

**Nirupam Aich**

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**SUMMARY**

The overarching goal of my research is to protecting public health through water quality engineering and physical-chemical treatment of drinking water and wastewater. Especially, my research focuses on the mitigation of emerging water pollution (e.g., per- and polyfluoroalkyl substances or PFASs) and resource recovery through the safer and intelligent design and development of advanced materials, membranes, and manufacturing. In pursuing this, I leverage my expertise in environmental engineering and sciences and develop in-department and interdisciplinary collaborations with other engineering disciplines, chemistry, data science, and environmental health sciences. Topics of interest include:

- (i) Rational design of multifunctional nanomaterials for treatment of legacy and emerging pollutants,
- (ii) Additive manufacturing or 3D printing for nano-enabled water treatment,
- (iii) Sustainable design of nanocomposite membranes for water treatment and resource recovery,
- (iv) Data driven (nano)material discovery for environmental remediation and separations,
- (v) Global health inequity due to air, soil, and water pollution from electronic and plastic waste recycling.

My research is **extramurally supported by current/recommended funding of total >\$3.5M with my share of >\$1.45M** from the National Science Foundation (NSF), National Institute of Health (NIH), United States Department of Agriculture (USDA), US Department of Defense/Strategic Environmental Restoration and Development Program (DoD/SERDP), US Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC). My research resulted in 61 publications (46 journal articles, 7 book chapters, 6 conference papers, and 2 patents). I received the **NSF CAREER Award in 2022 and 2019 Emerging Investigator Award** from the Sustainable Nanotechnology Organization. I am serving in Editorial Board for the Journal of Hazardous Materials Letters and as reviewer for journals e.g., Nature Nanotech., ES&T, ES:Nano. I graduated 2 PhDs, 6 MS, and supervised 13 undergraduate students.

**EDUCATION**

**PhD**, 2015, Environmental Engineering, University of Texas, Austin, TX  
Dissertation: "Environmental Implications of Higher Order Fullerenes and Conjugated Nanostructures"  
Advisor: Dr. Navid Saleh

**M.S.**, 2012, Environmental Engineering, University of South Carolina, Columbia, SC  
Thesis: "Method Development for Transmission Electron Microscopy of Carbon Nanotubes and for Distributed Sensing with Triboluminescent Materials in the Premise of Sustainable Infrastructure"  
Advisor: Dr. Navid Saleh

**B.Sc.**, 2009, Chemical Engineering, Bangladesh University of Engineering & Technology, Bangladesh  
Thesis: "An Effort to Produce Laboratory Grade Potable Water from Pharmaceutical Wastewater".  
Advisor: Dr. Iqbal Mahmud

**PROFESSIONAL APPOINTMENTS**

01/23- Associate Professor, University of Nebraska, Lincoln, NE  
01/16-12/22: Assistant Professor, University at Buffalo, SUNY, Buffalo, NY  
Affiliate Faculty, Research & Education for eEnergy, Environment & Water (RENEW)  
01/14-12/15: Graduate Research Assistant, University of Texas, Austin, TX  
01/10-12/13: Graduate Research Assistant, University of South Carolina, Columbia, SC

## AWARDS AND HONORS

1. **National Science Foundation CAREER Award, 2022.**
2. **40 Under 40 Recognition**, American Academy of Environmental Engineers and Scientists, 2022.
3. **Best Paper of 2021**, *Environmental Science: Nano* (IF: 9.473), Royal Society of Chemistry, 2022.
4. **Emerging Investigator Series Paper & Cover Article**, *Environmental Science: Nano* (IF: 9.473), Royal Society of Chemistry, 2021.
5. **Member, Early Career Advisory Board**, Journal of Hazardous Materials Letters, 05/2020-Present.
6. Distinguished Alumni Lecturer, Department of Chemical Engineering, Bangladesh University of Engineering and Technology, 2020.
7. NSF-SNO Travel Award for Early Career Researchers, 9<sup>th</sup> Nano Conference, 2020.
8. **2019 SNO Emerging Investigator Award**, the Sustainable Nanotechnology Organization (SNO).
9. Certificate of Merit, American Chemical Society, 2019.
10. Outstanding Reviewer, Journal of Hazardous Materials, 2017.
11. **National Research Council Research Associateship Award (NRC RAP) for Postdoctoral Research** at the US Environmental Protection Agency, National Academy of Sciences, 2015. (Dr. Aich was offered the award, but he declined the offer to join UB)
12. Certificate of Appreciation for 5 years of service, American Chemical Society, 2015
13. Certificate of Appreciation, Women in Engineering Program, University of Texas at Austin, 2015
14. Walter L. and Reta Mae Moore Graduate Fellowship, University of Texas at Austin, 2014
15. National Graduate Student Award, ENVR Division, American Chemical Society, 2014
16. Sustainable Nanotechnology Organization (SNO) Student Award, 2013
17. SPARC Graduate Fellowship, University of South Carolina, 2013
18. M. Bert Storey Endowed Graduate Fellowship, University of South Carolina, 2011-2012
19. University of South Carolina Travel Grants, 2010-2011
20. Dean's List Scholarship, Bangladesh University of Engineering & Technology, 2009
21. Wasi-Shirin Scholarship, Bangladesh University of Engineering & Technology, 2008-2009
22. University Merit Scholarship, Bangladesh University of Engineering & Technology, 2006-2009
23. Technical Scholarship, Bangladesh University of Engineering & Technology, 2004-2009

## CURRENT, PENDING, AND COMPLETED SUPPORTS

Summary of Research Funding:

Funding Category	Total	Candidate's Share
External sources	\$3,535,065	\$1,402,273
Internal sources	\$110,500	\$50,500
Total Funded Research	\$3,645,565	\$1,452,773

### Current (Funded/Recommended)

1. Title: CAREER: 3D Printed Carbon-Metal Nanohybrid Aerogels for Highly Efficient Adsorptive/Catalytic Removal of PFASs  
Role: PI.  
Sponsor Program: **NSF CAREER Award**.  
Duration: 07/01/2022-06/30/2027. Total Budget: \$500,000 for 5 years. Aich Share: \$500,000.
2. Title: Collaborative Research: Transformation, interaction and toxicity of emerging inorganic 2D nanomaterials free-standing and embedded onto nanocomposite membranes for PFAS degradation.  
Role: PI.  
Sponsor Program: **NSF CBET – Nanoscale Interactions/Environmental Engineering**.  
Duration: 01/01/2023-12/31/2025. Total Budget: \$650,612 for 3 years. Aich Share: \$254,833.
3. Title: High-Capacity Sustainable Sorbents for Treatment of PFAS  
Role: Co-PI.  
Sponsor Program: **DoD/SERDP**. (Recommended for Funding, Pending Final Approval)  
Duration: 07/01/2022-06/30/2025. Total Budget: \$649,798 for 3 years. Aich Share: \$101,940.

4. Title: Model-aided Design and Integration of Functionalized Hybrid Nanomaterials for Enhanced Bioremediation of Per- and Polyfluoroalkyl Substances (PFASs)  
Role: Co-I.  
Sponsor Program: **NIH/NIEHS Superfund Research Program R01**.  
Duration: 1/2021-12/2025. Total Budget: \$1,535,434. Aich Share: ~\$375,000.
5. Title: Engineered Solutions for Prevention and Control of Eutrophication using Novel Bio-sorbents  
Role: Co-PI.  
Sponsor Program: **USDA NIFA**.  
Duration: 9/2021-8/2024. Total Budget: \$450,000. Aich Share: \$135,000
6. Title: Converging Additive Manufacturing, Materials Informatics, and Nanotechnology for Innovative Water Treatment and Resource Recovery  
Role: PI.  
Sponsor Program: **NYS Center for Materials Informatics (CMI)**  
Duration: 08/2021-6/2022. Total Budget: \$50,000. Aich Share: \$40,000
7. Title: Advanced Materials for Carbon Utilization  
Role: PI.  
Sponsor Program: **Buffalo Blue Sky (UBVPR)**  
Duration: 04/2021-3/2023. Total Budget: \$55,000. Aich Share: \$5,000
8. Title: Characterizing the Environmental Burden of E-waste and their Impact on Children and Women Health  
Role: Collaborator.  
Sponsor Program: **RISE Internal Research Grant, BUET**.  
Duration: 7/2019-6/2022. Total Budget: \$100,000. Aich Share: \$3000.
9. Title: Characterizing the Environmental Burden of E-waste and their Impact on Children and Women Health  
Role: Co-I.  
Sponsor Program: **Swedish International Development Cooperation Agency (Sida)**  
Duration: 7/2019-6/2022. Total Budget: \$100,000. Aich Share: \$3000.

### Pending

10. Title: Development of Smart PVDF-Based Iron Oxide Nanocomposite Membranes for Water Treatment  
Role: PI (US).  
Sponsor Program: **National Academy of Sciences (NAS), US-Egypt Joint Board on Scientific and Technological Cooperation, USAID**  
Submission Date: 12/08/2021. Total Budget: \$400,000 for 2 years. Aich Share: \$200,000.
11. Title: Conversion of fin- and shell-fish processing waste to amino acids and activated biochar  
Role: Co-PI.  
Sponsor Program: **US Department of Agriculture (USDA)**  
Submission Date: 09/01/2022. Total Budget: \$1,000,000 for 3 years. Aich Share: \$166,000.
12. Title: Understanding the Occurrence and Fate of Atmospheric Microplastics and Their Potential Risks to Human Health  
Role: Co-PI.  
Sponsor Program: **Ministry of Health and Family Welfare, Bangladesh**.  
Submission Date: 07/15/2021. Total Budget: \$195,247 for 2 years. Aich Share: \$10,000.
13. Title: iSMART: IOT-based Sensing and Multiscale Analytics for water Tracking for Addressing the Industry Problem.  
Role: Co-PI.

Sponsor Program: **Water Innovation Challenge Competition 2021, World Bank**  
Submission Date: 06/30/2021. Total Budget: \$31,250 for 2 years. Aich Share: \$3,000.

14. Title: iSMART: IOT-based Sensing and Multiscale Analytics for water Tracking for Addressing the Urban Problem.  
Role: Co-PI.  
Sponsor Program: **Water Innovation Challenge Competition 2021, World Bank**  
Submission Date: 06/30/2021. Total Budget: \$31,250 for 2 years. Aich Share: \$3,000.

### **Completed**

15. Title: Carbon-Metallic Nanohybrid (CMNH) Synthesis and Characterization for Determining their Fate and Transport.  
Role: PI.  
Sponsor Program: United States Environmental Protection Agency (USEPA).  
Duration: 11/2017-6/2018. Total Budget: \$20,000. Aich Share: 100%.
16. Title: Towards Complete Removal of Per- and Polyfluoroalkyl Substances (PFAS) Using a Nanotechnology Assisted Advanced Wastewater Treatment Process.  
Role: PI.  
Sponsor Program: Great Lakes Research Consortium, SUNY ESF.  
Duration: 4/2019-6/2021. Total Budget: \$25,000. Aich Share: 50%.

## **PUBLICATIONS**

Publication Types and Numbers: Total **61 published scholarly works** including **46 peer-reviewed journal articles**, 7 book chapters, 2 patents, and 6 peer-reviewed conference papers.

### **Peer-Reviewed Journal Articles:**

**46** Published (**34** after joining UB in 2016, **31** Independent of PhD Advisor).

[Google Scholar Link](#), Total Citations: 1247, h-index: 21, i10-index: 34.

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ResearcherID: J-7404-2019 ([link](#))

### Published/In-Review Journal Articles

*(Journal articles without Ph.D. Advisor after joining UB)*

*(Among them 5 are reviews/editorial and 29 are primary research articles; Among them 16 are with my graduate students, 9 are with my graduate students as first author, and 4 are with my undergraduate students as co-authors)*

*(Underline denotes my graduate and undergraduate students)*

1. Mehrabi, N., **Aich, N.**,\* Using Deep Eutectic Solvents for the In-Situ Synthesis of Graphene-Metal Nanohybrids and Nanocomposite Membranes for Dye Desalination, **2022**, *Journal of Environmental Chemical Engineering*. (Accepted). (UB)
2. Parvez, S.M., Hasan, S.S., Knibbs, L.D., Jahan, F., Rahman, M., Raqib, R., Islam, N., **Aich, N.**, Moniruzzaman, M., Islam, Z., Fujimura, M., Sly, P.D., Ecological burden of e-waste in Bangladesh: participant's characteristics and methods of cross-sectional assessment to measure the exposure to e-waste and associated health outcomes, **2022**, *JMIR Research Protocols*, (Accepted). DOI: 10.2196/38201. (UB)

3. Pushan, Z.A., Rahman, E., Islam, N., **Aich, N.**,\* A Critical Review of the Emerging Research on the Detection and Assessment of Microplastic Pollution in the Coastal, Marine, and Urban Bangladesh, **2022**, *Frontiers of Environmental Science and Engineering*, 16(10), Pages 128. DOI: 10.1007/s11783-022-1563-2. Journal Impact Factor: 6.048. (UB)
4. Ghosal, P., Gupta, B., Ambekar, R.S., **Aich, N.**,\* Gupta, A.K., Rahman, M., Tiwary, C.S., 3D printed materials in water treatment applications, **2021**, *Advanced Sustainable Systems*, 6(3), Pages 2100282. DOI: 10.1002/adsu.202100282. Journal Impact Factor: 6.737. (UB) **(Cover Article)**
5. Mowla, M., Rahman, E., Islam, N., **Aich, N.**,\* Assessment of Heavy Metal Contamination and Health Risk from Indoor Dust and Air of Informal E-waste Recycling Shops in Dhaka, Bangladesh, **2021**, *Journal of Hazardous Materials Advances*, 4, Pages 100025. DOI: 10.1016/j.hazadv.2021.100025. Journal Impact Factor: None yet, Journal of Hazardous Materials has an impact factor of 10.588. (UB)
6. Alam, M.M., Masud, A., Scharf, B., Bradley, I.M., **Aich, N.**,\* Long-term exposure of rGO-nZVI nanohybrids to biological wastewater treatment: Impacts on nutrient removal, biomass, and microbial communities, **2021**, *Environmental Science & Technology*, 56(1), Pages 512-524. DOI: 10.1021/acs.est.1c02586. Journal Impact Factor: 11.357. (UB)
7. Parvez, S.M., Jahan, F., Brune, M-N., Gorman, J., Rahman, M.J., Carpenter, D., Islam, Z., Rahman, M., **Aich, N.**, Knibbs, L.D., Sly, P., Health consequences of exposure to e-waste: an updated systematic review, **2021**, *Lancet Planetary Health*, 5(12), Pages e905-e920. DOI: 10.1016/S2542-5196(21)00263-1. Journal Impact Factor: 28.750. (UB)
8. Masud, A., Zhou, C., **Aich, N.**,\* Emerging Investigator Series: 3D printed graphene-biopolymer aerogel for water contaminant removal: A proof of concept, *Environmental Science: Nano*, **2021**, 8(2), 399-414. DOI: 10.1039/D0EN00953A. Journal Impact Factor: 9.473. (UB) **(Best Paper of 2021, Cover Article)**  
**Featured in Online Media:** Around 50 different websites including [EurekAlert from American Association for the Advancement of Science \(AAAS\)](#), [Communications of the Association for Computing Machinery \(ACM\)](#), [phys.org](#), [medium.com](#), [azonano.com](#).
9. Mehrabi, N., Lin, H., **Aich, N.**,\* Deep Eutectic Solvent Functionalized Graphene Oxide Nanofiltration Membranes with Superior Water Permeance for Highly Efficient Dye Desalination, **2021**, *Chemical Engineering Journal*, 412, 128577. DOI: 10.1016/j.cej.2021.128577. Journal Impact Factor: 16.744. (UB)
10. Masud, A.,<sup>§</sup> Guardia, M.G.E.,<sup>§</sup> Travis, S.C., Jarin, M., Aga, D., **Aich, N.**,\* Redox-active rGO-nZVI nanohybrid-catalyzed chain shortening of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), *Journal of Hazardous Materials Letters*, **2021**, 2, 100007. DOI: 10.1016/j.hazl.2020.100007. Journal Impact Factor: None yet, Journal of Hazardous Materials has an impact factor of 14.224. (UB)
11. Atmatzidis, K., Alimohammadi, F., **Aich, N.**, Tehrani, R., CFD Modeling and Simulation of Nano-Enhanced Fluid Purification: Removal of Pb(II) by Manganese Oxide in a Dialytic System, *ACS Omega*, **2020**, 5, 50, 32697–32705. DOI: 10.1021/acsomega.0c05069. Journal Impact Factor: 4.132. (UB)
12. Shin, N., Draphcho, J., **Aich, N.**, Guha, U., Tsai, C.S.J., Quantification and characterization of nanometer-sized particles released from dental composite products using a multimodal approach, *Journal of Nanoparticle Research*, **2020**, 22, (11), 1-13. DOI: 10.1007/s11051-020-05078-0. Journal Impact Factor: 2.253. (UB)

13. Skinner, A.W., DiBernardo, A.M., Masud, A., **Aich, N.**, Pinto, A.H., Factorial design of experiments for optimization of photocatalytic degradation of tartrazine by zinc oxide (ZnO) nanorods with different aspect ratios, *Journal of Environmental Chemical Engineering*, **2020**, 8, 104235. DOI: 10.1016/j.jece.2020.104235. Journal Impact Factor: 5.909. (UB)
14. Mehrabi, N., Abdul Haq, U.F., Reza, M.T., **Aich, N.**,\* Application of Deep Eutectic Solvent for Conjugation of Magnetic Nanoparticles onto Graphene Oxide for Lead(II) and Methylene Blue Removal, *Journal of Environmental Chemical Engineering*, **2020**, 8, (5), 104222. DOI: 10.1016/j.jece.2020.104222. Journal Impact Factor: 7.968. (UB)
15. Masud, A., Chavez Soria, N.G., Aga, D., **Aich, N.**,\* Adsorption and advanced oxidation of diverse pharmaceuticals and personal care products (PPCPs) from water using highly efficient rGO-nZVI nanohybrids, *Environmental Science: Water Research and Technology*, **2020**, 2223-2238. DOI: 10.1039/D0EW00140F. Journal Impact Factor: 5.819. (UB)
16. Wang, Y., Peris, A., Rifat, M.R., Ahmed, S.I., **Aich, N.**, Nguyen, L.V., Urik, J., Eljarrat, E., Vrana, B., Jantunen, L.M., Diamond, M.L., Measuring exposure of e-waste dismantlers in Dhaka Bangladesh to organophosphate esters and halogenated flame retardants using silicone wristbands and T-shirts, *Science of the Total Environment*, **2020**, 137480. DOI: 10.1016/j.scitotenv.2020.137480. Journal Impact Factor: 10.753. (UB)
17. Licata, O., Guha, U., Poplawsky, J., **Aich, N.**,\* Mazumder, B., Probing heterogeneity in bovine enamel composition through nanoscale chemical imaging using atom probe tomography, *Archives of Oral Biology*, **2020**, 112, 104682. DOI: 10.1016/j.archoralbio.2020.104682. Journal Impact Factor: 2.64. (UB)
18. Baalousha, M., Wang, J., Nabi, M.M., Loosli, F., Valenca, R., Mohanty, S.K., Afroz, N., Cantando, E., **Aich, N.**, Stormwater green infrastructures retain high concentrations of TiO<sub>2</sub> engineered (nano)-particles, *Journal of Hazardous Materials*, **2020**, 392, 122335. DOI: 10.1016/j.jhazmat.2020.122335. Journal Impact Factor: 14.224. (UB)
19. Wang, J., Nabi, M.M., Mohanty, S.K., Afroz, N., Contado, E., **Aich, N.**, Baalousha, M., Detection and quantification of engineered particles in urban runoff, *Chemosphere*, **2020**, 248, 126070. DOI: 10.1016/j.chemosphere.2020.126070. Journal Impact Factor: 8.943. (UB)
20. Palchoudhury, S., **Aich, N.**, Zhou, Z., Advances in smart nanomaterials: Environmental perspectives, *Journal of Nanomaterials*, **2020**, 6715765. DOI: 10.1155/2020/6715765 Journal Impact Factor: 3.791. (UB)
21. Saharia, A., Zhu, Z., **Aich, N.**, Baalousha, M., Atkinson, J.F., Modeling the transport of titanium dioxide nanomaterials from combined sewer overflows in an urban river, *Science of The Total Environment*, **2019**, 696, 133904. DOI: 10.1016/j.scitotenv.2019.133904. Journal Impact Factor: 10.753. (UB)
22. Wang, D., Saleh, N., Sun, W., Shen, C., **Aich, N.**, Peijnenburg, W.J.G.M., Zhang, W., Jin, Y., Su, C; Park, C.M., Next-generation multifunctional carbon-metal nanohybrids for energy and environmental applications, *Environmental Science & Technology*, **2019**, 53, 13, 7265-7287. DOI: 10.1021/acs.est.9b01453. Journal Impact Factor: 11.357. (UB)
23. Boutchuen, A., Zimmerman, D., **Aich, N.**, Masud, A., Arabshashi, A., Palchoudhury, S., Increased plant growth with hematite nanoparticle fertilizer drop and determining nanoparticle uptake in plants using multimodal approach, *Journal of Nanomaterial*, **2019**, vol. 2019, Article ID 6890572, 11 pages. DOI: 10.1155/2019/6890572. Journal Impact Factor: 3.791. (UB)

24. Mohona, T., Gupta, A., Masud, A., Chien, S-C., Lin, L-C., Nalam, P., **Aich, N.**,\* Aggregation behavior of inorganic 2D nanomaterials beyond graphene: Insights from molecular modeling and modified DLVO theory, *Environmental Science & Technology*, **2019**, 53 (8), 4161-4172. DOI: 10.1021/acs.est.8b05180. Journal Impact Factor: 11.357. (UB)
25. Cui, Y., Masud, A., **Aich, N.**, Atkinson, J.D., Phenol and Cr(VI) removal using materials derived from harmful algal bloom biomass: Characterization and performance assessment for a biosorbent, a porous carbon, and Fe/C composites, *Journal of Hazardous Materials*, **2019**, 368, 477-486. DOI: 10.1016/j.jhazmat.2019.01.075. Journal Impact Factor: 14.224. (UB)
26. Kellner-Rogers, J.S., Taylor, J. Masud, A., **Aich, N.**, Pinto, A.H., Kinetic and thermodynamic study of methylene blue adsorption on chitosan: Insights about metachromasy occurrence on wastewater remediation, *Energy, Ecology & Environment*, **2019**, (Online). DOI: 10.1007/s40974-019-00116-7. Journal Impact Factor: 1.75. (UB)
27. Mehrabi, N., Masud, A., Afolabi, M., Hwang, J.W., Calderon Ortiz, G.A., **Aich, N.**,\* Synthesis and characterization of magnetic graphene oxide-nano zero valent iron (GO-nZVI) nanohybrids using biocompatible cross-linkers for contaminant removal, *RSC Advances*, **2019**, 9, 963-973. DOI: 10.1039/C8RA08386J. Journal Impact Factor: 4.036. (UB)
28. Wang, Q.,<sup>§</sup> Masud, A.,<sup>§</sup> **Aich, N.**,\* Wu, Y.,\* *In vitro* pulmonary toxicity of reduced graphene oxide-nano zero valent iron nanohybrids and comparison with parent nanomaterial attributes, *ACS Sustainable Chemistry & Engineering*, **2018**, 6 (10), pp 12797-12806. DOI: 10.1021/acssuschemeng.8b02004. Journal Impact Factor: 9.224. (Invited Research Article). (UB)
29. Wang, D., Jin, Y., Park, C.M., Heo, J., Bai, X., **Aich, N.**, Su, C., Modeling the transport of the 'new-horizon' reduced graphene oxide—metal oxide nanohybrids in water-saturated porous media, *Environmental Science & Technology*, **2018**, 52 (8), 4610-4622. DOI: 10.1021/acs.est.7b06488. Journal Impact Factor: 11.357. (UB)
30. Masud, A., Cui, Y., Atkinson, J.D., **Aich, N.**,\* Shape matters: Cr(VI) removal using iron nanoparticle impregnated 1-D vs 2-D carbon nanohybrids prepared by ultrasonic spray pyrolysis, *Journal of Nanoparticle Research*, **2018**, 20 (3), pp 64. DOI: 10.1007/s11051-018-4172-z. Journal Impact Factor: 2.533. (UB)
31. Wang, D., Park, C.M., Masud, A., **Aich, N.**, Su, C., Carboxymethylcellulose mediates the transport of carbon nanotubes-magnetite nanohybrid aggregates in water-saturated porous media, *Environmental Science & Technology*, **2017**, 51 (21), 12405-12415. DOI: 10.1021/acs.est.7b04037. Journal Impact Factor: 11.357. (UB)
32. Enam, F., Mursalat, M., Guha, U., **Aich, N.**, Anik, M. I., Nisha, N.S., Esha, A.A., Khan, M. S., Dental erosion potential of beverages and bottled drinking water in Bangladesh, *International Journal of Food Properties*, **2017**, 20 (11), 2499-2510. DOI: 10.1080/10942912.2016.1242607. Journal Impact Factor: 3.388. (UB)
33. Saleh, N.B., Milliron, D., **Aich, N.**, Katz, L.E., Liljestrand, H.M., Kirisits, M.J., Importance of doping, dopant distribution, and defects on electronic band structure alteration of metal oxide nanoparticles: Implications for reactive oxygen species, *Science of The Total Environment*, **2016**, 568, 926-932. DOI: 10.1016/j.scitotenv.2016.06.145. Journal Impact Factor: 10.753. (UB)

34. **Aich, N.**, Boateng, L. K., Sabaraya, I. V., Das, D., Flora, J. R. V., Saleh, N. B., Aggregation kinetics of higher order fullerenes in aquatic systems, *Environmental Science & Technology*, **2016**, 50 (7), 3562–3571. DOI: 10.1021/acs.est.5b05447. Journal Impact Factor: 11.357. (UB)
35. Saleh, N.B., Chambers, B. §, **Aich, N.** §, Plazas-Tuttle, J., Kirisits, M.J., Mechanistic lessons learned from metallic nanomaterials' antimicrobial studies: Implications for nano-biofilm interactions, *Special Issue for Frontiers in Microbiology*, **2015**, 6. DOI: 10.3389/fmicb.2015.00677. Journal Impact Factor: 5.064. (Invited Article). (UT)
36. Khan, I.A., Afrooz, A.R.M.N., **Aich, N.**, Schierz, P.A., Flora, J.R.V., Ferguson, P.L., Sabo-Attwood, T., Saleh, N.B., Change in chirality of semiconducting single-walled carbon nanotubes can overcome anionic surfactant stabilization: A systematic study of aggregation kinetics, *Environmental Chemistry*, **2015**, 12, (6), 652-661. DOI: 10.1071/EN14176. Journal Impact Factor: 4.24. (UT)
37. Saleh, N.B., **Aich, N.**, Plazas-Tuttle, J., Lead, J.R., Lowry, G.V., Research strategy to determine when novel nanohybrids pose unique environmental risks, *Environmental Science: Nano*, **2015**, 2, 11-18. DOI: 10.1039/C4EN00104D. Journal Impact Factor: 9.473. (Cover Article). (UT)
38. **Aich, N.**, Plazas-Tuttle, J., Lead, J.R., Saleh, N.B., A critical review of nanohybrids: synthesis, applications, and environmental implications, *Environmental Chemistry*, **2014**, 11, 609-623. (Cover Article) DOI: 10.1021/acs.est.5b05447. Journal Impact Factor: 4.24. (UT)
39. Saleh, N.B., Afrooz, A.R.M.N., Bisesi, J.H.Jr., **Aich, N.**, Plazas-Tuttle, J., Sabo-Attwood, T., Emergent properties and toxicological considerations for nanohybrid materials in aquatic systems, *Nanomaterials*, **2014**, 4, (2), 372-407. (Invited and Featured Article in 2014) DOI: 10.3390/nano4020372. Journal Impact Factor: 5.719. (UT)
40. **Aich, N.** §, Kim, E. §, El-Batanouny, M., Plazas-Tuttle, J., Yang, J.K., Saleh, N.B., Ziehl, P., Detection of crack formation and stress distribution for carbon fiber reinforced polymer specimens through triboluminescent-based imaging, *Journal of Intelligent Material Systems and Structures*, **2014**, 26(8), 913-920. DOI: 10.1177/1045389X14535017. Journal Impact Factor: 2.774. (UT)
41. Chambers, B.A., Afrooz, A.R.M.N., Bae, S., **Aich, N.**, Katz, L., Saleh, N.B., Kirisits, M.J., Effects of chloride and ionic strength on physical morphology, dissolution, and bacterial toxicity of silver nanoparticles, *Environmental Science & Technology*, **2014**, 48, 761-769. DOI: 10.1021/es403969x. Journal Impact Factor: 11.357. (UT)
42. **Aich, N.**, Boateng, L., Flora, J.R.V., Saleh, N.B., Preparation of non-aggregating aqueous fullerenes in highly saline solutions with a biocompatible non-ionic polymer, *Nanotechnology*, **2013**, 24, (39), 395602. DOI: 10.1088/0957-4484/24/39/395602. Journal Impact Factor: 3.953. (UofSC)
43. Khan, I.A., **Aich, N.**, Afrooz, A.R.M.N., Flora, J.R.V., Ferguson, P.L., Sabo-Attwood, T., Saleh, N.B., Fractal structures of single-walled carbon nanotubes in biologically relevant conditions: Role of chirality vs. media conditions, *Chemosphere*, **2013**, 93, (9), 1997-2003. DOI: 10.1016/j.chemosphere.2013.07.019. Journal Impact Factor: 8.943. (UofSC)
44. **Aich, N.**, Apalla, A., Saleh, N.B., Ziehl, P., Triboluminescence for distributed damage assessment in cement based materials, *Journal of Intelligent Material Systems and Structures*, **2013**, 24, (14), 1714-1721. DOI: 10.1177/1045389X13484100. Journal Impact Factor: 2.774. (UofSC)
45. **Aich, N.**, Zohhadi, N., Khan, I.A., Matta, F., Ziehl, P., Saleh, N.B., Applied TEM approach for micro/nanostructural characterization of carbon nanotube reinforced cementitious composites, *Journal*



of *Research Updates in Polymer Science*, **2012**, 1, (1), 14-23. Journal Impact Factor: Not Found. (UofSC)

46. **Aich, N.**, Flora, J.R.V., Saleh, N.B., Preparation and characterization of stable aqueous higher order fullerenes, *Nanotechnology*, **2012**, 23, (5), 1-7. DOI: 10.1088/0957-4484/23/5/055705. Journal Impact Factor: 3.953. (UofSC)

#### Book Chapters: 7 in Total

1. **Aich, N.**,\* Kordas, K., Ahmed, I., Sabo-Attwood, T., The Hidden Risks of E-Waste: Perspectives from Environmental Engineering, Epidemiology, Environmental Health, and Human-Computer Interaction, in *Transforming Global Health: Interdisciplinary Challenges, Perspectives, and Strategies*, Ram, P.K., Korydon, S., (Eds.), Springer, Cham, **2020**; pp: 161-178. ISBN: 978-3-030-32112-3. (UB)
2. **Aich, N.**,\* Su, C-M., Kim, I., Masud, A., Application of Nano Zero Valent Iron (nZVI) for Water Treatment and Soil Remediation: Emerging Nanohybrid Approach and Environmental Implications, in *Iron Nanomaterials for Water and Soil Treatment*, Litter, M., Quici, N., Meichtry, M. (Eds.), Pan Stanford Publishing, 2018; pp: 53-75. ISBN: 9781351334792. (UB)
3. **Aich, N.**,\* Masud, A., Sabo-Attwood, T., Plazas-Tuttle, J., Saleh, N.B., Dimensional variations in nanohybrids: Property alterations, applications, and considerations for toxicological implications, in *Anisotropic and Shape-Selective Nanomaterials: Structure-Property Relationships*, Murph, S.H., Larsen, G., Coopersmith, K.J. (Eds.), Springer International, 2017; pp: 271-291. ISBN: 978-3-319-59662-4. (UB)
4. Saleh, N.B., Afrooz, A.R.M.N., **Aich, N.**, Plazas-Tuttle, J., Aggregation kinetics and fractal dimensions of nanomaterials in environmental systems, in *Engineered Nanoparticles and the Environment: Biophysicochemical Processes and Biototoxicity*, John Wiley and Sons, Inc., 2016; pp: 139-159. ISBN: 978-1-119-27582-4. (UT)
5. **Aich, N.**, Saleh, N.B., and Plazas-Tuttle, J., Fullerenes, higher fullerenes, and their hybrids: Synthesis, characterization, and environmental considerations, in *Carbon Nanomaterials for Advanced Energy Systems*, Lu, W., Baek, J-B., Dai, L., John Wiley and Sons, Inc., 2015; pp: 1-45. ISBN: 978-1-118-58078-3. (UT)
6. Zohhadi, N.; **Aich, N.**; Matta, F.; Saleh, N.B.; Ziehl, P., Graphene Nanoreinforcement for Cement Composites, in *Nanotechnology in Construction*, Sobolev, K. and Shah, S.P. (Eds.), Springer New York: 2015; pp 265-270. ISBN: 978-3-319-17088-6. (UT)
7. Saleh, N.B.; Lead, J.R.; **Aich, N.**; Das, D.; Khan, I.A., Environmental Interactions of Geo-and Bio-Macromolecules with Nanomaterials, in *Bio-Inspired Nanotechnology-From Surface Analysis to Applications*, Knecht, M., Walsh, T (Eds.), Springer New York: 2014; pp: 257-290. ISBN: 978-1-4614-9446-1. (UT)

#### Patents

1. **Aich, N.**, Masud, A., Zhou, C., Graphene-Biopolymer Compositions and Methods of Making and Using Same / 011520.01599. Int'l Pat. Appln. No. PCT/US21/25005 (Patent Application Pending) (UB)
2. Saleh, N.B., Ziehl, P., Matta, F., **Aich, N.**, Zohhadi, N., Khan, I. A., Polymeric additive for strength, deformability, and toughness enhancement of cementitious materials and composites, US patent no. US8907050B2. (UofSC)

#### Peer Reviewed Conference Papers (6 in Total)

1. Mowla, M., Rahman, E., Prottoy, H.M., Ishtiaque, S.I., **Aich, N.**, Islam, N., Health risk assessment of heavy metals in E-waste recycling shops in Dhaka, Bangladesh, Proceedings of International

- Conference of Engineering Research and Practice (iCERP), January 19-22, 2019, Dhaka, Bangladesh. (UB)
2. Rahman, E., Mowla, M., **Aich, N.**, Islam, N., Risk assessment study of e-waste recycling shops in Dhaka, Proceedings of International Conference on Disaster Risk Management, January 12-14, 2019, Dhaka, Bangladesh. (UB)
  3. Rifat, M.R., **Aich, N.**, Prottoy, H.M., Ahmed, S.I., Understanding the opportunities and challenges in e-waste management practices in Dhaka, Bangladesh, 2018, *ACM CHI Conference on Human Factors in Computing Systems*, SIGCHI, Montreal, Canada. (UB)
  4. Zohhadi, N., **Aich, N.**, Khan, I.A., Matta, F., Saleh, N.B., and Ziehl, P., Graphene nanoplatelet reinforcement for cement composites, 2015, *Proc. 5<sup>th</sup> International Symposium on Nanotechnology in Construction (NICOM-5)*, May 24-26, 2015, Chicago, IL, Sobolev, K. and Shah, S.P. (Eds.). (UT)
  5. Enam, F., Mursalat, M., Guha, U., **Aich, N.**, Anik, M.I., Khan, M.S., Characterizing dental erosion potential of beverages and bottled drinking water in Bangladesh, 2014, *Proc. International Conference on Chemical Engineering (ICChE, 2014)*, December 29-30, Dhaka, Bangladesh. (UT)
  6. Zohhadi, N., **Aich, N.**, Khan, I.A., Matta, F., Saleh, N.B., and Ziehl, P., (2012), Graphene nanoreinforcement for cement-based composites, 2012, *Proc. 4<sup>th</sup> International Symposium on Nanotechnology in Construction (NICOM4)*, Konsta-Gdoutos, M.S. (Ed.), May 20-22, 2012, Crete, Greece, Paper 178, 7 p. (UofSC)

#### PLENARY AND INVITED TALKS AND CONFERENCE PRESENTATIONS

##### Plenary Talk

1. **Aich, N.**, 'Exploring Sustainable Nanotechnology Opportunities (SNO) for Water Treatment: New Solvents, Additive Manufacturing, and Data Driven Design', SNO Emerging Investigator Talk, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 8, 2019, San Diego, CA. (UB)

##### Keynote Talk

1. **Aich, N.**, 'Envisioning Innovative Nano-Enabled Water Treatment Technologies in the 2020s', 6<sup>th</sup> International Conference on Chemical Engineering (ICChE), December 20-22, 2020, BUET, Dhaka, Bangladesh. (UB)

##### Invited Talks

1. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', September 9, 2022, Department of Chemical and Materials Engineering, University of Nevada, Reno, NV. (Virtual) (UB)
2. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', March 24, 2022, Department of Civil and Environmental Engineering, University of Nebraska, Lincoln, NE. (UB)
3. **Aich, N.**, 'Envisioning Innovative Nano-Enabled Water Treatment Technologies in the 2030s', February 22, 2022, Department of Biological and Chemical Engineering and Sciences, Florida Institute of Technology, Melbourne, FL. (Virtual) (UB)
4. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', February 11, 2022, Department of Civil and Environmental Engineering, University of Nebraska, Lincoln, NE. (Virtual) (UB)
5. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', January 19, 2022, Water and Environment Student Talks (WESTalks), University of British Columbia, Vancouver, BC, Canada. (Virtual) (UB)

6. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', January 19, 2022, Department of Chemical and Materials Engineering and Department of Civil Engineering, University of Kentucky, Lexington, KY. (UB)
7. **Aich, N.**, Mehrabi, N., 'Using Deep Eutectic Solvents for In Situ Synthesis and Application of Graphene-Metal Nanohybrids for Water Treatment', November 4, 2021, Emerging Investigators in Sustainable Nanotechnology, 10<sup>th</sup> Sustainable Nanotechnology Organization (SNO) Conference. (Virtual) (UB)
8. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', September 8, 2021, School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA. (Virtual) (UB)
9. **Aich, N.**, 'Sustainable Design and Manufacturing of Nano-Enabled Membranes and Adsorbents', July 21, 2021, Institute for Advanced Membrane Technology, Karlsruhe Institute of Technology, Germany. (Virtual) (UB)
10. **Aich, N.**, 'Multifunctional Nanohybrids for Innovative Water Treatment', March 24, 2021, World Water Day Symposium, North Dakota State University, Fargo, ND. (Virtual) (UB)
11. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', March 24, 2021, World Water Day Symposium, Indian Institute of Technology, Bombay, India. (Virtual) (UB)
12. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', February 26, 2021, Department of Civil and Environmental Engineering, Temple University, Philadelphia, PA. (Virtual) (UB)
13. **Aich, N.**, 'Multifunctional Nanohybrids for Innovative Water Treatment: Opportunities for Emerging Contaminant Treatment and Considerations for Toxicological Implications', December 7, 2020, Department of Civil & Environmental Engineering, University of Ulsan, Ulsan, South Korea. (Virtual) (UB)
14. **Aich, N.**, 'Safer-by-design multifunctional nanomaterials for emerging contaminants degradation', October 26, 2020, John A. Reif, Jr. Department of Civil & Environmental Engineering, New Jersey Institute of Technology, Newark, NJ. (Virtual) (UB)
15. **Aich, N.**, 'Multifunctional Nanohybrids for Innovative Water Treatment', October 17, 2020, BUET ChE Distinguished Alumni Lecture Series, Department of Chemical Engineering, Bangladesh University of Engineering & Technology, Dhaka, Bangladesh. (Virtual) (UB)
16. Mohsin, R., Hamid, N.N., **Aich, N.**, 'Career Development: Adapting & Evolving with Change', Escalate: A Development Summit (Webinar Series), June 27, 2020, NSU YES, North South University, Dhaka, Bangladesh. (Virtual) (UB)
17. **Aich, N.**, 'Sustainable Nanotechnology for Environmental Applications', February 28, 2020, Department of Civil and Environmental Engineering, University of California, Irvine, CA. (UB)

18. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART) in the 2020s', February 19, 2020, Department of Civil, Environmental and Construction Engineering, University of Central Florida, Orlando, FL. (UB)
19. **Aich, N.**, 'Envisioning Innovative Nano-Enabled Water Treatment Technologies in the 2030s', February 10, 2020, Department of Biomedical and Chemical Engineering and Sciences, Florida Institute of Technology, Melbourne, FL. (UB)
20. **Aich, N.**, 'Additive Manufacturing for Sustainable Nano-Enabled Water Treatment Technology', December 6, 2019, Department of Civil and Environmental Engineering, Clarkson University, Potsdam, NY. (UB)
21. **Aich, N.**, 'Academic Job Search: Why, When, and How?', December 13, 2018, Harvard Medical Postdoctoral Association Seminar Series, Harvard Medical School, Cambridge, MA. (UB)
22. **Aich, N.**, 'Sustainable design of multifunctional nanohybrids for innovative water treatment', September 21, 2018, Department of Civil and Environmental Engineering, University of South Carolina, Columbia, SC. (UB)
23. **Aich, N.**, 'Sustainable design of multifunctional nanohybrids for innovative water treatment', May 8, 2018, Department of Environmental Engineering Sciences, University of Florida, Gainesville, NY. (UB)
24. **Aich, N.**, 'Sustainable use of nanomaterials for environmental applications', February 23, 2018, Erie-Niagara Chapter of the New York State Society of Professional Engineers, Buffalo, NY. (UB)
25. **Aich, N.**, 'Multifunctional nanohybrids for environmental and energy applications: Rational design and environmental implications', November 9, 2017, Civil and Environmental Engineering, University of California, Los Angeles, CA. (UB)
26. **Aich, N.**, 'Multifunctional nanohybrids for environmental applications: Rational design and environmental implications', October 12, 2017, Civil, Environmental and Geodetic Engineering, Ohio State University, Columbus, OH. (UB)
27. **Aich, N.**, 'Multifunctional nanohybrids for environmental and energy applications: Rational design and environmental implications', September 25, 2017, Golisano Institute for Sustainability, Rochester Institute of Technology, Rochester, NY. (UB)
28. **Aich, N.**, 'Environmental implications of nanomaterials and nanohybrids', December 17, 2013, Department of Chemical Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh. (UofSC)

#### **Other Talks and Guest Lectures**

29. **Aich, N.**, 'Multifunctional Nanohybrids for Innovative Water Treatment', Guest Lecture, March 10, 2022, Department of Civil and Environmental Engineering, Manhattan College, Riverdale, NY.
30. **Aich, N.**, 'Sustainable Materials for Advanced Water Treatment (SMART)', Guest Lecture, September 9, 2021, Center for Environmental Nanoscience and Risk, Arnold School of Public Health, University of South Carolina, Columbia, SC.
31. **Aich, N.**, 'Nanotechnology for the environment', EAS 200 Guest Lecture, October 31, 2019, University at Buffalo (SUNY), Buffalo, NY.
32. **Aich, N.**, 'Nanotechnology for the environment', EAS 200 Guest Lecture, November 6, 2018, University at Buffalo (SUNY), Buffalo, NY.
33. **Aich, N.**, 'Sustainable applications of multifunctional nanomaterials for environmental remediation and

water treatment', October 18, 2016, Institute for Research and Education for eEnergy, Environment, and Water (RENEW), University at Buffalo (SUNY), Buffalo, NY. (UB)

34. **Aich, N.**, 'E-waste repair and recycling in Bangladesh: A complex socioeconomic, environmental, and health Issue', October 13, 2016, Community for Global Health Equity, University at Buffalo (SUNY), Buffalo, NY. (UB)

**Conference Proceedings and Presentations (71 total)**

1. Ali, A., Thapa, U., Antle, J., Aga, D., **Aich, N.**, Influence of Water Chemistry and Oxidant Concentration on the Degradation of Per- and Polyfluoroalkyl Substances (PFAS) using rGO-nZVI nanohybrid, AEESP Research and Education Conference, June 28-30, 2022, Washington University in St. Louis, St. Louis, MO. (UB)
2. **Aich, N.**, Masud, A., Zhou, C., 3D printed Nanomaterials for Adsorption/Catalysis of Water Pollutants, AEESP Research and Education Conference, June 28-30, 2022, Washington University in St. Louis, St. Louis, MO. (UB)
3. Aga, D., **Aich, N.**, Ng, C., Model-Aided Design and Integration of Functionalized Hybrid Nanomaterials for Enhanced Bioremediation of Per- and Polyfluoroalkyl Substances (PFASs), Progress in Webinar Series: Utilizing Innovative Materials Science Approaches to Enhance Bioremediation: Session I - Per- and Polyfluoroalkyl substances, NIEHS Superfund Research Program (SRP), April 15, 2022. (UB)
4. **Aich, N.**, Masud, A., 3D printed Nanomaterials for Adsorption/Catalysis, 10<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 3-5, 2021, Virtual. (UB)
5. Baker, L., Masud, A., Guardian, M.G.E., Aga, D., **Aich, N.**, 'NSF-S07-Magnetic and Photocatalytic rGO-nZVI-TiO<sub>2</sub> Nanohybrids for PFAS Treatment', 9<sup>th</sup> Nano Conference, November 12-13, 2020, Virtual.
6. **Aich, N.**, Mehrabi, N., Lin, H., Ultrafast Graphene Oxide Nanofiltration Membranes for Dye Desalination, 9<sup>th</sup> Nano Conference, November 12-13, 2020, Virtual.
7. Shin, N., Drapcho, J., **Aich, N.**, Guha, U., Tsai, C., Potential (nano)particle exposure from dental filling composite containing advanced/nanomaterials, AIHce Expo 2020, American Industrial Hygiene Association (AIHA), June 1-3, 2020, Atlanta, GA.
8. Masud, A., Chavez Soria, N.G., Aga, D.S., **Aich, N.**, Enhanced removal of conventional and emerging pharmaceuticals and personal care products (PPCPs) from water by graphene-iron nanohybrid, 259<sup>th</sup> ACS National Meeting, March 22-26, 2020, Philadelphia, PA. (UB)
9. **Aich, N.**, Mehrabi, N., Green solvent for nano-enabled water treatment, 259<sup>th</sup> ACS National Meeting, March 22-26, 2020, Philadelphia, PA. (Canceled due to COVID-19) (UB)
10. Jarin, M., Masud, A., Guardian, M., Travis, S.C., Aga, D., **Aich, N.**, Nano-enabled water treatment technologies for PFAS degradation and removal, The Second Pan-American Nanotechnology Conference (PANNANO), March 4-7, 2020, Aguas de Lindoia, SP, Brazil. (UB)
11. **Aich, N.**, Alam, M., Masud, A., Bradley, I., Interaction of carbon-metal nanohybrids with biological wastewater treatment, The Second Pan-American Nanotechnology Conference (PANNANO), March 4-7, 2020, Aguas de Lindoia, SP, Brazil. (UB)
12. **Aich, N.**, Masud, A., Zhou, C., Tabassum, A., 3D printed graphene aerogels for water treatment, The Second Pan-American Nanotechnology Conference (PANNANO), March 4-7, 2020, Aguas de Lindoia, SP, Brazil. (UB)

13. Mehrabi, N., **Aich, N.**, Graphene oxide-titanium dioxide nanohybrids for designing nanofiltration membranes with enhanced permeability and rejection in dye desalination, 2019 AIChE National Meeting, November 10-15, 2019, Orlando, FL. (UB)
14. Mehrabi, N., Reza, M.T., **Aich, N.**, Green solvent for conjugation of iron nanoparticles ( $\text{Fe}_3\text{O}_4$ ) and graphene oxide (GO) nanosheets to remove water contaminants, 2019 AIChE National Meeting, November 10-15, 2019, Orlando, FL. (UB)
15. Masud, A., Aga, D., **Aich, N.**, Chavez Soria, N.G., Enhanced removal of conventional and emerging pharmaceuticals and personal care products (PPCPs) from water by graphene-iron nanohybrids, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
16. **Aich, N.**, Mehrabi, N., Abdul Huq, U.F., Green solvent for conjugation of iron nanoparticles ( $\text{Fe}_3\text{O}_4$ ) and graphene oxide (GO) nanosheets to remove water contaminants, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
17. Shin, N., Drapcho, J., **Aich, N.**, Guha, U., Tsai, C., Assessment of nanometer-sized particles released from dental products, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
18. **Aich, N.**, Alam, M., Masud, A., Bradley, I., Interaction of carbon-metal nanohybrids with biological wastewater treatment, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
19. Jarin, M., Masud, A., **Aich, N.**, Travis, S.C., Aga, D., Nano-enabled water treatment technologies for PFAS degradation and removal, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
20. Tabassum, A., Masud, A., Sysouvanh, D., Zhou, C., **Aich, N.**, 3D Print-assisted graphene aerogels for water contaminant removal, 8<sup>th</sup> Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
21. Tabassum, A., Masud, A., Zhou, C., **Aich, N.**, Combined Ice-Templating and 3D Printing for Synthesizing Graphene Oxide Aerogels for Contaminant Removal from Water, SUNY Undergraduate Research Conference (SURC), Niagara Community College, April 27, 2019, Sanborn, NY. (UB)
22. Masud, A., Tabassum, A., Zhou, C., **Aich, N.**, 3D printed graphene based hybrid aerogel for contaminant removal from water, 257th ACS National Meeting, March 30-April 4, 2019, Orlando, FL. (UB)
23. Masud, A., Chavez Soria, N.G., Aga, D.S., **Aich, N.**, Removal of perfluorooctane sulfonate (PFOS) from aqueous solution by reduced graphene oxide-iron nanohybrid, 257th ACS National Meeting, March 30-April 4, 2019, Orlando, FL. (UB)
24. **Aich, N.**, Masud, A., Wang, Q., Wu, Y., *In vitro* pulmonary toxicity of reduced graphene oxide-nano zero valent iron nanohybrids and comparison with parent nanomaterial attributes, 257th ACS National Meeting, March 30-April 4, 2019, Orlando, FL. (UB)
25. Masud, A., Tabassum, A., Zhou, C., **Aich, N.**, Combined ice-templating and 3D printing for synthesizing graphene oxide aerogels for contaminant removal from water, NYWEA's 91<sup>st</sup> Annual Meeting, February 4-6, 2019, NYC, NY. (UB)
26. Scharf, B., Bradley, I., **Aich, N.**, Interaction of rGO-nZVI nanohybrids with the biological wastewater treatment processes, NYWEA's 91<sup>st</sup> Annual Meeting, February 4-6, 2019, NYC, NY. (UB)

27. Wang, D., Su, C., **Aich, N.**, Modeling the transport of the 'New-Horizon' reduced graphene oxide-metal oxide nanohybrids in saturated porous media, 2018 AGU Fall Meeting, December 10-14, 2018, Washington, D.C. (UB)
28. **Aich, N.**, Mohona, T.M., Lin, L.C., Masud, A., Gupta, A., Chien, S.C., Aggregation behavior of inorganic 2D nanomaterials beyond graphene: Insights from molecular dynamics simulations and modified DLVO theory, 7th Sustainable Nanotechnology Organization Conference 2018, November 8-10, 2018, Washington, D.C. (UB)
29. Mehrabi, N., Masud, A., **Aich, N.**, Afolabi, M., Hwang, J.W., Calderon Ortiz, G.A., Magnetic graphene oxide-nano zero valent iron (GO-nZVI) nanohybrids synthesized using biocompatible cross-linkers for contaminant removal, 7th Sustainable Nanotechnology Organization Conference 2018, November 8-10, 2018, Washington, D.C. (UB)
30. Scharf, B., Bradley, I., Alam, M., Masud, A., **Aich, N.**, Interaction of rGO-nZVI nanohybrids with the biological wastewater treatment processes, 7th Sustainable Nanotechnology Organization Conference 2018, November 8-10, 2018, Washington, D.C. (UB)
31. **Aich, N.**, Masud, A., Cui, Y., Atkinson, J.D., Shape matters: Cr (VI) removal using iron nanoparticle impregnated 1-D vs 2-D carbon nanohybrids prepared by ultrasonic spray pyrolysis, 2018 AIChE Annual Meeting, October 28 – November 2, 2018, Pittsburgh, PA. (UB)
32. **Aich, N.**, Wang, Q., Masud, A., Wu, Y., Interactions and toxicity of next generation graphene-metal nanohybrids at the pulmonary interfaces: Influence of emergent physicochemical properties, 2018 AIChE Annual Meeting, October 28 – November 2, 2018, Pittsburgh, PA. (UB)
33. **Aich, N.**, Masud, A., Atkinson, J.D., Cui, Y., Shape matters: Cr (VI) removal using iron nanoparticle impregnated 1-D vs 2-D carbon nanohybrids prepared by ultrasonic spray pyrolysis, 256th ACS National Meeting, August 19-23, 2018, Boston, MA. (UB)
34. Shepard, Z., Masud, A., **Aich, N.**, Iron nanoparticle conjugation onto 2D MoS<sub>2</sub> nanosheets: Green synthesis for environmental application, 2018 Emerging Researchers National (ERN) Conference in STEM, February 22-24, 2018, Washington, D.C. (UB)
35. Su, C., Wang, D., Park, C.M., **Aich, N.**, Aggregation, sedimentation, transport, and retention of nanohybrids of reduced graphene oxide/carbon nanotubes and metal/metal oxides in aqueous solutions and saturated porous media, 2nd International Conference on Environmental Engineering and Sustainable Development (CEESD 2017), December 8-10, 2017, Koh Samui, Thailand. (UB)
36. Masud, A., Atkinson, J.D., **Aich, N.**, Iron nanoparticle impregnated carbon nanohybrids prepared with ultrasonic spray pyrolysis for Cr (VI) removal, 1st Pan American Congress of Nanotechnology (PanNano-2017), November 27-30, 2017, Guarujá, São Paulo, Brazil. (UB)
37. **Aich, N.**, Wang, Q., Masud, A., Wu, Y., Effect of metal nanoparticle conjugation on the cytotoxicity of graphene oxides, Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA. (UB)
38. Mohona, T.M., Gupta, A., Masud, A., **Aich, N.**, Aggregation behavior of 2D nanomaterials beyond graphene, Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA. (UB)
39. Shepard, Z., Masud, A., **Aich, N.**, Environmental application of nano zero valent iron (nZVI) conjugated with 2D MoS<sub>2</sub> nanosheets, Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA. (UB)

40. Mehrabi, N., Masud, A., **Aich, N.**, Magnetic nanohybrids of graphene oxide (GO) and nano zero valent iron (nZVI) synthesized using biocompatible cross-linker for contaminant removal, Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA. (UB)
41. Masud, A., Atkinson, J.D., **Aich, N.**, Iron nanoparticle impregnated 1-D and 2-D carbon nanohybrids prepared with ultrasonic spray pyrolysis for Cr (VI) removal, Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA. (UB)
42. **Aich, N.**, Mohona, T., Behdad, S., Kordas, K., Cao, Y., Ram, P., Yang, J., Ahmed, S.I., Rahman, M.M., An integrated health, economic, and environmental sustainability approach (IHEESA) for understanding the health inequity of e-waste recycling and repair workers in Bangladesh, UB's Communities of Excellence – 2017 Conference, University at Buffalo (SUNY), September 14, 2017, Buffalo, NY. (UB)
43. Shepard, Z., Masud, A., **Aich, N.**, Iron nanoparticle conjugation onto 2D MoS<sub>2</sub> nanosheets: Green synthesis for environmental application, NSF-REU Program for Environmental Engineering Solutions for Pollution Prevention (EESPP), University at Buffalo (SUNY), August 9, 2017, Buffalo, NY. (UB)
44. Masud, A., Atkinson, J., **Aich, N.**, Iron nanoparticle conjugated carbon nanohybrids synthesis by ultrasonic spray pyrolysis for water treatment, UB CSEE Student Poster Competition, University at Buffalo (SUNY), March 31, 2017, Buffalo, NY. (UB)
45. Afolabi, M., Masud, A., **Aich, N.**, Biocompatible cross-linked graphene-nZVI hybrids for organic contaminant degradation, Fifth Sustainable Nanotechnology Conference, November 10-12, 2016, Orlando, FL. (UB)
46. Afolabi, M., Masud, A., **Aich, N.**, Graphene-based magnetic nanohybrids for organic contaminant removal from water, NSF-REU Program for Environmental Engineering Solutions for Pollution Prevention (EESPP), University at Buffalo (SUNY), August 10, 2016, Buffalo, NY. (UB)
47. Saleh, N.B., **Aich, N.**, Das, D., Kirisits, M.J., Sabo-Attwood, T., Microbial interactions of carbon nanotube-titania-platinum nanohybrid electrocatalyst, 250th ACS National Meeting, August 16-20, 2015, Boston, MA. (UB)
48. Das, D., Sabaraya, I.V., **Aich, N.**, Saleh, N.B., Aggregation kinetics of carbon nanotube and metal or metal oxide nanohybrids in aquatic environment, 250th ACS National Meeting, August 16-20, 2015, Boston, MA. (UT)
49. **Aich, N.**, Rigdon, W.A., Das, D., Plazas-Tuttle, J., Bisesi, J.H.Jr., Ngo, T., Huang, X., Sabo-Attwood, T., Saleh, N.B., Assessing environmental sustainability of novel carbon-nanotube-titania-platinum nano-hybrid electrocatalysts, 2015 Workshop on Electrochemistry, Center for Electrochemistry, The University of Texas, February 7-8, 2015, Austin, Texas. (UT)
50. **Aich, N.**, Rigdon, W.A., Das, D., Plazas-Tuttle, J., Bisesi, J.H.Jr., Ngo, T., Huang, X., Sabo-Attwood, T., Saleh, N.B., Assessing environmental sustainability of novel carbon-nanotube-titania-platinum nano-hybrid electrocatalysts, Graduate and Industry Networking (GAIN) 2015, Graduate Engineering Council, The University of Texas, February 4, 2015, Austin, Texas. (UT)
51. Bisesi, J.H.Jr., Ngo, T., **Aich, N.**, Rigdon, W., Huang, X., Saleh, N.B., Sabo-Attwood, T., Analysis of the contributions of component materials to the toxicity of hybrid nanomaterials, 9th International Conference on the Environmental Effects of Nanoparticles and Nanomaterials (ICEENN), September 7-11, 2014, Columbia, SC. (UT)
52. **Aich, N.**, Rigdon, W.A., Das, D., Plazas-Tuttle, J., Huang, X., Saleh, N.B., Hybridization with titania changes aggregation kinetics of carbon nanotubes, 247th ACS National Meeting, March 16-20, 2014, Dallas, TX. (UT)



53. Saleh, N.B., **Aich, N.**, Chambers, B.A., Afrooz, A.R.M.N., Kirisits, M.J., Influence of tin doping on environmental interactions of nano indium oxides in aqueous systems, 247th ACS National Meeting, March 16-20, 2014, Dallas, TX. (UT)
54. Saleh, N.B., **Aich, N.**, Rowles, L.S., Synthesis and characterization of carbonaceous nanomaterial-multimetallic hybrids for simultaneous removal of radioactive and organic contaminants: A case study on navajo nation, 247th ACS National Meeting, March 16-20, 2014, Dallas, TX. (UT)
55. Das, D., **Aich, N.**, Irin, F., Green, M.J., Saleh, N.B., Surface coating dependent aggregation kinetics of graphene suspensions, 247th ACS National Meeting, March 16-20, 2014, Dallas, TX. (UT)
56. **Aich, N.**, Das, D., Saleh, N.B., Extent of tin doping influences nano indium tin oxide's aggregation behavior in aqueous systems, Second Sustainable Nanotechnology Organization Conference, November 3-5, 2013, Santa Barbara, CA. (UofSC)
57. Saleh, N.B., **Aich, N.**, Plazas-Tuttle, J. Lead, J.R., Rigdon, W., Huang, X., Are nanohybrid environmental implication studies overdue?, Second Sustainable Nanotechnology Organization Conference, November 3-5, 2013, Santa Barbara, CA. (UofSC)
58. Daniels, K.M., **Aich, N.**, Miller, K.P., Andrews, J., Shetu, S., Daas, B.K., Sudarshan, T.S., Saleh, N.B., Decho, A.W., Chandrashekhar, M.V.S., Real-time sensing of *E. coli* biofilm growth using epitaxial graphene, 2013 IEEE Sensors, November 3-6, 2013, Baltimore, Maryland. (UofSC)
59. Zohhadi, N., **Aich, N.**, Matta, F., Saleh, N.B., Ziehl, P., Bio-Inspired polymeric binder for sustainable and resilient cement composites, Conference of the ASCE Engineering Mechanics Institute, Northwestern University, August 4-7, 2013, Evanston, IL. (UofSC)
60. Zohhadi, N., **Aich, N.**, Matta, F., Saleh, N.B., Ziehl, P., and Kidane, A., Graphene nanoreinforcement for cement-based composites, in 4th Advances in Cement-Based Materials: Characterization, Processing, Modeling and Sensing, July 8-10, 2013, University of Illinois at Urbana-Champaign, IL. (UofSC)
61. Zohhadi, N., **Aich, N.**, Matta, F., Saleh, N.B., Ziehl, P., Graphene nano-platelets and multi-walled carbon nanotubes for high-performance cement composites, 7th M.I.T. Conference on Computational Fluid and Solid Mechanics, June 12-14, 2013, Boston, MA. (UofSC)
62. **Aich, N.**, Flora, J. R. V., Boatang, L., Saleh, N.B. Size tuned aqueous nC<sub>60</sub>s and nC<sub>70</sub>s stabilized with biocompatible surface coatings, 245th ACS National Meeting, April 7-11, 2013, New Orleans, LA. (UofSC)
63. Daniels, K.M., **Aich, N.**, Miller, K.P., Daas, B.K., Sudarshan, T.S., Saleh, N.B., Decho, A.W., Chandrashekhar, M.V.S., Biological sensing applications of epitaxial graphene, 54th Annual Electronic Materials Conference (EMC 2012), June 20 – 22, 2012, Pennsylvania State University, State College, PA. (UofSC)
64. Shah, V., Haiduk, B., Collins, D., Afrooz, A.R.M.N., **Aich, N.**, Rispoli, F., Saleh, N.B., Aggregation and antimicrobial activity of copper nanoparticle suspension, 243rd ACS National Meeting, Mar 25-29, 2012, San Diego, CA. (UofSC)
65. Matta, F., Saleh, N.B., Ziehl, P., Zohhadi, N., **Aich, N.**, and Khan, I.A., Graphene nanoreinforcement for damage-tolerant cement-based composites, 1st Annual World Congress of Nano-S&T, October 23-26, 2011, Dalian, China. (UofSC)
66. **Aich, N.**, Saleh, N.B., Aggregation kinetics of endohedral metallofullerene-single-walled carbon nanohorn and nanotube peapods, 241st ACS National Meeting, Mar 27-31, 2011, Anaheim, CA. (UofSC)

67. Afrooz, A.R.M., **Aich, N.**, Rispoli, F., Shah, V., Saleh, N., Influence of media chemical properties on aggregation behavior of copper nanoparticles, 241st ACS National Meeting, Mar 27-31, 2011, Anaheim, CA. (UofSC)
68. **Aich, N.**, Saleh, N.B., Aggregation kinetics of higher order fullerenes in aquatic environment, 241st ACS National Meeting, Mar 27-31, 2011, Anaheim, CA. (UofSC)
69. **Aich, N.**, Saleh, N.B., Aggregation Kinetics of Fullerene-Single-walled Carbon Nanotube Hybrids, 240th ACS National Meeting, Aug 22-26, 2010, Boston, MA. (UofSC)
70. Saleh, N.B., Afrooz, A.R.M.N., **Aich, N.**, Khan, I.A., Filtration of anisotropic and hybrid nanomaterials, 240th ACS National Meeting, Aug 22-26, 2010, Boston, MA. (UofSC)
71. Saleh, N.B., Afrooz, A.R.M.N., **Aich, N.**, Khan, I.A., Saturated porous media transport of anisotropic and hybrid nanomaterials, Environmental Effects of Nanoparticles and Nanomaterials, SETAC-Clemson University, Aug 22-26, 2010, Clemson, SC. (UofSC)

### PROFESSIONAL DEVELOPMENT

1. Participant, Workshop: #10: Developing Future Academic Leaders in Environmental Engineering and Science, AEESP Research and Education Conference, Washington University in St. Louis, June 28, 2022, St. Louis, MO.
2. Digital Manufacturing and Processing Workshop, Advanced Manufacturing and Processing Conference, American Institute of Chemical Engineers (AIChE), 2021.
3. Additive Manufacturing and Advanced Materials Workshop, Advanced Manufacturing and Processing Conference, American Institute of Chemical Engineers (AIChE), 2021.
4. Green Manufacturing and Processing Workshop, Advanced Manufacturing and Processing Conference, American Institute of Chemical Engineers (AIChE), 2021.
5. Team Leader, 3D-Water, NSF I-Corps Regional Program, October 2020.
6. Participant, NSF CAREER Proposal Writing Workshop, NSF (Online), March 31-April 1, 2020.
7. Participant, SUNY NSF CAREER Proposal Writing Workshop, University at Albany, March 1-2, 2019.
8. Participant, Designing Experiences Workshop Series, CEI Faculty Academy, Center for Educational Innovation (CEI), University at Buffalo (SUNY), Weekly on Monday during February 4-25, 2019.
9. Participant, NSF-AEESP Grand Challenges Workshop, Redefining Environmental Engineering and Science, Rice University, March 30-April 1, 2016.
10. Participant, NUE: Workshop on Problem-Based Learning for Nanotechnology, Columbia, SC, August 19-20, 2013.

### RESEARCH STUDENT ADVISEMENT

Graduated 2 PhD and 6 MS students.

Current supervising 1 PhD, 2 MS Students, and 4 Undergraduate Students.

Supervised total 11 undergraduate students in research (from 2016), with 5 NSF REU fellows thus far.

### GRADUATE STUDENTS

Dissertations/Theses Directed (as major professor unless otherwise indicated)

*Ph.D. degrees*

1. Arvid Masud, PhD, August 2017-January 2021

Dissertation Title: Functional Graphene-Based Nanohybrids and Aerogels for Water Treatment and Emerging Contaminant Removal

Current Employment: Process Engineer, Intel Corporation. Also, received postdoctoral position offers from University of Illinois Chicago and Arizona State University; and teaching faculty position offer from Bucknell University.

2. Novin Mehrabi, PhD, January 2017-May 2021  
Dissertation Title: Advancing Functional Graphene Oxide Based Adsorbents and Membranes Using Deep Eutectic Solvents (DESs)  
Current Employment: Process Engineer on Bioseparations at the Dutch Multinational Corporations

*M.S. degrees (Theses)*

1. Tashfia M. Mohona, MS, August 2016-May 2018  
Thesis Title: Aggregation behavior of inorganic 2D nanomaterials beyond graphene  
Currently pursuing PhD in UB CSEE.
2. Arvid Masud, MS, August 2015-May 2017  
Project Title: Iron nanoparticle impregnated 1-D and 2-D carbon nanostructures prepared with ultrasonic spray pyrolysis for Cr (VI) removal.  
Current Employment: Intel Corporation.

Dissertations/Theses in Progress

1. Md. Arafat Ali, August 2021-present, degree expected May 2026  
Tentative Dissertation Title: Multifunctional photo-redox active graphene-metal nanohybrids for degradation of per- and polyfluoroalkyl substances (PFASs)

Other Graduate Student Supervision in Research (Project/Non-Project/Non-Thesis)

1. Ehsan Tanim, MS, August 2021-Present  
Project Title: 3D printing for nanotechnology enabled water treatment
2. Sarah Kisiel, MS, August 2021-Present  
Project Title: Micro/Nanoplastics pollution in aquatic systems
3. Laura Kowalski, MS, August 2020-August 2021  
Project Title: Synthesis and characterization of hierarchical rGO-nZVI-TiO<sub>2</sub> nanohybrids for catalytic degradation of organic contaminants  
Current Employment: Process Engineer at Corning
4. Umar Faruq Abdul Haq, MS, August 2017-January 2019  
Project Title: Green solvent for novel carbon-metallic nanohybrids for environmental applications  
Current Employment: Project Engineer at Lochmueller Group
5. Anika Tabassum, MS, August 2019-January 2021  
Research Topic: 3D printing for nano-enabled water treatment  
Current Employment: Water Resources Engineer at H2M Architects & Engineers
6. Shruti Jagini, MS, August 2019-January 2021  
Research Topic: Solvent mediated functional materials for water treatment  
Current Employment: Water/Wastewater Engineer at Jacobs Engineering

Special Achievements of Graduate Students

1. Md. Arafat Ali, Robert B. Apmann Memorial Award for the Most Outstanding 1<sup>st</sup> Year Graduate Student, UB CSEE, 2022.
2. Arvid Masud, UB SEAS Dean's Graduate Achievement Award, University at Buffalo, 2020.
3. Arvid Masud, Mark Diamond Research Fund, University at Buffalo, 2020.
4. Arvid Masud, 3<sup>rd</sup> Place, UB CSEE Student Poster Competition, 2020.
5. Anika Tabassum, 2<sup>nd</sup> Place, Poster Competition, Eighth Sustainable Nanotechnology Organization

- (SNO) Conference, San Diego, CA, 2019.
6. Anika Tabassum, Sustainable Nanotechnology Organization (SNO) Student Award, 2019.
  7. Arvid Masud, Certificate of Merit, American Chemical Society (ACS), 2019.
  8. Arvid Masud, Graduate Student Award in Environmental Chemistry, Division of Environmental Chemistry, American Chemical Society (ACS), 2019.
  9. Arvid Masud, First Place, UB CSEE Student Poster Competition, 2019.
  10. Arvid Masud, 2nd Prize, UB EWRE Graduate Student Symposium, 2018.
  11. Novin Mehrabi, Sustainable Nanotechnology Organization (SNO) Student Award, 2018.
  12. Tashfia M. Mohona, Sustainable Nanotechnology Organization (SNO) Student Award, 2017.
  13. Arvid Masud, Travel Award, 1<sup>st</sup> Pan American Congress of Nanotechnology, PANNANO Conference, Guarujá, Sao Paulo, Brazil, 2017.
  14. Arvid Masud, Second Place, UB CSEE Student Poster Competition, 2017.

Dissertation/Thesis Committee Member

1. Tashfia M. Mohona, Department of Civil, Structural and Environmental Engineering, PhD degree (expected) May 2023.
2. Mahbulul Alam, Department of Civil, Structural and Environmental Engineering, MS degree, May 2021.
3. Nuvia Rashid, Department of Civil, Structural and Environmental Engineering, MS, May 2020
4. Yanbin Cui, Department of Civil, Structural and Environmental Engineering, PhD, May 2019

**UNDERGRADUATE STUDENTS MENTORING IN RESEARCH**

1. Brianna Youngquest, Spring 2022-Present  
Environmental Engineering Senior at UB  
Project: Nanotechnology for PFAS treatment
2. Abigail Vincent, Spring 2022-Present  
Environmental Engineering Senior at UB  
Project: Nanotechnology for PFAS treatment
3. Mollika Urmi, Summer 2021-Present  
Environmental Engineering Senior at UB  
Project: 3D printing for nano-enabled water treatment
4. Connor Bannochie, Summer 2021-Present  
Environmental Engineering Senior at UB  
Project: 3D printing for nano-enabled water treatment
5. Lillian Baker, Fall 2019-Present (UB CSTEP Fellow)  
Environmental Engineering Senior at UB  
Project: PFAS degradation using nanomaterials.
6. Shequana Courtney, Spring 2021-Summer 2021 (UB LSAMP Fellow)  
Mechanical Engineering Sophomore at UB  
Project: 3D printing for nano-enabled water treatment
7. Mourin Jarin, Summer 2017-Spring 2020 and REU Fellow in Summer 2019  
Chemical Engineering Graduate from UB  
Project: Abiotic and biotic transformation of PFAS  
Currently: PhD student in Environmental Engineering at Georgia Institute of Technology.
8. Dao Sysouvanh, REU Fellow in Summer 2019  
From Civil Engineering at Valpo University  
Project: Additive manufacturing for pollutant removal.  
Currently: Civil Engineer I for DLZ Indiana LLC.

9. Brianna Scharf, Summer 2017-Spring 2019, and REU Fellow in Summer 2018  
Environmental Engineering Graduate at UB of 2019  
Project: Interaction of carbon-metal nanohybrids with biological wastewater treatment.  
Currently: Project Manager, NY State Department of Environmental Conservation.
10. Anika Tabassum, Summer 2017-Spring 2019  
Environmental Engineering Graduate at UB of 2019  
Project: Nanohybrid aerogel synthesis and characterization for water treatment.  
Currently: Water Resources Engineer - at H2M architects + engineers.
11. Zachary Shepard, REU Fellow in Summer 2017  
From Chemistry at Assumption College  
Project: Green synthesis of MoS<sub>2</sub>/Fe nanohybrids for environmental application.  
Currently: PhD Student in Environmental Engineering at University of Rhode Island.
12. Anusha Gupta, Summer Intern 2017  
From Civil Engineering, IIT Gandhinagar, India.  
Project: Aggregation kinetics of MoS<sub>2</sub> nanosheets in aquatic systems.  
Currently: Indian Institute of Management.
13. Moyosore Afolabi, REU Fellow in 2017 and Spring 2015 (Independent Supervision at UT)  
From Chemical Engineering, University of Texas at Austin  
Projects: Nanohybrids for pollutant degradation. Aggregation Kinetics of Higher Order Fullerene.  
Currently: NSF Graduate Fellow in Environmental Engineering at Georgia Institute of Technology

#### Special Achievements of Undergraduate Students

1. Lilian Baker, NSF-SNO Travel Award, 9<sup>th</sup> Nano Conference, 2020.
2. Mourin Jarin, Experiential Learning Network Individual Conference Funding Award, UB, 2019.
3. Mourin Jarin, Certificate of Academic Excellence in Undergraduate Research, University at Buffalo, The State University of New York, Buffalo, NY, 2018.
4. Brianna Scharf, 3<sup>rd</sup> Place, Poster Competition, Seventh Sustainable Nanotechnology Organization (SNO) Conference, Alexandria, VA, 2018.
5. Brianna Scharf, Sustainable Nanotechnology Organization (SNO) Student Award, 2018.
6. Zachary Shepard, 3<sup>rd</sup> Place, Poster Competition, Sixth Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, 2017.
7. Zachary Shepard, 2<sup>nd</sup> Place, 100 Second NanoPitch Competition, Sixth Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, 2017.
8. Moyo Afolabi, Sustainable Nanotechnology Organization (SNO) Student Award, 2016.
9. Moyo Afolabi, 3<sup>rd</sup> Place, Poster Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
10. Moyo Afolabi, 3<sup>rd</sup> Place, 100 Second NanoPitch Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
11. Moyo Afolabi, UB NSF REU Symposium Poster Award, 2016.

## **PROFESSIONAL SERVICES**

### Leadership

#### Editorship

1. Editorial Board Member, Early Career Advisory Board, *Journal of Hazardous Materials Letters*, May 2020-present
2. Academic Editor, *PLOS ONE*, September 2018-Present
3. Co-Guest Editor, Special Issue on *Membrane Processes for Removing Contaminants of Emerging Concern in Water and Wastewater*, Membranes, 06/11/21-Present
4. Co-Guest Editor, Special Issue on *Advances in Smart Nanomaterials: Environmental Perspective*, Journal of Nanomaterials, 06/11/18-10/31/2019

*Positions in Professional Organizations*

1. Chair, Internet Resource Committee, Association of Environmental Engineering & Science Professors (AEESP), October 2021-Present.
2. Vice-Chair, Student Services Committee, (AEESP), August 2021-Present.
3. Secretary, Student Services Committee, AEESP, January 2020-August 2021.
4. Officer, Student Services Committee, AEESP, January 2019-December 2020.
5. Webmaster, Internet Resource Committee, AEESP, October 2020-October 2021.
6. Listserv Manager, Internet Resource Committee, AEESP, October 2019- October 2020.
7. Social Media Manager, Internet Resource Committee, AEESP, October 2018- October 2019.
8. Chair, Newsletter Committee, Sustainable Nanotechnology Organization (SNO), January 2018-December 2019.

*Conference Session and Workshop Organization*

1. Convener and Chair, Workshop: *Careers in Environmental Engineering and Sciences After Graduate School*, AEESP Conference 2022, June 28, 2022, Washington University St. Louis, MO.
2. Co-convener and co-organizer, *AEESP Seminar Series: Navigating Jobs After Grad School*, Spring 2022-Present. (Virtual)
3. Session Convener and Chair, *Advanced (Nano)Materials, Membranes, and Manufacturing for Water Treatment and Reuse*, Division of Environmental Chemistry, ACS Spring 2022 National Meeting & Exposition, March 20-24, 2022, San Diego, CA.
4. Co-Convener and Organizer, *AEESP AJAR Future Faculty Seminar Series*, Spring 2021-Fall 2021.
5. Co-Convener and Organizer, Workshop entitled 'Career in Environmental Engineering & Sciences after Graduate School', AEESP Conference Appetizer Event, July 13, 2021.
6. Session Convener and Chair (Invited): *Advanced & Additive manufacturing Materials & Technologies for Environmental Application*, Division of Environmental Chemistry, 261st ACS National Meeting & Exposition, April 5-16, 2021, Virtual.
7. Convener and Moderator, AEESP Future Faculty Workshop 2020, August 12, 2020.
8. Session Convener and Chair (Invited): *Advanced & Additive manufacturing Materials & Technologies for Environmental Application*, Division of Environmental Chemistry, 259th ACS National Meeting & Exposition, March 22-26, 2020, Philadelphia, PA. (Cancelled for COVID19)
9. Chair, Poster Session, 8th Sustainable Nanotechnology Organization (SNO) Conference, November 7-9, 2019, San Diego, CA.
10. Session Convener and Chair: *Innovation, Advances, and Sustainability in Additive Manufacturing for Energy and Environment*, Division of Environmental Chemistry, 257th ACS National Meeting, March 31-April 4, 2019, Orlando, FL.
11. Chair, Poster Session, 7th Sustainable Nanotechnology Organization (SNO) Conference, November 8-10, 2018, Washington, D.C.
12. Session Moderator, *Sustaining Communities through Energy & Resource Recovery (II)*, AEESP Conference 2017, June 20-22, 2017, Ann Arbor, Michigan.
13. Session Co-Chair, *Environmental and Biological Systems*, Fifth Sustainable Nanotechnology (SNO) Organization Conference, November 10-12, 2016.

Other Service

*Journal Reviewer:*

*Reviewing ~40 manuscripts per year.*

*Nature Nanotechnology; ACS Applied Materials and Interfaces; ACS Nano; Environmental Science: Nano; Environmental Science & Technology; Environmental Science: Water Research and Technology; ACS Omega; ACS Sustainable Chemistry & Engineering; Energy & Fuels; Journal of Colloids and Interface Science; Journal of Hazardous Materials; Journal of Hazardous Materials Letters; Journal of Hazardous Materials Advances; Advanced Science Focus; Applied Sciences; Chemosphere; Colloids and Surfaces B; Ecotoxicology and Environmental Safety; Environmental Engineering Sciences; Environmental Development; Environmental International; Environmental Nanotechnology, Monitoring, and Management; International Journal of Nanomedicine; Journal of Industrial and Environmental*

*Chemistry; Journal of Nanoparticle Research; Molecules; Nanoscale Advances; Nanotoxicology; Scientific Report; Water Science and Technology.*

Proposal Reviewer

- NSF Review Panels (CBET 2016, CMMI 2018, CBET 2021)
- Environmental Research and Education Foundation (EREF), 2020. (Ad Hoc)
- National Research Foundation of Singapore, 2018 (Ad Hoc)
- Reviewer for AEESP SSC Academic Job Application Review, 2016-Present.

Membership in Professional and Honor Societies

1. Association of Environmental Engineering & Science Professors (AEESP), 2013-Present.
2. American Chemical Society (ACS), 2010-Present.
3. American Institute of Chemical Engineers (AIChE), 2013-Present.
4. Sustainable Nanotechnology Organization (SNO), 2013-Present.

**UNIVERSITY SERVICES**

Department Committees

1. Organizer, EWRE Graduate Student Symposium, April 29, 2022.
2. Member, EWRE Website and Outreach Committee, September 2020-Present.
3. Member, CSEE Lab Spending Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2020.
4. Member, ABET Faculty Review Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2019.
5. Member, Faculty Search Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2017.
6. Principal Organizer, Environmental and Water Resources Engineering Seminar, University at Buffalo (SUNY), 08/2016-12/2017.

School Committees

1. Member, School of Engineering and Applied Sciences Scholarship Committee, University at Buffalo (SUNY), Fall 2018-Present.
2. Member, Adjudication Pool, School of Engineering and Applied Sciences, University at Buffalo (SUNY), Spring 2019-Present.
3. Member, Faculty Committee, Women in Science and Engineering (WiSE) Program, University at Buffalo (SUNY), Fall 2017-Present.
4. Faculty Consultant, International Graduate Student Recruitment, Office of Graduate Education, School of Engineering and Applied Sciences (SEAS), University at Buffalo (SUNY).

University Committee

1. Member, Fulbright Scholar Interview Committee, Fall 2017.

Other Service

1. Faculty Mentor, Collegiate Science & Technology Entry Program (CSTEP), 06/2021-Present.
2. Faculty Mentor, Louis Stokes Alliance for Minority Participation (LSAMP), 02/2021-Present.
3. Faculty Mentor, National Science Foundation's Research Experience for Undergraduates (NSF-REU) program, Environmental Engineering Solutions for Pollution Prevention, 06/2016-Present.
4. Poster Judge, 10th Annual Postdoctoral Symposium, University at Buffalo (SUNY), June 13, 2018.
5. Panelist, Panel Discussion: Research for Common Good, UB School of Social Work Annual Symposium: Water, the Environment, and a Socially Just World, March 29, 2018.
6. Judge, UB SEAS Graduate Poster Competition, 2018.
7. Participant, UB's Women in Science and Engineering (WiSE) Early Move-in Program, University at Buffalo (SUNY), Fall 2017, 2019.
8. UB RENEW Seed Proposal Review, Fall 2016.

9. Poster Judge, 8th Annual Postdoctoral Symposium, University at Buffalo (SUNY), June 10, 2016.

## TEACHING

CIE500ENV: Environmental Nanotechnology. Spring 2016 and Spring 2017 (Eval. Avg. 4.3).

This course introduces the students to the applications and implications of nanomaterials in the context of environmental management. Through interactive discussions, guest lectures, and current literature, this course will familiarize students with the key principles governing nano-scale physics, chemistry, and biology. Topics will include: a historical perspective, synthesis, and manipulation of materials at nanoscale, traditional and advanced characterization techniques, natural vs. engineered nanomaterials, versatile applications, and emerging concerns regarding environmental fate, transport, and toxicity.

CIE441: Ecological Engineering. Fall 2016 (Eval. Avg. 3.1); Fall 2017 (Eval. Avg. 4.1); Spring 2019 (Eval. Avg. 3.2); Spring 2020 (Eval. Avg. 3.7), Spring 2021 (Eval. Avg. 4.0), and Spring 2022 (Eval. Avg. 4.4).

This course introduces the students with the fundamental physical and chemical principles governing specific environmental and ecological processes. With the help of mathematical expressions, the students will learn to describe quantitatively the ecological processes that are responsible for environmental fate and transport of pollutants in natural (and engineered) systems. Topics include mass and energy balance, reaction kinetics, mixing processes, partitioning of pollutants into air, soil, and water, etc.

CIE562: Environmental Fate and Transport of Pollutants. Fall 2017 (Eval. Avg. 4.2); Fall 2018 (Eval. Avg. 4.2); Fall 2019 (Eval. Avg. 4.9); Fall 2020 (Low Response Rate) and Fall 2021 (Eval. Avg. 4.7).

This course discusses the basic physical, chemical, and biological processes governing the migration and transformation of pollutants in the environment. With the help of mathematical expressions, the students will learn to describe quantitatively the ecological processes that are responsible for environmental fate and transport of pollutants in surface water, ground water, soil, and atmosphere. Topics will include mass and energy balance, reaction kinetics, mixing processes, partitioning of pollutants into different environmental compartments leading to their migration both at different spatial and temporal scales.

**Last Updated on September 13, 2022.**