

Nirupam Aich

Assistant Professor

Department of Civil, Structural and Environmental Engineering

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Weblinks: [Google Scholar](#), [ResearcherID](#), [Pubmed](#), [ResearchGate](#), [OrcidID](#), [Website](#), [Twitter](#)

SUMMARY

My research group (Aich Laboratory for Environmental Nanotechnology and Sustainability, #AichLENS) focuses on the *sustainable materials for advanced physical-chemical water treatment along with determining their environmental and global health implications*.

Topics of interest include:

- (i) Safer-by-design of catalytic nanohybrids for emerging pollutant removal from water and wastewater,
- (ii) Additive manufacturing for nano-enabled water treatment,
- (iii) Environmental and health implications of nano-enabled products e.g., e-waste and dental materials.,
- (iv) Environmental fate, transport, and toxicity of emerging contaminants.

My research is extramurally supported by National Institute of Health Superfund Research Program (NIH SRP), United States Department of Agriculture (USDA), United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), and Swedish International Development Cooperative Agency (Sida).

EDUCATION

PhD, 2015, Civil Engineering, University of Texas, Austin, TX

Dissertation: “Environmental Implications of Higher Order Fullerenes and Conjugated Nanostructures”

Advisor: Dr. Navid B. Saleh.

M.S., 2012, Civil 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 B. Saleh.

B.Sc., 2009, Chemical Engineering, Bangladesh University of Engineering & Technology, Bangladesh

Thesis: “An Effort to Produce Laboratory Grade Potable Water from Pharmaceutical Wastewater”.

PROFESSIONAL EXPERIENCE

- | | |
|----------------|---|
| 01/16-Present: | Assistant Professor, University at Buffalo, SUNY, Buffalo, NY
Faculty Affiliate, UB Research and Education in eNergy, Environment, and Water
Faculty Affiliate, UB Community of Excellence in Global Health Equity
Member, UB Graduate College |
| 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. Member, Early Career Advisory Board, Journal of Hazardous Materials Letters, May 2020-Present.
2. Emerging Investigator Series Paper, *Environmental Science: Nano* (IF: 7.683), Royal Society of Chemistry, 2020.

3. NSF-SNO Award for Early Career Researchers, 9th Nano Conference, 2020.
4. Distinguished Alumni Lecturer, Department of Chemical Engineering, Bangladesh University of Engineering and Technology, 2020.
5. 2019 SNO Emerging Investigator Award, the Sustainable Nanotechnology Organization (SNO) – the premium professional organization for Environmental Nanotechnology researchers.
6. Certificate of Merit, American Chemical Society, 2019.
7. Outstanding Reviewer, Journal of Hazardous Materials, 2017.
8. National Research Council (NRC) Research Associateship Award 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)
9. Certificate of Appreciation for 5 years of service, American Chemical Society, 2015
10. Certificate of Appreciation, Women in Engineering Program, University of Texas at Austin, 2015
11. Walter L. and Reta Mae Moore Graduate Fellowship, University of Texas at Austin, 2014
12. National Graduate Student Award, ENVR Division, American Chemical Society, 2014
13. Sustainable Nanotechnology Organization (SNO) Student Award, 2013
14. SPARC Graduate Fellowship, University of South Carolina, 2013
15. M. Bert Storey Endowed Graduate Fellowship, University of South Carolina, 2011-2012
16. University of South Carolina Travel Grants, 2010-2011
17. Dean's List Scholarship, Bangladesh University of Engineering & Technology, 2009
18. Wasi-Shirin Scholarship, Bangladesh University of Engineering & Technology, 2008-2009
19. University Merit Scholarship, Bangladesh University of Engineering & Technology, 2006-2009
20. Technical Scholarship, Bangladesh University of Engineering & Technology, 2004-2009

GRANT PROPOSALS

Total Amount Awarded: \$2,180,434. Total Share of Aich: \$571,500.
Awarded

1. Title: Model-aided Design and Integration of Functionalized Hybrid Nanomaterials for Enhanced Bioremediation of Per- and Polyfluoroalkyl Substances (PFASs)
Role: Co-I with PI Diana Aga from UB Chemistry, Co-I Ian Bradley from UB CSEE, and Co-I Carla Ng from University of Pittsburg.
Sponsor Program: NIH Superfund Research Program.
Submission Date: May 2020. Total Budget: ~\$1,535,434 for 5 years.
Aich Share: ~\$375,000.
Status: Awarded.
2. Title: Engineered Solutions for Prevention and Control of Eutrophication using Novel Bio-sorbents
Role: Co-PI with PI Toufiq Reza from Florida Institute of Technology.
Sponsor Program: USDA NIFA.
Submission Date: May 2020. Total Budget: \$500,000 for 3 years.
Aich Share: \$150,000
Status: Pending Award.
3. Title: Characterizing the Environmental Burden of E-waste and their Impact on Children and Women Health
Role: Co-I with PI from icddr,b in Bangladesh
Sponsor Program: Swedish International Development Cooperation Agency (Sida)
Submission Date: April 2019. Total Budget: \$100,000 for 18 months. UB Share: \$3000.
Status: Funded.

4. Title: Towards Complete Removal of Per- and Polyfluoroalkyl Substances (PFAS) Using a Nanotechnology Assisted Advanced Wastewater Treatment Process.
Role: PI with Ian Bradley (UB CSEE) and Diana Aga (UB Chemistry).
Sponsor Program: Great Lakes Research Consortium, SUNY ESF.
Submission Date: February 2019. Total Budget: \$25,000 for April 2019-June 2021. UB Share: 100%.
Status: Funded.
5. Title: Characterizing the Environmental Burden of E-waste Recycling/Repair Workers in Bangladesh. Early Life Exposome Big Idea Funding Call.
Role: PI with Katarzyna Kordas (UB EEH) and Lina Mu (UB EEH).
Sponsor Program: Community for Global Health Equity (CGHE), UB.
Submission Date: January 2019. Total Budget: \$5,500 for 12 months. UB Share: Internal Grant.
Status: Funded.
6. Title: Comparative analysis of bovine and human enamel composition using novel 3D nanoscale imaging.
Role: Co-PI with Baishakhi Mazumder (MDI) and Upoma Guha (UB SDM).
Sponsor Program: Center for Nanophase Materials Sciences User Proposal, Oak Ridge National Laboratory (ORNL).
Submission Date: October 2017. Budget: Instrument Time.
Status: Completed.
7. Title: Carbon-Metallic Nanohybrid (CMNH) Synthesis and Characterization for Determining their Fate and Transport.
Role: PI.
Sponsor Program: United States Environmental Protection Agency (USEPA).
Submission Date: September 2016. Total Budget: \$20,000 for 11,2017-6,2018. UB Share: 100%.
Status: Completed.

Pending

8. Title: Thermochemical TReatment and FAtE (TREAT) of Pharmaceuticals in Biosolids
Role: Co-PI with Anwar Sadmani (UCF), Debra Reinhart (UCF), Samiul Hasan (UCF), Toufiq Reza (FIT), and Ajay Shah (OSU).
Sponsor Program: USEPA
Submission Date (Deadline): January 5, 2021. Total Budget: \$2M for 4 years.
Aich Share: \$300,000.
Status: Pending.
9. Title: High-Capacity Sustainable Sorbents for Treatment of PFAS
Role: Co-PI with PI Dr. Michelle Crimi and others from Clarkson University.
Sponsor Program: DoD/SERDP.
Submission Date (Preproposal): January 7, 2021. Total Budget: \$649,798 for 3 years.
Aich Share: \$101,940.
Status: Pending.
10. Title: CAREER: Enabling *in situ* nano-remediation of per- and polyfluoroalkyl substances (PFASs) in groundwater
Role: PI
Sponsor Program: NSF CAREER
Submission Date: August 2020. Total Budget: \$500,588. UB Share: \$500,588. Aich Share: \$500,588.

Status: Pending.

11. Title: Mechanistic Understanding of Low Temperature Degradation (LTD) of Zirconia Based Dental Restorative Materials Using Novel 3D Nanoscale Imaging Technique
Role: PI with co-Is Baishakhi Mazumder from UB MDI, Upoma Guha and Jean-Francois Roulet from University of Florida College of Dentistry
Sponsor Program: NIH/NIDCR
Submission Date: June 2020. Total Budget: \$275,000 for 2 years (Direct Cost). UB Share: \$200,000 (Direct Cost). Aich Share: ~\$87,000 (Direct Cost).
Status: Pending.

PUBLICATIONS

Publication Types and Numbers: Total 53 published/accepted works including 39 peer-reviewed journal articles, 7 book chapters, 2 patents, and 6 peer-reviewed conference papers.

After joining UB, total 34 publications i.e., 27 peer-reviewed journal articles, 3 book chapters, 1 patent, and 3 peer-reviewed conference papers. Among these, 31 publications are independent of PhD advisor.

Supervised students' names are underlined.

My corresponding authorship in a publication is indicated by '*' beside my name 'Aich, N.'.

My M.S./Ph.D. advisor is Navid B. Saleh and is indicated by putting '^' after his name 'Saleh, N.B.'.

Equally contributing authors in a publication are indicated by putting '\$' after each author's name.

My professional affiliations during the publications are identified, after each publication, as UB for University at Buffalo, UT for University of Texas, UofSC for University of South Carolina.

Number of publications independent of Ph.D. Advisor is given at the beginning of each category.

Peer-Reviewed Journal Articles:

39 Published/Accepted (27 after joining UB, 25 independent of Ph.D. Advisor).

[Google Scholar Link](#), Total Citations: 668, h-index: 14, i10-index: 22.

Published Journal Articles

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

1. 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* (Accepted). Journal Impact Factor: 10.652. (UB)
2. 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**, Advance Article. DOI: 10.1039/D0EN00953A. Journal Impact Factor: 7.638. (UB)
3. Masud, A.§ Guardia, M.G.E.§ 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 9.038. (UB)
4. 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: 2.87. (UB)
 5. 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: 2.132. (UB)
 6. 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: 4.3. (UB)
 7. 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: 4.3. (UB)
 8. 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: 3.449. (UB)
 9. 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: 6.551. (UB)
 10. 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: 1.931. (UB)
 11. Baalousha, M., Wang, J., Nabi, M.M., Loosli, F., Valenca, R, Mohanty, S.K., Afrooz, N., Cantando, E., **Aich, N.**, Stormwater green infrastructures retain high concentrations of TiO₂ engineered (nano)-particles, *Journal of Hazardous Materials*, **2020**, 392, 122335. DOI: 10.1016/j.jhazmat.2020.122335. Journal Impact Factor: 9.038. (UB)

12. Wang, J., Nabi, M.M., Mohanty, S.K., Afrooz, 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: 5.778. (UB)
13. 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: 1.980. (UB)
14. 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**, article id: 133904. DOI: 10.1016/j.scitotenv.2019.133904. Journal Impact Factor: 6.551. (UB)
15. 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: 7.149. (UB)
16. 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: 1.980. (UB)
17. 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: 7.864. (UB)
18. 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: 9.038. (UB)
19. 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: Pending. (UB)
20. 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: 3.119. (UB)
21. Wang, Q.,^{\$} Masud, A.,^{\$} **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: 7.632. (Invited Research Article). (UB)
22. 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: 7.864. (UB)
23. 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: 2.132. (UB)
24. 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: 7.864. (UB)
25. 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: 1.808. (UB)
- (Journal articles with Ph.D. Advisor after joining UB)
26. 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: 6.551. (UB)
27. **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: 7.864. (UB)
- (Journal articles with Ph.D. Advisor before joining UB)
28. 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: 4.235. (Invited Article). (UT)
29. 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: 2.923. (UT)

30. 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: 7.704. **(Cover Article)**. (UT)
31. **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: 2.193. (UT)
32. 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: 4.034. (UT)
33. **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: 2.172. (UT)
34. 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: 7.149. (UT)
35. **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: 3.339. (UofSC)
36. 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: 5.108. (UofSC)
37. **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: 2.172. (UofSC)
38. **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)
39. **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: 4.427. (UofSC)

Book Chapters: 7 Published

Published/Accepted Book Chapters (2 independent of Ph.D. Advisor after joining UB)

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)

Patent (with Ph.D. Advisor before joining UB)

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)

Provisional Patent (without Ph.D. Advisor after joining UB)

Aich, N., Masud, A., Zhou, C., Fabrication of Graphene-Biopolymer Aerogel with Direct Ink Writing (DIW) 3D Printing Technique for Application in Water Treatment, 2020. (UB)

Peer Reviewed Conference Papers (6 in Total, 3 Independent of Ph.D. Advisor after Joining UB)

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. 5th 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. 4th 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, 8th Sustainable Nanotechnology Organization Conference, November 8, 2019, San Diego, CA. (UB)

KeynoteTalk

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

Invited Talks

1. **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. (UB)
2. **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. (UB)
3. **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. (UB)
4. 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. (UB)

5. **Aich, N.**, ‘Sustainable Nanotechnology for Environmental Applications’, February 28, 2020, Department of Civil and Environmental Engineering, University of California, Irvine, CA. (UB)
6. **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)
7. **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)
8. **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)
9. **Aich, N.**, ‘Academic Job Search: Why, When, and How?’, December 13, 2018, Harvard Medical Postdoctoral Association Seminar Series, Harvard Medical School, Cambridge, MA. (UB)
10. **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)
11. **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)
12. **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)
13. **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)
14. **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)
15. **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)
16. **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

17. **Aich, N.**, ‘Nanotechnology for the environment’, EAS 200 Guest Lecture, October 31, 2019, University at Buffalo (SUNY), Buffalo, NY.

18. **Aich, N.**, ‘Nanotechnology for the environment’, EAS 200 Guest Lecture, November 6, 2018, University at Buffalo (SUNY), Buffalo, NY.
19. **Aich, N.**, ‘Sustainable applications of multifunctional nanomaterials for environmental remediation and water treatment’, October 18, 2016, Institute for Research and Education for eNergy, Environment, and Water (RENEW), University at Buffalo (SUNY), Buffalo, NY. (UB)
20. **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 (67 total, 42 independent of advisor after joining UB)

1. Baker, L., Masud, A., Guardian, M.G.E., Aga, D., **Aich, N.**, ‘NSF-S07-Magnetic and Photocatalytic rGO-nZVI-TiO₂ Nanohybrids for PFAS Treatment’, 9th Nano Conference, November 12-13, 2020, Virtual.
2. **Aich, N.**, Mehrabi, N., Lin, H., Ultrafast Graphene Oxide Nanofiltration Membranes for Dye Desalination, 9th Nano Conference, November 12-13, 2020, Virtual.
3. **Aich, 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.
4. 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, 259th ACS National Meeting, March 22-26, 2020, Philadelphia, PA. (UB)
5. **Aich, N.**, Mehrabi, N., Green solvent for nano-enabled water treatment, 259th ACS National Meeting, March 22-26, 2020, Philadelphia, PA. (Canceled due to COVID-19) (UB)
6. 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)
7. **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)
8. **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)
9. 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)
10. Mehrabi, N., Reza, M.T., **Aich, N.**, Green solvent for conjugation of iron nanoparticles (Fe₃O₄) and graphene oxide (GO) nanosheets to remove water contaminants, 2019 AIChE National Meeting, November 10-15, 2019, Orlando, FL. (UB)

11. 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, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
12. **Aich, N.**, Mehrabi, N., Abdul Huq, U.F., Green solvent for conjugation of iron nanoparticles (Fe₃O₄) and graphene oxide (GO) nanosheets to remove water contaminants, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
13. Shin, N., Drapcho, J., **Aich, N.**, Guha, U., Tsai, C., Assessment of nanometer-sized particles released from dental products, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
14. **Aich, N.**, Alam, M., Masud, A., Bradley, I., Interaction of carbon-metal nanohybrids with biological wastewater treatment, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
15. Jarin, M., Masud, A., **Aich, N.**, Travis, S.C., Aga, D., Nano-enabled water treatment technologies for PFAS degradation and removal, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
16. Tabassum, A., Masud, A., Sysouvanh, D., Zhou, C., **Aich, N.**, 3D Print-assisted graphene aerogels for water contaminant removal, 8th Sustainable Nanotechnology Organization Conference, November 7-9, 2019, San Diego, CA. (UB)
17. 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)
18. 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)
19. 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)
20. **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)
21. 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 91st Annual Meeting, February 4-6, 2019, NYC, NY. (UB)
22. Scharf, B., Bradley, I., **Aich, N.**, Interaction of rGO-nZVI nanohybrids with the biological wastewater treatment processes, NYWEA's 91st Annual Meeting, February 4-6, 2019, NYC, NY. (UB)
23. 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)

24. **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)
25. **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)
26. **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)
27. **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)
28. **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)
29. **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)
30. **Shepard, Z., Masud, A., Aich, N.,** Iron nanoparticle conjugation onto 2D MoS₂ nanosheets: Green synthesis for environmental application, 2018 Emerging Researchers National (ERN) Conference in STEM, February 22-24, 2018, Washington, D.C. (UB)
31. **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)
32. **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)
33. **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)
34. **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)
35. **Shepard, Z., Masud, A., Aich, N.,** Environmental application of nano zero valent iron (nZVI) conjugated with 2D MoS₂ nanosheets, Sixth Sustainable Nanotechnology Organization Conference

- 2017, November 5-7, Los Angeles, CA. (UB)
36. 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)
 37. 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)
 38. 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)
 39. Shepard, Z., Masud, A., Aich, N., Iron nanoparticle conjugation onto 2D MoS₂ 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)
 40. 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)
 41. 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)
 42. 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)
 43. 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)
 44. 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)
 45. 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)
 46. 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)
 47. 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)
48. **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)
 49. 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)
 50. 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)
 51. 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)
 52. **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)
 53. 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)
 54. 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)
 55. 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)
 56. 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)
 57. 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)
 58. **Aich, N.**, Flora, J. R. V., Boatang, L., Saleh, N.B. Size tuned aqueous nC₆₀s and nC₇₀s stabilized with biocompatible surface coatings, 245th ACS National Meeting, April 7-11, 2013, New Orleans, LA. (UofSC)
 59. 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)
60. 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)
 61. 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)
 62. **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)
 63. 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)
 64. **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)
 65. **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)
 66. 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)
 67. 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. Team Leader, 3D-Water, NSF I-Corps Regional Program, October 2020.
2. Participant, NSF CAREER Proposal Writing Workshop, NSF (Online), March 31-April 1, 2020.
3. Participant, SUNY NSF CAREER Proposal Writing Workshop, University at Albany, March 1-2, 2019.
4. 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.
5. Participant, NSF-AEESP Grand Challenges Workshop, Redefining Environmental Engineering and Science, Rice University, March 30-April 1, 2016.
6. Participant, NUE: Workshop on Problem-Based Learning for Nanotechnology, Columbia, SC, August 19-20, 2013.

STUDENT ADVISEMENT

Graduated 1 PhD and 3 MS students.

Currently supervising 1 PhD and 1 MS students.

Supervised 9 undergraduate students in research (from 2016), with 5 NSF REU fellows thus far.

Ph.D. Students

1. Arvid Masud (Graduated: January 2021)
Dissertation Title: Functional Graphene-Based Nanohybrids and Aerogels for Water Treatment and Emerging Contaminant Removal.
2. Novin Mehrabi (Ph.D. Candidate ABD; Expected graduation: May 2021)
Tentative Dissertation Title: Green solvents for nano-enabled water treatment.

M.S. Students

1. Laura Kowalski (Expected Graduation: May 2021)
Project: Nano-enabled technologies for PFAS treatment
2. Umar Faruq Abdul Haq (Graduated: February 2019)
Project: Green solvent for novel carbon-metallic nanohybrids for environmental applications.
3. Tashfia M. Mohona (Graduated, May 2018)
Thesis: Aggregation behavior of inorganic 2D nanomaterials beyond graphene.
4. Arvid Masud (Graduated, May 2017)
Project: Iron nanoparticle impregnated 1-D and 2-D carbon nanostructures prepared with ultrasonic spray pyrolysis for Cr (VI) removal.

Undergraduate Students

1. Mourin Jarin, Summer 2017-Spring 2020 and REU Fellow in Summer 2019
Chemical Engineering Graduate from UB
Project: Abiotic and biotic transformation of PFAS
Joining PhD in Environmental Engineering at the Georgia Institute of Technology in Fall 2020.
2. Lillian Baker, Fall 2019-Present
Environmental Engineering Sophomore at UB
Project: PFAS degradation using nanomaterials.
3. Rowan Call, Fall 2019-Present
Mechanical Engineering Sophomore at UB
Project: 3D printing for water treatment.
4. Dao Sysouvanh, REU Fellow in Summer 2019
From Civil Engineering at Valpo University
Project: Additive manufacturing for pollutant removal.
5. 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.

6. Anika Tabassum, Summer 2017-Spring 2019
Environmental Engineering Graduate at UB of 2019
Project: Nanohybrid aerogel synthesis and characterization for water treatment.
7. Zachary Shepard, REU Fellow in Summer 2017
From Chemistry at Assumption College
Project: Green synthesis of MoS₂/Fe nanohybrids for environmental application.
Joined University of Rhode Island Environmental Engineering as a PhD student in Fall 2018.
8. Anusha Gupta, Summer Intern 2017 from Civil Engineering, IIT Gandhinagar, India.
Project: Aggregation kinetics of MoS₂ nanosheets in aquatic systems.
9. 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.
Joined Georgia Tech University as NSF Graduate Fellow in Environmental Engineering in Fall 2017.

Ph.D. Committee Membership

1. Tashfia M. Mohona in CSEE (Advisor: Dr. Ning Dai, PhD Ongoing)
2. Yanbin Cui in CSEE (Advisor: Dr. John Atkinson, Graduated: May 2019).

Ph.D. Committee Membership

1. Nuvia Rashid in CSEE (Advisor: Dr. John Atkinson, Graduated: May 2020)
2. Mahbulul Alam in CSEE (Advisor: Dr. Ian Bradley, Expected Graduation: September 2020).

Awards/Honors Received by Students for Research Performed in Dr. Aich's Group

Graduate Students:

1. Arvid Masud, UB SEAS Dean's Graduate Achievement Award, University at Buffalo, 2020.
2. Arvid Masud, Mark Diamond Research Fund, University at Buffalo, 2020.
3. Arvid Masud, 3rd Place, UB CSEE Student Poster Competition, 2020.
4. Anika Tabassum, 2nd Place, Poster Competition, Eighth Sustainable Nanotechnology Organization (SNO) Conference, San Diego, CA, 2019.
5. Anika Tabassum, Sustainable Nanotechnology Organization (SNO) Student Award, 2019.
6. Arvid Masud, Certificate of Merit, American Chemical Society (ACS), 2019.
7. Arvid Masud, Graduate Student Award in Environmental Chemistry, Division of Environmental Chemistry, American Chemical Society (ACS), 2019.
8. Arvid Masud, First Place, UB CSEE Student Poster Competition, 2019.
9. Arvid Masud, 2nd Prize, UB EWRE Graduate Student Symposium, 2018.
10. Novin Mehrabi, Sustainable Nanotechnology Organization (SNO) Student Award, 2018.
11. Tashfia M. Mohona, Sustainable Nanotechnology Organization (SNO) Student Award, 2017.
12. Arvid Masud, Travel Award, 1st Pan American Congress of Nanotechnology, PANNANO Conference, Guaruja, Sao Paulo, Brazil, 2017.
13. Arvid Masud, Second Place, UB CSEE Student Poster Competition, 2017.

Undergraduate Students:

14. Lilian Baker, NSF-SNO Travel Award, 9th Nano Conference, 2020.
15. Mourin Jarin, Experiential Learning Network Individual Conference Funding Award, UB, 2019.
16. Mourin Jarin, Certificate of Academic Excellence in Undergraduate Research, University at Buffalo, The State University of New York, Buffalo, NY, 2018.
17. Brianna Scharf, 3rd Place, Poster Competition, Seventh Sustainable Nanotechnology Organization (SNO) Conference, Alexandria, VA, 2018.

18. Brianna Scharf, Sustainable Nanotechnology Organization (SNO) Student Award, 2018.
19. Zachary Shepard, 3rd Place, Poster Competition, Sixth Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, 2017.
20. Zachary Shepard, 2nd Place, 100 Second NanoPitch Competition, Sixth Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, 2017.
21. Moyo Afolabi, Sustainable Nanotechnology Organization (SNO) Student Award, 2016.
22. Moyo Afolabi, 3rd Place, Poster Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
23. Moyo Afolabi, 3rd Place, 100 Second NanoPitch Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
24. Moyo Afolabi, UB NSF REU Symposium Poster Award, 2016.
25. Moyo Afolabi, 3rd Place, GLUE Division, PEERS Poster Competition, UT Austin, 2015

PROFESSIONAL SERVICES

Editorship

1. Editorial Board Member, Journal of Hazardous Materials Letters, 05/01/2020-Present.
2. Academic Editor: PLOS ONE, 09/01/2018-Present.
3. Review Editor: Frontiers in Nanotechnology, 09/13/2019-Present.
4. Co-Guest Editor, Special Issue on *Advances in Smart Nanomaterials: Environmental Perspective*, Journal of Nanomaterials, 06/11/2018-10/31/2019.

Reviewing Activities

5. Proposal Reviewer (Ad Hoc): Environmental Research and Education Foundation (EREF), 2020.
6. Proposal Reviewer (Panel): National Science Foundation (CBET 2016, CMMI 2018)
7. Proposal Reviewer (Ad Hoc): National Research Foundation of Singapore, 2018
8. Journal Reviewer (100 Manuscript Reviews from 26 Journals in 5 Years)
ACS Applied Materials and Interfaces; ACS Nano; ACS Omega; ACS Sustainable Chemistry & Engineering; Advanced Science Focus; Applied Sciences; Chemosphere; Colloids and Surfaces B; Ecotoxicology and Environmental Safety; Environmental Engineering Sciences; Energy & Fuels; Environmental Development; Environmental International; Environmental Nanotechnology, Monitoring, and Management; Environmental Science: Nano; Environmental Science & Technology; Environmental Science: Water Research and Technology; International Journal of Nanomedicine; Journal of Colloids and Interface Science; Journal of Hazardous Materials; Journal of Industrial and Environmental Chemistry; Journal of Nanoparticle Research; Molecules; Nanoscale Advances; Nanotoxicology; Scientific Report; Water Science and Technology.
9. Reviewer for AEESP SSC Academic Job Application Review, 2016-2020.

Conference Session and Workshop Organization

10. 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, Online.
11. Co-Organizer, AEESP AJAR Faculty Candidate Seminar Series 2021.
12. Convener and Moderator, AEESP Future Faculty Workshop 2020, August 12, 2020.
13. 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 last minute due to COVID19)
14. Chair, Poster Session, 8th Sustainable Nanotechnology Organization (SNO) Conference, November 7-9, 2019, San Diego, CA.
15. 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.
16. Chair, Poster Session, 7th Sustainable Nanotechnology Organization (SNO) Conference, November 8-10, 2018, Washington, D.C.
 17. Session Moderator, *Sustaining Communities through Energy & Resource Recovery (II)*, AEESP 2017, June 20-22, 2017, Association of Environmental Engineering & Science Professors (AEESP).
 18. Session Co-Chair, *Environmental and Biological Systems*, Fifth Sustainable Nanotechnology (SNO) Organization Conference, November 10-12, 2016.

Services for Professional Organizations

19. Secretary, Student Services Committee, Association of Environmental Engineering & Science Professors (AEESP), January 2020-Present.
20. Officer, Student Services Committee, Association of Environmental Engineering & Science Professors (AEESP), January 2019-December 2020.
21. Webmaster, Internet Resource Committee, AEESP, October 2020-Present.
22. Listserv Manager, Internet Resource Committee, AEESP, October 2019- October 2020.
23. Social Media Manager, Internet Resource Committee, AEESP, October 2018- October 2019.
24. Chair, Newsletter Committee, Sustainable Nanotechnology Organization (SNO), January 2018-Present.

PROFESSIONAL MEMBERSHIP

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

1. Member, CSEE Lab Spending Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2020.
2. Member, ABET Faculty Review Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2019.
3. Member, Adjudication Pool, School of Engineering and Applied Sciences, University at Buffalo (SUNY), Spring 2019-Present.
4. Member, School of Engineering and Applied Sciences Scholarship Committee, University at Buffalo (SUNY), Fall 2018-Present.
5. Member, Faculty Committee, Women in Science and Engineering (WiSE) Program, University at Buffalo (SUNY), Fall 2017-Present.
6. Faculty Mentor, National Science Foundation's Research Experience for Undergraduates (NSF-REU) program, Environmental Engineering Solutions for Pollution Prevention, University at Buffalo (SUNY), 06/2016-Present.
7. Poster Judge, 10th Annual Postdoctoral Symposium, University at Buffalo (SUNY), June 13, 2018.
8. 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.
9. Judge, UB SEAS Graduate Poster Competition, 2018.
10. Participant, UB's Women in Science and Engineering (WiSE) Early Move-in Program, University at Buffalo (SUNY), Fall 2017, 2019.
11. Member, Fulbright Scholar Interview Committee, Fall 2017.
12. Member, Faculty Search Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2017.
13. Principal Organizer, Environmental and Water Resources Engineering Seminar, University at Buffalo (SUNY), 08/2016-12/2017.
14. Faculty Consultant, International Graduate Student Recruitment, Office of Graduate Education, School

of Engineering and Applied Sciences (SEAS), University at Buffalo (SUNY).

15. UB RENEW Seed Proposal Review, Fall 2016.

16. 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.

CIE562/441: 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).

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 (Un-dual-listed). Fall 2017 (Eval. Avg. 4.2); Fall 2018 (Eval. Avg. 4.2); Fall 2019 (Eval. Avg. 4.9); Fall 2020 (Low Response Rate).

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 February 3, 2021.