-regeneration of PFAS-laden and other spent sorbents. Attorney Docket No: 22193-0357P01.

PUBLICATIONS (h-index = 15, 1170 citations via Google Scholar as of 11/2025)

Peer-Reviewed Publications

1. **Ersan, G.,** Goz, E., Karanfil, T. **2025**. Performance analysis of machine learning algorithms for the prediction of disinfection byproducts formation during chlorination: Effect of background water characteristics. Journal of Environmental Management, 389, 126144.
2. Mulugeta, T.G., Ersan, M.S., Garcia-Segura, S. **Ersan, G**. **2025.** Predicting Full-Scale Performance of Adsorbents for PFAS Adsorption: The role of Rapid Small-Scale Column Tests (RSSCTs). Science of The Total Environment, 974, 178944.
3. **Ersan G.,** and Lukman, A., **2024.** Can Machine Learning Algorithms Enhance the Prediction Accuracy of Linear Solvation Energy Relationship (LSER) Models for PFAS Adsorption by Activated Carbons in Complex Water Matrices? ACS Environmental Science & Technology-Water. 5, 1, 479–487.
4. **Ersan, G.,** Ersan, M.S., Karanfil, T. **2024.** Statistical modeling for iodinated trihalomethanes: Preformed chloramination versus prechlorination followed by ammonia addition. Chemosphere. 363, 142876.
5. **Ersan, G.** Gaber, S. M., François Perrault, Garcia-Segura, S. **2024.** Comparative study on electro-regeneration of antibiotic-laden activated carbons in RO concentrate. Water Research. 255, 121528.
6. **Ersan, G.** Dos Santos, A. J., Marcos, R.V. Lanza, François Perrault, Garcia-Segura, S. **2023.** Enhancing selectivity ciprofloxacin adsorption in urine matrices through the metal-doping of carbon sorbents. Journal of Environmental Management. 348, 119298.
7. **Ersan, G.** Ersan, M.S., François Perrault, Garcia-Segura, S. **2023.** Enabling in situ electro-regeneration systems for PFAS-laden spent carbon adsorbent reuse. Journal of Environmental Chemistry. Journal of Environmental Chemistry. 11 (6), 119298.
8. **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.

9. **Ersan, G.** Cerron-Calle, G., Ersan, M.S. and Garcia-Segura, S. **2023.** Opportunities for in situ electro-regeneration of PFAS-laden carbonaceous adsorbents: A critical review. Water Research. 119718.
10. Ersan, M.S., **Ersan, G. 2023.** The removal of N-nitrosodimethylamine, Trihalomethane, and Halonitromethane precursors by RO membrane from water sources. Journal of International Environmental Engineering and Science. 18 (1), 1-9.
11. Sengul, A., **Ersan,** G., Albayrak, E. Y., Rajab, M. A., Tüfekci, N. **2023.** Effective removal of microcystin by a hybrid process combining PAC-submerged hollow fiber membrane from raw water. Water Supply. ws2023062.
12. Ateia, M., **Ersan, G.,** Alalam, M. G., Boffito, D.C., Karanfil, T. **2022.** Emerging investigator series: microplastic sources, fate, toxicity, detection, and interactions with micropollutants in aquatic ecosystems – a review of reviews. Environmental Science: Processes & Impacts. 24, 172.
13. **Ersan, G. 2021.** Adsorption modeling of organic compounds (OCs) by carbon nanotubes (CNTs): Role of OC and CNT properties on the linear solvation energy relationships (LSER). Water Science and Technology. 84 (7), 1635-1647.
14. **Ersan, G.,** Ersan, M.S., Kanan, A., and Karanfil, T. **2021.** Predictive modeling of haloacetonitriles under uniform formation conditions. Water Research. 201, 117322.
15. **Ersan G.,** and Ersan, M.S. **2021.** Are carbon-based nanomaterials for the adsorption of organic contaminants perform better than nanoplastics (NPs) and microplastics (MPs)? Journal of International Environmental Engineering and Science. 16 (2), 72-81.
16. Apul, O.G., Perreault, F., **Ersan, G.,** and Karanfil, T. **2020.** Linear solvation energy relationship development for adsorption of synthetic organic compounds by carbon nanomaterials: an overview of the last decade. Environmental Science: Water Research & Technology. 6, 2949.
17. **Ersan, G.,** Kaya, Y., Ersan, M.S., Apul, O.G. and Karanfil, T. **2019.** Adsorption kinetics and aggregation for three classes of carbonaceous adsorbents in the presence of natural organic matter. Chemosphere. 229, 515-524.
18. **Ersan, G.,** Apul, O.G. and Karanfil, T. **2018.** Predictive models for adsorption of organic contaminants by graphene nanosheets: comparison with carbon nanotubes. Science of the Total Environment. 654, 28-34.
19. Sengul, A.B, **Ersan, G.,** Tüfekci, N. **2018.** Removal of intra-and extracellular microcystin by submerged ultrafiltration (UF) membrane combined with coagulation/flocculation and powdered activated carbon (PAC) adsorption. Journal of Hazardous Materials. 343, 29-35.
20. **Ersan, G.,** Apul, O.G., Perreault, F., and Karanfil, T. **2017.** Adsorption of organic compounds by graphene nanosheets: A review. Water Research. 125, 1-14.
21. **Ersan, G.,** Kaya, Y., Apul, O.G. and 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.
22. **Ersan, G.,** Apul, O.G. and Karanfil, T. **2016.** Linear solvation energy relationships (LSER) for adsorption of organic compounds by carbon nanotubes. Water Research. 98, 28-38.
23. Kaya, Y., **Ersan, G.,** Vergili, I., Gonder, Z.B., Yilmaz, G., Dizge, N., Aydiner, C. **2013.** The treatment of pharmaceutical wastewater using in a submerged membrane bioreactor under different sludge retention times. Journal of Membrane Science. 442, 72-82.
24. Çınar Ö., Demiröz K., Uysal, Y., **Kanat, G. 2009.** Effect of oxygen on anaerobic color removal of azo dye in sequencing batch reactor, Clean - Soil, Air, Water. 37, 657-662.

Publications in Progress

25. Fisher, T., Dao, M., Lu, S., Flores, K., Segura, S. G., **Ersan, G. 2025.** A Comparative Evaluation of the Adsorption Behavior of Fe and Fe/Cu-containing Metal Organic Frameworks (MOFs) for Aqueous Arsenic Removal. (Under Review- Colloids and Surfaces A: Physicochemical and Engineering Aspects).

26. Ahmed, F., Gaber, M.S., **Ersan, G.,** Garcia-Segura, S., Ersan, M.S. **2025.** Pharmaceutical Adsorption and Electro-Regeneration Performance of Magnetically Modified Activated Carbon. (Under Review-Environmental Science and Pollution Research).

Book Chapters (Peer reviewed)

1. Ersan G., and Ersan, M.S. **2022.** Application of nanoparticles for environmental remediation: potential impacts of carbon- and metal-based engineered nanoparticles. Green Synthesis and Applications of Nanomaterials. Chapter 9. ISBN10: 179988936X, Pages 199-222.

2. Ersan G., and Ersan, M.S. **2023**. Nano-sensors for the detection of contaminants in aqueous water. Nanotechnology for Sustainable Agriculture, Food and Environment (will be published by CRC Press, Taylor & Francis Group in July 2023).

Conference Proceedings and Presentations

1. Ali, S.G.M., Atrashkevich, A., **Ersan, G.,** Garcia-Segura, S., Ersan, M.S., **2025.** Evaluation of in-situ electro-regeneration of PFAS-laden spent activated carbon adsorbents for sustainable solid waste management. ND Water and Pollution Control Conference, October 29, 2025. Fargo, ND (Poster Presentation).

2. Ali, S.G.M., Ersan, M.S., Garcia-Segura, S., **Ersan G., 2024.** Electro-regeneration of PFAS-laden activated carbons in groundwater. Water Quality and Technology Conference, November 17-21, 2024. Schaumburg, IL, USA (Poster Presentation-1st Place Awarded).

3. Ahmed, F., **Ersan G.,** Garcia-Segura, S. Ersan, M.S., **2024.** Removal of Ibuprofen and Ciprofloxacin using magnetized versus non-magnetized powdered activated carbon. South Dakota Water Conference, October 10-15, 2024. Brookings, South Dakota, USA (Poster Presentation).

4. Ahmed, F., **Ersan G.,** Garcia-Segura, S. Ersan, M.S., **2024.** Does Magnetization of Carbonaceous Adsorbents Facilitate Pharmaceutical Removal? ACS, August 18-22, 2024. Denver, Colorado, USA (Oral Presentation).

5. Ersan, G. Garcia-Segura, S. Ersan, M.S., **2024.** Opportunities for in situ electro-regeneration of PFAS-spent carbon. Red River Valley ACS, February 3- 4, 2024. Bemidji, Minnesota, USA (Oral Presentation).

6. Gaber, M.S., **Ersan, G.,** Perrault, F., Garcia-Segura, S., Ersan, M.S., **2024.** Electro-assisted regeneration of organic contaminants-laden activated carbon. Red River ACS, February 3-4, 2024, Bemidji, Minnesota, USA (Poster Presentation).

7. Ahmed, F., **Ersan G.,** Ersan, M.S., **2024.** Adsorption of Antibiotics on Magnetic Iron-doped Powdered Activated Carbon. Electro-assisted regeneration of organic contaminants-laden activated carbon. Red River ACS, February 3-4, 2024, Bemidji, Minnesota, USA (Poster Presentation).

8. Ersan, G., Ersan, M.S., François Perrault, Garcia-Segura, S. **2023.** In situ electro-regeneration of per- and polyfluoroalkyl substances (PFAS)-spent carbon. ACS, March 26-30, 2023. Indianapolis, Indiana (Oral Presentation).

9. Ersan, G., Garcia-Segura, S. **2022.** In situ electro-regeneration system for PFAS-laden carbon: Benchmarking single use vs. reuse. 4th Arizona Postdoctoral Research Conference, Tucson, Arizona, USA (Oral Presentation).

10. Ersan, G., Sengul, A.B, Karanfil T. **2018.** Removal of algal toxin by powder activated carbon (PAC) adsorption combined with membrane systems. 2018 South Carolina Environmental Conference, March, Myrtle Beach, USA (Poster Presentation).
11. Ersan, G., Apul, O.G., Perreault, F., and Karanfil, T. **2017.** Linear solvation energy relationships (LSER) for adsorption of organic compounds by graphene nanosheets. 2017 South Carolina Envıronmental Conference, March, Myrtle Beach, USA (Poster Presentation).
12. Apul O. G., **Ersan G.,** Karanfil T. **2016.** Environmental applications and implications of carbon nanomaterials. Academy for Co-creative Education of Environment and Energy Science (ACEEES) Conference at Tokyo Tech. The 5th International Education Forum on Environment and the Energy Science, December, San Diego, USA (Oral Presentation).
13. Ersan G., Apul O. G., Karanfil T. **2016.** Prediction of organic compounds adsorption by carbon nanotubes using linear solvation energy relationships. 2016 South Carolina Environmental Conference, March, Myrtle Beach, USA (Poster Presentation).
14. Ersan G., Kaya Y., Karanfil T. **2015.** Adsorption and kinetic studies of organic compounds by graphene nanosheets, carbon nanotubes and granular activated carbons. International Conference on Environmental Science and Technology, September, Sarajevo, Bosnia, and Herzegovina (Poster Presentation).
15. Ersan G., Kaya Y., Karanfil T. **2014.** Adsorption kinetics of phenanthrene and trichloroethylene by graphene nanosheets, carbon nanotubes and granular activated carbons under different natural organic matter preloading conditions. 2nd International Conference on Environmental Science and Technology, May, Side, Turkey (Poster Presentation).
16. Ersan G., Ersan M.S., Karanfil T. **2014.** Adsorption kinetics of trichloroethylene by graphene nanosheets, carbon nanotubes and granular activated carbons. 2014 Annual South Carolina Environmental Conference, March, Myrtle Beach, USA (Poster Presentation).
17. Ersan G., Karanfil T. **2013.** Competitive adsorption of phenanthrene and trichloroethylene by graphene nanosheets, carbon nanotubes and granular activated carbons under different natural organic matter preloading conditions. 2013 Annual Conference and Exposition, June, Denver, Colorado, USA (Poster Presentation).
18. Ersan G., Karanfil T. **2013.** The effect of natural organic matter characteristics on the adsorption of organic contaminants by graphene nanosheets, carbon nanotubes and granular activated carbons. 2013 Annual South Carolina Environmental Conference, March, Myrtle Beach, USA (Poster Presentation-1st Place Awarded).
19. Kaya Y., **Ersan G.,** Vergili İ., Özçelep Z.B., Yilmaz G., Dizge N., Aydıner Ç., **2012.** the treatment of pharmaceutical wastewater by an aerobic membrane reactor (AMBR) under different sludge retention times (SRTs). International Conference on Recycling and Reuse, June, Istanbul, Turkey (Poster Presentation).

FUNDED RESEARCH EXPERIENCES

1. **Project Title:** Evaluation of In-Situ Electro-Regeneration of PFAS-Laden Adsorbents
   Funding Agency: Department of Defense-SERDP ($250K)
   Role: Co-PI
   Responsibility: Column design and development. Characterization of the electro-regenerated of spent carbons. Writing reports and journal articles.
   Collaborator-Department |University: Civil Engineering, University of North Dakota and School of Sustainable Engineering and the Built Environment, Arizona State University **(2025-2026)**

2. **Project Title:** Hybrid Advanced Electrochemical Processes for Perfluoroalkyl Substances (PFAS) Removal
   Funding Agency: ASEE/NSF ($251K)
   Role: PI
   Responsibility: Data collection, column design and development. Run the electro-regeneration of spent carbons experiments. Writing reports and journal articles.
   Department |University: School of Sustainable Engineering and the Built Environment, Arizona State University **(2022-2024)**

3. **Project Title:** In situ electro-regeneration of PFAS-laden sorbents after use in groundwater remediation: Benchmarking single use vs. reuse
   Funding Agency: Phoenix/Scottsdale Groundwater Contamination Endowment for Research on the Risks and Mitigation of Chemical Releases to the Environment ($70K)
   Role: Researcher
   Responsibility: Conducting experiments and writing report and journal article.
   Department |University: School of Sustainable Engineering and the Built Environment, Arizona State University **(2021-2022)**

4. **Project Title:** Prediction modeling for the formation of disinfection byproducts (DBPs)
   Funding Agency: TUBITAK-Turkish NSF, 2219–International Research Scholarship Program ($30K)
   Role: PI
   Responsibility: Proposal writing and report preparation. Model development to understand the formation of brominated and iodinated DBPs from natural organic matter (NOM), algal organic matter (AOM), and effluent organic matter (EfOM)
   Department |University: Department of Environmental Engineering and Earth Sciences, Clemson University **(2015- 2017)**

5. **Project Title:** The removal of organic contaminants by carbon nanomaterials in natural waters
   Funding Agency: TUBITAK-Turkish NSF, 2214/A International Research Fellowship Program ($24K)
   Role: PI
   Responsibility: Bench scale adsorption experiment to understand the impact of organic matters on the adsorption capacity of organic contaminants by several nanomaterials
   Department |University: Department of Environmental Engineering and Earth Sciences, Clemson University **(2012- 2014)**

TEACHING EXPERIENCES

Sole Lecturer University of North Dakota, Grand Forks, ND, US- (**2025**-Present)
ENGR 200: Computer Application in Engineering (Fall and Spring)
ENGR 340: Professional Integrity in Engineering (Spring)
CE 411: Civil Engineering Materials Laboratory (Fall and Summer)
CE 412L: Soil Mechanics Laboratory (Fall)

Guest Lecturer Arizona State University, AZ, US- Spring **2022**
CEE 591 EVE Graduate Seminar
Topic: Adsorption of Contaminants by Engineered Nanomaterials in Aquatic Systems

Guest Lecturer Istanbul University, Istanbul, Turkey, Spring **2014**
CE 308- Water and Wastewater Treatment Process
Topic: Adsorption Process with Nanotechnology

MENTORING EXPERIENCES

University of North Dakota (2025-Present)
Co-mentoring two doctoral student (Mohamed S. Gaber and Faisal Ahmed) and one master's student (Tihitna Mulugeta) on their research and review paper writing.

Arizona State University (2021-2025)
Supervising and mentoring for 3 doctoral (Gabriel Cerron Calle, Aksana Atrashkevich, Taylor Fisher), 1 undergraduate (Kaitlyn Yeager), and 1 visiting students (Mohamed S. Gaber) on their personal development in academia.

Clemson University (2012- 2020)
Supported and provided specific feedback for 2 master (Yang Zhou, Semra Bakkaloglu) and 3 international visiting scholars (Amir Khan, Yiran Ren, Eda Goz) on their personal development in academia, networking, and collaboration with another peer

SERVICE/OUTREACH ACTIVITIES

STEM Outreach Activities:

Volunteer: Brain STEM - Water Treatment Challenge (+160 students), October 10, **2024,** University of North Dakota

Volunteer: Brain STEM - Water Treatment Challenge (+160 students), October 9, **2025,** University of North Dakota

Volunteer: ASU Open Door, January 28, **2023,** Arizona State University

Synergistic Outreach Activities:

Publicity Committee Chair: ND American Water Association Work (AWWA) Student Chapters at UND, **2025-Present**, University of North Dakota

Poster Judge: Graduate Achievement Day Poster Symposium, February 27, **2025,** University of North Dakota

Poster Judge: Graduate Achievement Day Poster Symposium, March 5, **2024,** University of North Dakota

Poster Judge: 30th Annual Undergraduate Research Poster Symposium, April 22, **2023,** Arizona State University

Poster Judge: 29th Annual Undergraduate Research Poster Symposium, April 22, **2022,** Arizona State University

Scientific and Professional Societies:

- Member of American Water Works Association (AWWA), **2011-Present**
- Member of American Chemical Society (ACS), **2022-202**

- Association of Environmental Engineering and Science Professors (AEESP), **2015-Present**
- Global Home of Chemical Engineers, **2022-Present**

Reviewer:

- Environmental Science and Technology
- Water Research
- Water Science and Technology
- The Royal Society of Chemistry
- New Journal of Chemistry
- Water Science and Technology
- Chemical Engineering Journal Advances
- Chemosphere
- Science and Total Environment
- Chemical Engineering Science
- Separation and Purification Technology

Experience using Analytical Instruments:

- Gas Chromatograph-GC-ECD Analyzer (Agilent 6890 & 6850)
- High-Performance Liquid Chromatography-HPLC Analyzer (Dionex Ultimate 3000, Waters, and Agilent Technologies)
- Total Organic Carbon-TOC Analyzer (Shimadzu TOC-VCHS or TOC-LCHS High Temperature Combustion Analyzer)
- Ion Chromatography (Thermo Scientific-Dionex)
- CHNS-O Elemental Analyzer (FlashEA 1112 Series)
- UV-Vis Spectrophotometer (Varian Cary 50)
- BET Surface Area and Porosity Analyzer (ASAP 2010, 2020 and Tristar II PLUS)
- X-ray Photoelectron Spectroscopy (XPS-Krator Axis Supra+)
- Thermogravimetric Analyzer (TGA 8000- Perkin Elmer)

Computer Skills:

- Phyton
- MATLAB
- AutoCAD
- Minitab
- Origin
- Casa
- SAS
- ACD Percepta

License and Certifications:

- **Introduction to Machine Learning-**Developer Ecosystem Programs, Issued January 8, 2021. Credential ID 374836603141. Global AI Hub and AI Business School.
- **Introduction to Python Programming-**Developer Ecosystem Programs, Issued December 25, 2020. Credential ID 4360973725651. Global AI Hub and AI Business School.
- **AutoCAD 2002-**Private Adana Programing Course. 12/24/2004. Turkey