

**Gamze ERSAN, Ph.D.**  
Research Assistant Professor, ASEE eFellows

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**PERSONAL INFORMATION**

**FULL NAME** Gamze Ersan  
**WORK ADDRESS:** School of Sustainable Engineering and the Built Environment,  
Arizona State University, Interdisciplinary Science and  
Technology Building 4 (ISTB4). 781 E. Terrace Mall, Room  
488A, Tempe, AZ 85281  
**PHONE:** 864.707.6262  
**EMAIL:** gersan@asu.edu

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**EDUCATION**

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- 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**

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<b>Research Assistant Professor</b>	2022-2024	<i>Arizona State University, US</i>
<b>Postdoctoral Researcher</b>	2021-2022	<i>Arizona State University, US</i>
<b>Visiting Researcher (Parental Leave)</b>	2017-2020	<i>Clemson University, US</i>
<b>International Postdoctoral Fellow</b>	2015-2017	<i>Clemson University, US</i>
<b>International Research Fellow</b>	2012-2014	<i>Clemson University, US</i>
<b>Graduate Research Assistant</b>	2010-2014	<i>Istanbul University, Turkey</i>
<b>Graduate Research Assistant</b>	2007-2010	<i>Kahramanmaras University, Turkey</i>

## AWARDS AND HONORS

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1. eFellows Engineering Postdoctoral Fellowship, American Society for Engineering Education (ASEE) with funding provided by the National Science Foundation (NSF), **2022-2024**.
2. Scientific and Technological Research Council of Turkey (TUBITAK-Turkish NSF) 2219–International Research Scholarship Program, International Postdoctoral Fellow, **2015-2017**.
3. Scientific and Technological Research Council of Turkey (TUBITAK-Turkish NSF) 2214/A–International Research Fellowship Program, International Research Fellow, **2012-2014**.
4. Annual South Carolina Environmental Conference, Student Poster Award, 1<sup>st</sup> place, **2013**

## PUBLICATIONS (h-index = 10, 791 citations via Google Scholar as of 11/2023)

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### Peer-Reviewed Publications

1. **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. In Press*.
2. **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.
3. **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 (In Press)*.
4. **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.
5. 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.
6. 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.
7. 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.
8. **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.
9. **Ersan, G.**, Ersan, M.S., Kanan, A., and Karanfil, T. **2021**. Predictive modeling of haloacetonitriles under uniform formation conditions. *Water Research*. 201, 117322.
10. **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.
11. 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.

12. **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.
13. **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.
14. 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.
15. **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.
16. **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.
17. **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.
18. 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.
19. 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**

20. **Ersan, G.,** Ersan, M.S., Karanfil, T. **2023.** Statistical modeling of iodinated trihalomethanes formation during chloramination and prechlorination/chloramination processes. (Ready for submitting to *Water Research*).
21. **Ersan, G.,** Goz, E., Karanfil, T. **2023.** Performance Analysis of Regression-Machine Learning Algorithms for the Prediction of DBP Formation during Chlorination (Ready for submitting to *Water Research*)
22. **Ersan, G.** Gaber, M.S., François Perrault, Garcia-Segura, Electro-regeneration of antibiotic-laden carbons in a single sequential reactor. (70% completed).
23. **Ersan, G.** Atrashkevich, A., Garcia-Segura, S. Enhancing carbon properties of metal-doped carbons for the lead adsorption (in preparation).

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

2. **Ersan, G.,** Garcia-Segura, S. **2022.** In situ electro-regeneration system for PFAS-laden carbon: Benchmarking single use vs. reuse. 4<sup>th</sup> Arizona Postdoctoral Research Conference, Tucson, Arizona, USA (Oral Presentation).
3. **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).
4. **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 Environmental Conference, March, Myrtle Beach, USA (Poster Presentation).
5. 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 5<sup>th</sup> International Education Forum on Environment and the Energy Science, December, San Diego, USA (Oral Presentation).
6. **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).
7. **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).
8. **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. 2<sup>nd</sup> International Conference on Environmental Science and Technology, May, Side, Turkey (Poster Presentation).
9. **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).
10. **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).
11. **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).
12. Kaya Y., **Ersan G.,** Vergili İ., Özçelep Z.B., Yilmaz G., Dizge N., Aydın 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

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- 1. Project Title:** Hybrid Advanced Electrochemical Processes for Perfluoroalkyl Substances (PFAS) Removal  
**Funding Agency:** ASEE/NSF (\$251K)  
**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)
- 2. 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)  
**Responsibility:** Conducting experiments and writing report and journal article.  
**Department |University:** School of Sustainable Engineering and the Built Environment, Arizona State University (2021-2022)
- 3. Project Title:** Prediction modeling for the formation of disinfection byproducts (DBPs)  
**Funding Agency:** TUBITAK-Turkish NSF, 2219–International Research Scholarship Program (\$30K)  
**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)
- 4. 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)  
**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

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**Guest Lecturer** Istanbul University, Istanbul, Turkey, Spring 2014

Course: Water and Wastewater Treatment

Topic: Adsorption process with nanotechnology

**Guest Lecturer** Arizona State University, AZ, US, Spring 2022

Course: CEE 591 EVE Graduate Seminar

Topic: Adsorption of Contaminants by Engineered Nanomaterials in Aquatic Systems

## **MENTORING EXPERIENCES**

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### **Arizona State University (2021-Present)**

Supervising and mentoring for 2 doctoral (Gabriel Cerron Calle, Aksana Atrashkevich), 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 other peers

## **SERVICE/OUTREACH ACTIVITIES**

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### **Synergistic Outreach Activities:**

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

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

### **Scientific and Professional Societies:**

- Member of American Water Works Association (AWWA), **2011-2014**
- Member of American Chemical Society (ACS), **2022-2023**
- Association of Environmental Engineering and Science Professors (AEESP), **2015-Present**
- Global Home of Chemical Engineers, **2022-present**

### **Reviewer:**

- 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

### **Experience using Analytical Instruments:**

- GC-ECD Analyzer (Agilent 6890 & 6850)
- HPLC (Dionex Ultimate 3000 and Waters)
- TOC Analyzer (Shimadzu TOC-VCHS or TOC-LCHS High Temperature Combustion Analyzer)
- 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+)

**Computer Skills:**

- Minitab
- Python
- Origin
- Casa
- SAS
- ACD Percepta