Renzun Zhao, PhD, PE
Associate Professor
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Education

Virginia Tech, Blacksburg, VA	Civil Engineering	Ph.D., 2012
Harbin Institute of Technology, China	Civil Engineering	M.S., 2007
Harbin Institute of Technology, China	Civil Engineering	B.S., 2005

Professional Appointments

2023 – Now	Associate Professor, Dept. of Civil Engineering, NC A&T State University
2018 – 2023	Assistant Professor, Dept. of Civil Engineering, NC A&T State University
2015 – 2018	Assistant Professor, Department of Civil Engineering, Lamar University
2015 – 2015	Senior Process Engineer, Entex Technology Inc.
2014 – 2015	Associate Research Scientist, Columbia University
2012 – 2014	Process Engineer, Veolia Water

Honors and Awards

Received by Zhao

- 2023 Young Investigator of the Year at North Carolina A&T State University (one awardee per year campus-wide)
- The American Academy of Environmental Engineers and Scientists (AAEES) 40 Under 40 Recognition Program in 2023
- Honorable mention, Outstanding Young Investigator award, 2021-2022, North Carlina A&T SU
- Junior Faculty Teaching Excellence Award, 2021-2022, College of Engineering, North Carolina A&T SU
- Summer Research SEED Fund. Centers of Excellence, North Carolina A&T SU, 2020
- Summer Research SEED Fund. North Carolina A&T SU, 2019
- Research Enhancement Grant (REG), Lamar University, 2017-2018
- Research Enhancement Grant (REG), Lamar University 2016-2017
- Virginia Water Environment Association (VWEA) Sonny Roden Scholarship, Hampton, VA, 2010
- Champion in the Design competition in the Sixth Annual VA AWWA Student Water Challenge, Richmond VA, 2009
- “Guanghua” Scholarship, Harbin Institute of Technology, Harbin, China, 2006
- “Renmin” Scholarship, Harbin Institute of Technology, Harbin, China, 2004

Received by Zhao group members

- 12th Annual Graduate Research Poster Presentation Competition, College of Engineering, NC A&T SU April 25-26, 2023 (student awardee: Sk Sadman Sakib)
- 2023 Outstanding Senior Graduate Research Assistant Award (Advisee: Md Redowan Rashid)
- 2023 Outstanding Junior Graduate Teaching Assistant Award (Advisee: Sk Sadman Sakib)
- Travel award, 2023 AEESP Conference at Northeastern University, June 19-23, 2023, Boston MA (student awardee: Harsh V. Patel)
- Travel award, 2022 AEESP Conference at Washington University in St. Louis, June 28-30, 2022, St. Louis MO (student awardee: Harsh V. Patel)
- HDR Water Scholarship, 2021 ($10k tuition + summer internship, student awardee: Harsh V. Patel)
- NanoTechnology Entrepreneurship Challenge (NTEC-MUNI) award, Virginia Tech NanoEarth 2021. (student awardees: Myles Greer [UG], Temitope Soneye)
- 9th Annual Graduate Research Poster Presentation Competition, College of Engineering, NC A&T SU April 28-29, 2020 (student awardee: Harsh V. Patel)
- Texas Water University Forum presentation competition 2nd place 2018 (student awardee: Sailee Gawande)
- TX AWWA Local Scholarship 2017 (student awardee: Alfred Wadee), Houston, TX, 2017
- TX AWWA technical research paper award (student awardee: Alfred Wadee), Houston, TX, 2017
- AAUW Fellowship (student awardee: Synthia Mallick), Beaumont TX, 2016-2017
- Texas Hazardous Waste Management Society Fellowship (student awardee: Alfred Wadee), Beaumont, TX, 2016
- Water Environment Association of Texas (WEAT) (as the advisor, student awardee: Synthia Mallick), Beaumont TX, 2016-2017

Research Grants (2.1 M in total, 1.7 M as PI)

Federal grants (1.2 M in total, 1.1M as PI):

1. PI: MRI: Acquisition of a liquid chromatography with tandem mass spectrometer for interdisciplinary research and education on the campus of North Carolina A&T State University. Award number: 2216148. **$679,703**. **National Science Foundation**. 09/01/2022 – 08/31/2025.
2. PI: Excellence in Research: Delineating the characteristics, transformation and water quality impacts of landfill leachate induced dissolved organic nitrogen. Award No. 2101053, **$417,590**. **National Science Foundation**, 08/01/2021-07/31/2024.
3. Co-PI: RAPID/Collaborative Research: Enhance the Resilience of Water Infrastructure in Mid-sized Cities Adjacent to Energy Industry". Award No. 1760710. **$125,018**. **National Science Foundation**, 10/2017-08/2018. (PI: Dr. Helen Lou at Lamar University)

***State, private agency, and other grants*:**

4. PI: Sequestering PFAS in concentrated sources (complementary). **$163,199. NC Collaboratory**. 05/01/2023 – 04/30/2025.

5. PI: Sequestering PFAS in concentrated sources. Fund ID: Collab_245. **$99,986. NC Collaboratory**. 05/01/2022 – 04/30/2024.
6. PI: Mechanistic study of PFAS removal in landfill leachate. **$30,107. Waste Management National Service**, 01/01/2022-12/31/2022.
7. PI: Environmental impacts of landfill induced anthropogenic dissolved organic nitrogen in Eastern North Carolina estuaries. **$133,000**. **North Carolina Attorney General Office**, 02/01/2022 - 01/31/2025.
8. PI: Mitigation of PFAS in Landfill Leachate with Coal Fly Ash. **$68,425**. **Waste Management National Service**, 01/2021-12/2022.
9. Co-PI: Innovative Biological and Physicochemical Removal of Per- and Polyfluoalkyl Substances (PFAS) from Wastewater-A Platform for Building Long Term Partnerships between VT and NCA&T in Water Treatment. **$19,806**. **Virginia Tech ICTAS**, 11/2019 - 06/2021. (PI: Dr. Kang Xia at Virginia Tech)
10. PI: Optimal Design for a Sustainable PFAS Mitigation System, **$5,000**. Centers of Excellence: Summer SEED Funding for Preliminary R&D Efforts & Portfolio Development, **NC A&T State University**, 05/2020-08/2020.
11. PI: Performance Improvement of Biological Leachate Treatment by Micronutrients Addition. **$46,691**. **Waste Management National Service**, 01/2020-12/2021.
12. PI: Occurrence and Characterization of PFAS in Landfill Leachate. **$5,000**. Summer Research Seed Funding Program, **NC A&T State University**, 06/2019-07/2019.
13. PI: Development and Evaluation of Cost-effective Treatment Techniques for Minimization of Highly Concentrated Landfill Liquids. **$26,635**. **Waste Management National Service**, 01/2019-12/2019.
14. Co-PI: Investigation and Removal of Contaminants in the Coastal Texas Water Systems under Natural Disasters. Project No. 118LUB0058H. **$17,650**. **Texas Hazardous Waste Research Center**, 04/2018-07/2019. (PI: Dr. Helen Lou at Lamar University)
15. PI: Mechanism exploration and treatability investigation for landfill leachates and gas well liquids generated from ETLFs. **$40,918**. **Waste Management National Service**, 09/2017-08/2018.
16. Co-PI: Water System Study after Harvey. **$11,115**. Provost's office, Dean's office and Research & Sponsored Programs office at **Lamar University**, 09/2017-12/2017.
17. PI: Detection, Characterization and Mitigation of refractory dissolved organic nitrogen (rDON) in industrial wastewater. **$5,000**. Research Enhancement Grants, **Lamar University**. 09/2017-08/2018.
18. PI: Cultivation of a Landfill Leachate Acclimated Biomass Stock, **$12,113**. **Waste Management National Service**, 05/2017-10/2017.
19. PI: Characterization of Ultraviolet Quenching Substances (UVQS) in Landfill Leachates and Gas Well Liquids Generated from Elevated Temperature Landfills (ETLFs), **$39,999**. **Waste Management National Service**, 05/2016-12/2016.
20. PI: Characterization and mitigation of disinfection by-product precursors in municipal solid waste landfill leachates. **$5,000**. Research Enhancement Grants, **Lamar University**, 09/2016-08/2017.
21. Co-PI: Approaches to mitigation of landfill leachate-induced UV transmittance impacts. **$175,652**. **Environmental Research and Education Foundation**, 09/2014- 08/2016. (PI: Dr. Yang Deng at Montclair State University)

Other significant research grants/proposals:

1. Senior Personnel: MRI: Acquisition of an X-ray Diffractometer (XRD) for Multidisciplinary Materials Research and Education. Award No. 2117811, **$422,242**. **National Science Foundation**. 09/01/2021 - 08/31/2024. (PI: Dr. Shyam Aravamudhan at NC A&T)

Journal Publication (Google Scholar citation = 2000+, h-index = 13)
***Preprints and under review*:**

1. Mallick, Synthia**; Patel, Harsh**; Gawande, Sailee**; Wadee, Alfred**; Chen, Huan; McKenna, Amy; Brazil, Brian; Yu, Wenzheng; **Zhao, Renzun***. 2023 Using landfill leachate to indicate the chemical and biochemical activities in elevated temperature landfills. (Under review with Journal of Environmental Management, Manuscript ID: JEMA-D-23-13533)
2. Harsh V. Patel**, Hyo-shin Park, **Renzun Zhao***. 2022. Predicting the Partitioning Behavior of Per- and Poly-Alkyl Substances (PFAS) on Liquid-Solid Interface for Carbon and Mineral Based Surfaces using Multivariate Linear Regression Models with K-Fold Cross Validation. ChemRxiv. DOI: 10.26434/chemrxiv-2022-4r4ml (Under review with Chemosphere VSI: AI in Water Treatment, Manuscript ID: CHEM126480)
3. Harsh Patel**, Myles Greer**, Kang Xia, Zhiwu Wang, Brian Brazil, Chamindu Liyanapatirana, Sameer Hamoush, **Renzun Zhao***. 2022. Separation of Dissolved Organic Matter (DOM) and Per-and Polyfluoro-Alkyl Substances (PFAS) from Landfill Leachate Using Modified Coal Fly-Ash (CFA). ChemRxiv. DOI: 10.26434/chemrxiv-2022-h8l06
4. Xiong, Xuejun; Graham, Nigel; Siddique, Muhammad Saboor; Wang, Shuyan; **Zhao, Renzun**; Yu, Wenzheng. The effect of microplastics on extracellular algae organic matter (AOM) and the formation of AOM-associated disinfection byproducts. Under review with Journal of Hazardous Materials, Manuscript ID: HAZMAT-D-23-09656

***Published*:**

5. Mosarrat Samiha Kabir**, Hong Wang, Stephanie Luster-Teasley, Lifeng Zhang, **Renzun Zhao***. 2023. Microplastics in landfill leachate: Sources, Occurrence, and Removal. Environmental Science and Ecotechnology, 16,100256. DOI: https://doi.org/10.1016/j.ese.2023.100256
6. Cai, Xucheng; Hu, Yuxing; Zhou, Shuang; Meng, Die; Zhang, Yanyan; **Zhao, Renzun**; Wang, Hong. 2023. Nitrifier assemblages and dynamics in secondary water supply systems: Predominance of comammox – Nitrospira in tank biofilm and sediment. ACS ES&T Water, DOI: https://doi.org/10.1021/acsestwater.2c00493
7. Balaji Rao, Danny Reible, Dimitrios Athanasiou, Helen H. Lou, **Renzun Zhao**, Jian Fang, Ilektra Drygiannaki, Kayleigh Millerick, Nahirobe Barragan, Giovanna Pagnozzi. 2022. Environmental Impacts of Hurricane Harvey on the Neches-Brakes Bayou River

System in Beaumont, Texas. Environmental Management DOI: https://doi.org/10.1007/s00267-022-01743-3

8. Mengjie Liu, Nigel Graham, Wenyu Wang, **Renzun Zhao**, Yonglong Lu, Menachem Elimelech, Wenzheng Yu. 2022. Spatial assessment of tap-water safety in China. Nature Sustainability. 1-10. DOI: https://doi.org/10.1038/s41893-022-00898-5
9. Harsh V. Patel**, Brian Brazil, Helen Lou, Manoj J. Jha, Stephanie Luster-Teasley, **Renzun Zhao***. Evaluation of the Effects of Chemically Enhanced Primary Treatment on Landfill Leachate and Sewage Co-treatment in Publicly Owned Treatment Works. 2021. Journal of Water Process Engineering 42, 102116. https://doi.org/10.1016/j.jwpe.2021.102116
10. Jian Fang, **Renzun Zhao**, Balaji Rao, Magdalena Rakowska, Dimitrios Athanasiou, Kayleigh Millerick, Suying Wei, Xiangyang Lei, Helen H Lou*, Danny D Reible. Removal of Polycyclic Aromatic Hydrocarbons from Water Using Mn (III)-Based Advanced Oxidation Process. 2021. Journal of Environmental Engineering. 147(3), 04021002. https://doi.org/10.1061/(ASCE)EE.1943-7870.0001845
11. Xiaodong Zhang, Siqing Xia, **Renzun Zhao**, Hong Wang. Effect of temperature on opportunistic pathogen gene markers and microbial communities in long-term stored roof-harvested rainwater. 2020. Environmental Research. 181, 108917. https://doi.org/10.1016/j.envres.2019.108917
12. Syeed Md Iskander, **Renzun Zhao***, Ankit Pathak, Abhinav Gupta, Amy Pruden, John T. Novak, Zhen He. 2018. A review of landfill leachate induced ultraviolet quenching substances: Sources, characteristics, and treatment. Water Research. 145, 297-311. https://doi.org/10.1016/j.watres.2018.08.035
13. Yang Deng, Chanil Jung, **Renzun Zhao**, Kevin Torrens. 2018. Adsorption of UV-Quenching Substances (UVQS) from Landfill Leachate with Activated Carbon. Chemical Engineering Journal. 350, 739-746. https://doi.org/10.1016/j.cej.2018.04.056
14. **Renzun Zhao**, Chanil Jung, Alicja Trzopek, Kevin Torrens, Yang Deng. 2018. Characterization of Ultraviolet-Quenching Dissolved Organic Matter (DOM) in Mature and Young Leachates Before and After Biological Pre-treatment. Environmental Science: Water Research and Technology, 4(5), 731-738. https://doi: 10.1039/C7EW00544J
15. **Renzun Zhao***, Hong Zhao, Rich Dimmassimo, Guoren Xu. 2018. Pilot Scale Study of Sequencing Batch Reactor (SBR) Retrofit with Integrated Fixed Film Activated Sludge (IFAS): Nitrogen Removal and Design Consideration. Environmental Science: Water Research and Technology, 4, 569-581. https://doi: 10.1039/C7EW00337D
16. **Renzun Zhao***, Abhinav Gupta, John T Novak, C, Douglas Goldsmith. 2017. Evolution of Nitrogen Species in Landfill Leachates under Various Stabilization States. Waste Management. 69, 225-231. https://doi.org/10.1016/j.wasman.2017.07.041
17. Chanil Jung, Yang Deng, **Renzun Zhao**, Kevin Torrens. 2017. Chemical Oxidation for Mitigation of UV-Quenching Substances (UVQS) from Municipal Landfill Leachate: Fenton Process versus Ozonation. Water Research.108, 260-270. https://doi.org/10.1016/j.watres.2016.11.005

18. Yang Deng, **Renzun Zhao**. 2015. Advanced Oxidation Processes (AOPs) in Wastewater Treatment. Current Pollution Reports. 1, (3): 167-176. DOI 10.1007/s40726-015-0015-z (the **most downloaded paper** of Current Pollution Reports, 21,000+ times)
19. Abhinav Gupta, John T Novak, **Renzun Zhao**. 2015. Characterization of organic matter in the thermal hydrolysis pretreated anaerobic digestion return liquor. Journal of Environmental Chemical Engineering. 3 (4A), 2631-2636. https://doi.org/10.1016/j.jece.2015.07.029
20. Abhinav Gupta, **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. 2014. Variation in organic matter characteristics of landfill leachates in different stabilization stages. Waste Management & Research. 32(12), 1192-1199. https://doi.org/10.1177/0734242X14550739
21. Abhinav Gupta, **Renzun Zhao**, John T Novak, C, Douglas Goldsmith. 2014. Application of Fenton's reagent as a polishing step for removal of UV quenching organic constituents in biologically treated landfill leachates. Chemosphere. 105, 82-86. https://doi.org/10.1016/j.chemosphere.2013.12.066
22. **Renzun Zhao***, Abhinav Gupta, John T Novak, C, Douglas Goldsmith, Natalie Driskill. 2013. Characterization and treatment of organic constituents in landfill leachates that influence the UV disinfection in the publicly owned treatment works (POTWs). Journal of Hazardous Materials. 258, 1-9. https://doi.org/10.1016/j.jhazmat.2013.04.026
23. **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. 2013. Treatment of Organic Matter and Methylated Arsenic in Landfill Biogas Condensate. Waste Management. 33, 1207-1214. https://doi.org/10.1016/j.wasman.2013.01.013
24. **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. 2012. Evaluation of on-site biological treatment for stabilized landfill leachates and its impact: a size distribution study. Water Research. 46, 3837-3848. https://doi.org/10.1016/j.watres.2012.04.022
25. Jianlei Yuan, Liqiu Zhang, Feng Xiao, **Renzun Zhao**, Peng Wang. 2008. Study on influence factors of nitrite accumulation in biological activated carbon filter, Journal of Harbin University of Commerce (natural sciences edition). 1, 010. DOI: 10.3969/j.issn.1672-0946.2008.01.011
    *: Corresponding author, ** Zhao student advisee.

Peer Reviewed Conference Presentation

Podium:

1. Sk Sadman Sakib, Mosarrat Samiha Kabir, Seyedali Mirmotalebi, Kirk St.Arromand, Harsh V. Patel, Sameer Hamoush, Taher-Abu-Lebdeh, **Renzun Zhao***. Sequestering PFAS in concrete made with modified coal fly ash. 9th Global Waste Management Symposium. February 25-28, 2024, Indian Wells, CA, USA. (Accepted)
2. Md Ashik Ahmed, Md. Redowan Rashid, SK Sadman Sakib, Temitope Soneye, Harsh Patel, Lifeng Zhang, **Renzun Zhao*.** Denitrification Performance of Sequencing Batch Reactors for the Treatment of Sewage and Landfill Leachate Blend with Different External Carbon Sources. 9th Global Waste Management Symposium. February 25-28, 2024, Indian Wells, CA, USA. (Accepted)
3. Harsh V. Patel, Hyoshin Park, **Renzun Zhao***. Data Driven Machine Learning for Estimation of PFAS Partitioning on Various Surface Materials. AEESP Research and Education Conference, Northeastern University, June 20-23, 2023

4. **Renzun Zhao**. Sustainable Mitigation of Per and Poly-fluoroalkyl Substances (PFAS) and Recalcitrant Organic Matter (DOM) from Landfill Leachate using Modified Coal Fly-Ash (CFA). 2022 Intercontinental Landfill Research Symposium (ICLRS), Asheville NC September 19-21, 2022.
5. Harsh V. Patel, Brian Brazil, Kang Xia, Zhiwu Wang, Sameer Hamoush, **Renzun Zhao*.** Sustainable Mitigation of Per and Poly-fluoroalkyl Substances (PFAS) and Recalcitrant Organic Matter (DOM) from Landfill Leachate using Modified Coal Fly-Ash (CFA), AEESP Research and Education Conference, Washington University in St. Louis, June 28-30, 2022.
6. Mosarrat Samiha Kabir, **Renzun Zhao***. Occurrence and Treatment of New Emerging Contaminants Landfill Leachate – Microplastics. 8th Global Waste Management Symposium. February 14-17, 2022, Indian Wells, CA, USA.
7. Harsh V. Patel, Brian Brazil, Kang Xia, Zhiwu Wang, Sameer Hamoush, **Renzun Zhao***. Sustainable Mitigation of Per and Poly-fluoroalkyl Substances (PFAS) and Recalcitrant Organic Matter (DOM) from Landfill Leachate using Modified Coal Fly-Ash (CFA). 8th Global Waste Management Symposium. February 14-17, 2022, Indian Wells, CA, USA.
8. Harsh V. Patel, Brian Brazil, Kang Xia, Zhiwu Wang, Sameer Hamoush, **Renzun Zhao***. Removal of Perfluoro-alkyl Substances (PFAS) and Recalcitrant Organic Matter in Landfill Leachate using Coal Fly-Ash. WEFTEC. October 18, 2021
9. Harsh V. Patel, **Renzun Zhao***, Kang Xia, Zhiwu Wang, Brian Brazil. 2020. Occurrence, Distribution and Mitigation of PFAS in Landfill Liquids. WEFTEC. October 5-9, 2020, New Orleans, LA, USA. (Virtual)
10. Harsh V. Patel, Alessia Eramo, Sophia Blanc, Nicole Fahrenfeld, Brian Brazil, **Renzun Zhao***. 2020. Impact of Landfill Leachate Matrix on Nitrogen Removal Process with Heterogeneous Community of Heterotrophs and Autotrophs in a Sequencing Batch Reactor. 7th Global Waste Management Symposium. February 23-26, 2020, Indian Wells, CA, USA.
11. **Renzun Zhao***, Harsh V. Patel, Kang Xia, Zhiwu Wang, Brian Brazil. 2020. Occurrence, Distribution and Mitigation of PFAS in Landfill Liquids. 7th Global Waste Management Symposium. February 23-26, 2020, Indian Wells, CA, USA.
12. Jian Fang, Balaji Rao, Kayleigh Millerick, **Renzun Zhao**, Helen Lou, Danny Reible. Experimental Study on the Removal of Polycyclic Aromatic Hydrocarbons Contaminants from Surface Water. 2019 AIChE Annual Meeting.
13. Hao Luo, Huilong Gai, **Renzun Zhao**, Helen Lou, Xiangyang Lei. Investigating the elevated risk of source water contamination imposed by an unprecedented natural disaster. Abstracts of Papers of The American Chemical Society 256. Aug. 19, 2018
14. Jian Fang, Hao Luo, Helen Lou, **Renzun Zhao**, Danny Reible. Waste Management Enhancement Strategies Learned from Hurrican Harvey. 2018 AIChE Annual Meeting, Pittsburgh, PA, Oct 28 - Nov 2, 2018
15. Harsh Patel, **Renzun Zhao***. Synergetic Effects of Chemically Enhanced Primary Treatment (CEPT) on UV Quenching Phenomenon during the Co-treatment of Sewage and Landfill Leachate. 91st Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), New Orleans, LA, Sep.29- Oct.3. 2018
16. Sailee Gawande, Synthia Parveen Mallick, Shishir V. Kumar, Yawen Han, Helen H. Lou, Clayton S. Jeffryes, Xiangyang Lei, **Renzun Zhao***. Spectroscopic characterization of humic substances in landfill leachates from elevated temperature landfills (ETLFs). Texas

Water 2018, San Antonio, TX, April 23-26, 2018. (**2nd place winner** in presentation competition)

17. Synthia P. Mallick, **Renzun Zhao*,** Brian Brazil, Roger Green. Characterization of UV Quenching Substances (UVQS) in Waste Liquids from Elevated Temperature Landfills (ETLFs) and its Implication. 6th Global Waste Management Symposium (GWMS), Indian Wells, CA, Feb. 11-Feb. 14, 2018
18. Harsh Patel, **Renzun Zhao*,** Brian Brazil, Roger Green**.** Metal-humic Substances Complexation Under Landfill Leachate Matrix and its Implication on UV Transmittance. 6th Global Waste Management Symposium (GWMS), Indian Wells, CA, Feb. 11-Feb. 14, 2018
19. Synthia P. Mallick, Alfred Wadee, **Renzun Zhao*,** Brian Brazil, Roger Green. Humic substances Isolation Method Development and its Application to Landfill Leachates from elevated temperature landfills (ETLFs). 90th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, Sep.30- Oct.4. 2017
20. Harsh Patel*, **Renzun Zhao**. Mitigation of UV quenching substances (UVQS) by chemical enhanced primary treatment (CEPT) in co-treatment of landfill leachate and sewage. Texas Water 2017, Austin, TX, April 10-13, 2017
21. Yang Deng*, Chanil Jung, **Renzun Zhao**, Kevin Torrens. Characterizing UV-Absorbing Dissolved Organic Matters (DOMs) in Municipal Landfill Leachate. 5th Global Waste Management Symposium (GWMS), Indian Wells, CA, Jan. 31-Feb. 3 2016
22. **Renzun Zhao**, Jason Bowman*, Heidi Rupp, Dick Pehrson, Wayne Flournoy. Innovative Integrated Fixed-film Activated Sludge (IFAS) Oxidation Ditch Conversion for Total Nitrogen control. Pacific Northwest Clean Water Association Annual Conference and Exhibition (PNCWA), Boise, ID, Oct. 25-28 2015
23. **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. Occurrence and Identification of Refractory Dissolved Organic Nitrogen (rDON) in Landfill Leachates and Implications. 4th Global Waste Management Symposium (GWMS), Orlando, FL, 23.-25 Jun. 2014
24. **Renzun Zhao***, Abhinav Gupta, John T Novak, C, Douglas Goldsmith. Using Fenton's reagent as a polishing step for biologically treated landfill leachate. 86th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, Oct.5-9. 2013
25. **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. Evolution of organic nitrogen in landfill leachates with landfilling age and spectral study with solid state 15N NMR. 3rd Global Waste Management Symposium (GWMS), Phoenix, Arizona, 30 Sep.-3 Oct. 2012
26. **Renzun Zhao***, Abhinav Gupta, John T Novak,C, Douglas Goldsmith, Natalie Driskill. Occurrence and Hydrophobicity Distribution of Organic Nitrogen in Landfill Leachate and Implications. IWA Nutrient Removal and Recovery 2012: Trends in NRR, Harbin, China, 23-25 September 2012
27. **Renzun Zhao***, Abhinav Gupta, John T Novak, C, Douglas Goldsmith. Characterization and treatment of UV quenching substances in Landfill Leachates. VA AWWA/VWEA Water JAM 2012, Virginia Beach, Virginia, 10-13.September 2012
28. **Renzun Zhao***, John T Novak and C, Douglas Goldsmith. Size distribution of organic substance and organic nitrogen in landfill leachates from different sources. 84th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Los Angeles, CA, Oct.15-19. 2011

29. **Renzun Zhao***, John T Novak, C, Douglas Goldsmith. Treatment Strategies for Organics and Methylated Arsenic in Gas Condensate Generated from a Municipal Waste Landfill. 2nd Global Waste Management Symposium (GWMS), San Antonio, TX, Oct. 3-6. 2010

Poster:

1. Md Ashik Ahmed*, Md Redowan Rashid, Madison Minton, Karen Rossignol, Randy Sloup, Jammie Huerta, Lifeng Zhang, Chris Osburn, Hans Paerl, **Renzun Zhao****. Fate and Transport of the Biologically Treated Landfill Leachate Induced Dissolved Organic Nitrogen (DON). AEESP Research and Education Conference, Northeastern University, June 20-23, 2023 (accepted) **(* JSNN graduate student**)
2. Md Redowan Rashid*, Md Ashik Ahmed, Karen Rossignol, Randy Sloup, Hans Paerl, **Renzun Zhao****. Evaluation of Physicochemical Treatment Technologies for Landfill Leachate Induced Dissolved Organic Nitrogen (DON). AEESP Research and Education Conference, Northeastern University, June 20-23, 2023 (accepted)
3. Sk Sadman Sakib, Mosarrat Samiha Kabir, Seyedali Mirmotalebi, Sameer A. Hamoush, **Renzun Zhao****. Sequestering PFAS in concrete made with modified coal fly ash. AEESP Research and Education Conference, Northeastern University, June 20-23, 2023 (accepted)
4. Temitope Soneye*, Franklin Moy, Israt Jahan, Lifeng Zhang, **Renzun Zhao****. Degradation of PFAS using HTL and Activated Nanoscale Alumina. AEESP Research and Education Conference, Northeastern University, June 20-23, 2023 (accepted) (**JSNN graduate student**)
5. Mosarrat Samiha Kabir*, **Renzun Zhao****. Sources, Detection, Occurrence, and Removal of Microplastic/Nanoplastic in landfill leachate: A Complete Review. AEESP Research and Education Conference, Washington University in St. Louis, June 28-30, 2022. (**JSNN graduate student**)
6. Harsh V. Patel, **Renzun Zhao***, Stephanie Luster-Teasley, Brian Brazil. Synergetic Effects of Chemically Enhanced Primary Treatment on Leachate and Sewage Co-treatment. AEESP Research and Education Conference, Arizona State University, May 14-16, 2019.
7. Hao Luo, Renzun Zhao*, Helen Lou, Balaji Rao, Danny Reible, Kayleigh Millerick. Water Quality Investigation in Southeast TX region after Hurricane Harvey. AEESP Research and Education Conference, Arizona State University, May 14-16, 2019.
8. Hao Luo, Huilong Gai, **Renzun Zhao***, Helen Lou, Xiangyang Lei. Investigating the elevated risk of source water contamination imposed by an unprecedented natural disaster. 256th ACS National Meeting. Boston, MA, Aug 19-23, 2018.
9. **Renzun Zhao***, Hao Luo, Helen Lou. Investigation for the elevated risk of source water contamination imposed by unprecedented natural disaster. Environmental Sciences: Water Gordon Research Conference, Holderness, NH, June 24 - June 29, 2018.
10. Alfred Wadee, Synthia Mallick, **Renzun Zhao***. Size distribution study of refractory organic matter in leachates from impacted and non-impacted areas in elevated temperature landfills (ETLFs). Texas Water 2018, San Antonio, TX, April 23-26, 2018.
11. Sailee Gawande*, **Renzun Zhao**. Spectroscopic characterization of humic substances in landfill leachates from elevated temperature landfills (ETLF). 5th Annual Texas STEM Conference at Lamar University, Beaumont, TX, October 28, 2017
12. Lei Zheng*, **Renzun Zhao**, Chanil Jung, Yang Deng, Kevin Torrens. Comparison of Fenton's reagent and ozonation for chemical oxidation of UV-quenching substances

(UVQS) in municipal landfill leachate. 254th ACS National Meeting Division ENVR, Washington, DC, August 20-24, 2017

13. Synthia P. Mallick, Alfred Wadee, **Renzun Zhao***. Characterization of UV quenching substances (UVQS) in leachates from elevated temperature landfills (ETLFs) and its implication. AEESP Conference, Ann Arbor, MI, June 20-22, 2017
14. **Renzun Zhao***, John T Novak and C, Douglas Goldsmith. Evolution of organic nitrogen in landfill leachates with landfilling age and spectral study with solid state 15N NMR. 1st Interdisciplinary Research Symposium at Virginia Tech. Blacksburg, VA, Nov.4, 2011
15. **Renzun Zhao***, John T Novak and C, Douglas Goldsmith. Treatment exploration for organics and methylated arsenic in gas condensate produced from municipal waste landfill. Virginia Tech Research Symposium, Blacksburg, VA, Mar.15. 2010

*: Presenting author. **: Corresponding author

Invited Talk

1. **Renzun Zhao**, PFAS remediation in concentrated sources. North Carolina Department of Environmental Quality and PFAS Testing Network: Research Planning Meeting, September 21, 2023.
2. **Renzun Zhao**. Sustainable Mitigation of Per and Poly-fluoroalkyl Substances (PFAS) and Recalcitrant Organic Matter (DOM) from Landfill Leachate using Modified Coal Fly-Ash (CFA). Georgia Tech, CEE Seminar Series, October 5, 2022.
3. **Renzun Zhao**. Remediation of PFAS in Landfill Leachate using Modified Coal Fly Ash. International Conference on Sustainable Technology and Development 2021. Shenzhen, China, October 31 - November 2, 2021 (virtual)
4. **Renzun Zhao**. The advancement and trend of new emerging contaminants in landfill leachate. The 16th International Conference on Waste Management and Technology. Beijing China, June 25-28, 2021 (virtual)
5. **Renzun Zhao**. Co-treatment of landfill leachate and municipal wastewater: challenges and opportunities. University of California Irvine, CEE Seminar Series, January 22, 2021. (Virtual)
6. **Renzun Zhao**. Water Quality Impacts of Hurricane Harvey and Perspectives for Future Preparedness. Virginia Tech, Blacksburg, VA, March 22, 2019.
7. **Renzun Zhao**, Brian Brazil, Roger Green. Characterization of UV Quenching Substances in Leachates from Elevated Temperature Landfills. EREF regional summit/ Waste Expo, New Orleans, LA, May 8, 2017.
8. **Renzun Zhao**. Integrated Fixed Film and Activated Sludge (IFAS) Technology Design Philosophy. Shell Technology Center Houston (STCH), Houston, TX, Feb. 16, 2017.
9. **Renzun Zhao**, Kevin Torrens, Alan Kirschner. Landfill Leachate UV Transmittance Challenges and Research Findings. Luncheon speaker in EREF Research Council Meeting, The Woodlands, TX, Nov. 16, 2016.
10. Yang Deng, Chanil Jung, **Renzun Zhao**, Kevin Torrens. Chemical Oxidation Technologies for Reduction of UV Absorbing Substances from Landfill Leachate. EREF Regional Summit on Leachate Treatment Technologies, Philadelphia, PA, Nov. 18-19, 2015.
11. **Renzun Zhao**. Addressing wastewater issues in urban infrastructure systems. Dept. of Earth and environmental studies, Montclair State University, Montclair, NJ, Apr. 14, 2015.

12. **Renzun Zhao**. Addressing wastewater issues in urban infrastructure systems. Dept. of Civil engineering, NYU polytechnic school of engineering, Brooklyn, NY, Mar. 25 2015.
13. **Renzun Zhao**. Environmental issues in solid waste industry. Dept. of Civil engineering, University of South Alabama, Mobile, AL, Jan. 22, 2015.
14. **Renzun Zhao**. Leachate Characterization and Treatment: Challenges and Countermeasures Between Landfills and POTWs. EREF regional summit, Philadelphia, PA, Oct. 9, 2013.
15. **Renzun Zhao**. Should landfill leachates be discharged to POTWs? Dept. of Civil, Construction & Environmental Engineering, NC State University, Raleigh, NC, Jan.25, 2013.

Teaching and Advising

Courses taught (U=Undergraduate, G=Graduate)

NC A&T:

(U) Fluid Mechanics and Hydraulics (FA 2020, FA 2021, FA2022)
(U) Environmental Engineering Design (FA 2018, FA 2019, FA 2020, FA 2021, FA2022, FA2023)
(U) Introduction to Environmental Engineering (SP 2019, SP 2020, SP2021, SP2022, SP2023)
(U) Environmental Engineering Lab (SP 2021, SP 2022, SP2023)
(G) Engineering Statistics (SP 2020, SP 2021, SP 2022, SP2023)
(G) Sustainability in Civil Engineering (FA 2019)
(G) Solid Waste Management (SP 2019)

Lamar University:

(U) Water Chemistry in Environmental Engineering (FA 2016)
(U) Water and Wastewater treatment (SP 2017)
(U) Introduction to Environmental Engineering (SP 2016)
(U) Statics (FA 2017)
(G) Chemical Principles of Environmental Engineering (FA 2015, SP 2017)
(G) Solid and Hazardous Waste Management (FA 2015, FA 2016)
(G) Introduction to Environmental Engineering (SP 2016)
(G) Industrial Waste Treatment (SP 2016, SP 2018)
(G) Sustainable Infrastructure Design (SU 2016)

Virginia Tech (as teaching assistant):

(U) Water and Wastewater Treatment Design (FA 2008)
(U) CEE Surveying (FA 2008)
(U) Solid and Hazardous Waste Management (guest lecture, FA 2011)

Graduate Student Advising

Committee chair:

1. Sk. Sadman Sakib, MS in Civil Engineering at NC A&T. Proposed topic: TBD. 05/2024 (expected)
2. Md. Redowan Rashid, MS in Civil Engineering at NC A&T. Proposed topic: Physical-chemical treatment of refractory dissolved organic nitrogen (rDON) in landfill leachate. 05/2024 (expected)

3. Harsh V. Patel. PhD in Computational Science and Engineering at NC A&T. Proposed topic: Application of Machine Learning in Landfill Leachate Remediation and Resource Recovery. 05/2023 (expected).
4. Mosarrat Samiha Kabir, **MS in Nanoengineering** at NC A&T. Proposal topic: Mechanistic study of coal fly ash adsorption towards water contaminants removal. 12/2022.
5. Temitope Soneye, **PhD in Nanoengineering** at NC A&T. Proposal topic: Hydrothermal liquefaction for PFAS degradation and resource recovery. 08/2024 (expected).
6. Md Ashik Ahmed, **PhD in Nanoengineering** at NC A&T. Proposal topic: Fate and transport of dissolved organic nitrogen in novel biological nitrogen removal processes. 08/2025 (expected).
7. Sailee Gawandee, MS in environmental engineering at Lamar University, Proposed Topic: Spectroscopic Characterization of Dissolved Organic Matter in Natural and Engineered Systems, 08/2018.
8. Harsh Patel, MS in environmental engineering at Lamar University, Proposed Topic: Mitigation of UV Quenching Substances (UVQS) by Chemical Enhanced Primary Treatment (CEPT) in Co-treatment of Landfill Leachate and Sewage, 08/2018.
9. Alfred Wadee, MS in environmental engineering at Lamar University, Proposed Topic: Size Distribution of Dissolved Organic Matter and Refractory Organic Nitrogen in Landfill Leachate from Elevated Temperature Landfills (ETLF), 12/2017.
10. Synthia Mallick, MS in environmental engineering at Lamar University, Topic: Method Development for Aquatic Humic Substance Isolation and Its Application to Landfill Leachate, 08/2017.

Committee member:

11. Asamen Dawit, MS in Civil Engineering at NC A&T, Topic: Median grain size across U.S. and its application for assessing stream degradation potential. 01/2021
12. Debashis Das, MS in Civil Engineering at Lamar University, Topic: Role of Workplace Charging Opportunities On Plug-in Hybrid Electric Vehicle (PHEV) Adoption, 12/2016.
13. Andrea Dearing, MS in Environmental Engineering at Lamar University, Topic: Characterization and Proposed Use of Harvested Rainwater in A Coastal Petrochemical Industrial Meteropolis, Beaumont Texas, 12/2016.
14. Anudeep Kare, MS in Chemical Engineering at Lamar University, Topic: Metal Cation Uptake and Reduction Kinetics in Microalgal Cell Culture, 10/2016.
15. Shafiuddin Shatu, MS in Environmental Engineering at Lamar University, Topic: Characterization of A Selected Refinery Wastewater Streams for Treatability Assessment, 05/2016.
16. Alicja Trzopek, MS in Geoscience at Montclair State University, Topic: Characterization of UV-Quenching Dissolved Organic Matter in Landfill Leachate, 05/2015.

<u>Undergraduate researchers advised.</u>

1. Michael Murray (BSAE ‘25). Biological nitrogen removal, 2023- present
2. Kayla Taylor (BSES ‘25). Biological nitrogen removal, 2023- present
3. Madison Minton (BSCE ‘24). Biological nitrogen removal, 2022- 2023
4. Kirk Starromand (BSCE ‘24). PFAS remediation. 2022- 2023
5. Raina Lenear (BSCE ‘20). Physicochemical treatment of industrial wastewater. 2019-2020
6. Myles Greer (BSCE ‘22). PFAS remediation. 2019-2022
7. Jordan Washington. Landfill leachate treatment with coal fly ash. 2020- 2021

8. Eddie Cargor. PFAS remediation. 2021-2022
9. Austin Canty. Biological nitrogen removal. 2021-2022
10. Tim Ptak. Water contaminants releasing from coal fly ash concrete. 2021 – 2022
11. Justin Shane Henderson, TBD, 2022-present

University Service

- Reappointment, Tenure and Promotion (RTP)/ Post-tenure review (PTR) committee member in Civil, Architectural and Environmental Department, NC A&T 2023- present.
- Search committee for Department Chairperson position in Civil, Architectural and Environmental Engineering Department, 2021- 2022.
- Southern Association of Colleges and Schools (SACS) data reporting for Environmental Engineering related course at NC A&T, 2020-present.
- Affiliated faculty member for Center of Excellence in Product Design and Advanced Manufacturing (CEPDAM) 2020 - present.
- Steering Committee Member for Interdisciplinary Graduate Environmental Certificate Program, January 2019 - Present.
- Committee Member for Outstanding College Teaching Award and The Jr. Faculty Teaching Excellence Award, 2019, 2020.
- Anchor Judge, 9th Annual Graduate Research Poster Presentation Competition, COE, NC A&T SU April 28-29, 2020.
- Search committee for Transportation faculty position in Civil, Architectural and Environmental Engineering Department at NC A&T, 2018-2020.
- ABET data collection for Environmental Engineering courses at Lamar University and NC A&T, 2016-2019.
- Southern Association of Colleges and Schools (SACS) data reporting for M.S. in Environmental Engineering and M.S. in Environmental Studies programs at Lamar University, 2016-2017.
- Graduate Advisor for M.S. in Environmental Engineering and M.S. in Environmental Studies programs at Lamar University, 2016-2017.
- College of Engineering Safety Committee at Lamar University, 2016-2017.

Professional Service

- AAEES 40 Under 40 Selection Committee member 2023-present
- Executive Advisory Committee, North Carolina PFAS Testing network, 2022-present.
- Student Chapter Liaison, Chinese-American Professors in Environmental Engineering and Science (CAPEES), 2022-present.
- Editorial board: Environmental Science and Ecotechnology, Frontiers in Environmental Science, Clean Technologies & Recycling.
- Panel reviewer for research funding agencies: National Science Foundation (2016, 2021, 2022), US Environmental Protection Agency (2020, 2021), Oak Ridge Associated Universities (2021), Environmental Research and Education Foundation (2015-2017), Fonds de recherche du Québec - Nature et technologies (Canada) (2016).
- Ad hoc reviewer for journals: Environmental Science & Technology Letters, Water Research; Chemical Engineering Journal; Waste Management; Science of the Total Environment; Environmental Science: Water Research and Technology; Applied

Microbiology and Biotechnology; Environmental Engineering Science; Water Environment Research; Water Science and Technology; Bioprocess and Biosystems Engineering; Journal of Environmental Engineering, Applied microbiology and biotechnology, etc.

- Scientific committee: Water Environmental Federation - Research and Innovation Committee, Water Environmental Federation Industrial Wastewater Committee, International Conference on Environmental Pollution Control, Vancouver, Canada, Oct. 8-12, 2017. WEF Innovations in Process Engineering Conference, Miami FL, June 8-11, 2021.

Community Service

- North Carolina School of Science and Mathematics' science and engineering fair, March 2021.
- North Carolina Science Festival, April 9, 2021

Professional Affiliations

- Registered Professional Engineer (TX PE #125840, expired in 2018)
- International Water Association (IWA)
- American Society of Civil Engineering (ASCE)
- American Water Works Association (AWWA)
- Water Environmental Federation (WEF)
- Association of Environmental Engineering & Science Professors (AEESP)
- Chinese-American Professors in Environmental Engineering and Science (CAPEES)