Nirupam Aich
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Department of Civil, Structural and Environmental Engineering
University at Buffalo, The State University of New York
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Education

PhD, 2015, Civil Engineering, University of Texas, Austin, TX
Dissertation: *'Environmental Implications of Higher Order Fullerenes and Conjugated Nanostructures'*

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'*

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

Professional Experience

01/16-Present:	Assistant Professor, University at Buffalo, SUNY, Buffalo, NY
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

Research Interests

1. Safer-by-Design multifunctional 2D/3D nanomaterials for water treatment
2. Aerosol based processing and hybridization of 2D nanomaterials for environmental application
3. Additive manufacturing for water treatment
4. Nano-enabled high performance membrane technology for water purification
5. Environmental and human health implications of emerging nanohybrids and nano-enabled products
6. E-waste driven pollution and health effects in developing countries

Fellowships and Honors

1. 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)
2. Certificate of Appreciation for 5 years of service, American Chemical Society, 2015
3. Certificate of Appreciation, Women in Engineering Program, University of Texas at Austin, 2015
4. Walter L. and Reta Mae Moore Graduate Fellowship, University of Texas at Austin, 2014
5. National Graduate Student Award, ENVR Division, American Chemical Society, 2014
6. Sustainable Nanotechnology Organization (SNO) Student Award, 2013
7. SPARC Graduate Fellowship, University of South Carolina, 2013
8. M. Bert Storey Endowed Graduate Fellowship, University of South Carolina, 2011-2012
9. University of South Carolina Travel Grants, 2010-2011
10. Dean's List Scholarship, Bangladesh University of Engineering & Technology, 2009
11. Wasi-Shirin Scholarship, Bangladesh University of Engineering & Technology, 2008-2009
12. University Merit Scholarship, Bangladesh University of Engineering & Technology, 2006-2009
13. Technical Scholarship, Bangladesh University of Engineering & Technology, 2004-2009

Supervised Student Awards

1. Zachary Shepard, 3rd Place, Poster Competition, Sixth Sustainable Nanotechnology Organization Conference, Los Angeles, CA, 2017.
2. Zachary Shepard, 2nd Place, 100 Second NanoPitch Competition, Sixth Sustainable Nanotechnology Organization Conference, Los Angeles, CA, 2017.
3. Tashfia M. Mohona, Sustainable Nanotechnology Organization (SNO) Student Award, 2017.
4. Arvid Masud, Travel Award, 1st Pan American Congress of Nanotechnology, PANNANO Conference, Guaruja, Sao Paulo, Brazil, 2017.
5. Arvid Masud, Second Place, UB CSEE Student Poster Competition, 2017.
6. Moyo Afolabi, Sustainable Nanotechnology Organization (SNO) Student Award, 2016.
7. Moyo Afolabi, 3rd Place, Poster Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
8. Moyo Afolabi, 3rd Place, 100 Second NanoPitch Competition, Fifth Sustainable Nanotechnology Organization Conference, Orlando, FL, 2016.
9. Moyo Afolabi, UB NSF REU Symposium Poster Award, 2016.
10. Moyo Afolabi, 3rd Place, GLUE Division, PEERS Poster Competition, UT Austin, 2015

Teaching

CIE500ENV: Environmental Nanotechnology. Spring 2016 and 2017.
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.

CIE562/441ENV: Ecological Engineering. Fall 2016 and 2017.
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 different environmental compartments (air, soil, and water), etc.

Publications: Google Scholar Link

Peer-Reviewed Journal Articles (Supervised student's name is underlined)

1. 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", (Submitted to *Beilstein Journal of Nanotechnology*).

2. Wang, Q.,[$] Masud, A.,[$] **Aich, N.,**[*] Wu, Y.,[*] "Effect of hybridization and contributions from the parent materials on the in vitro pulmonary toxicity of reduced graphene oxide-nano zero valent iron nanohybrids", (Invited Paper submitted to *ACS Sustainable Chemistry & Engineering* – SNO Conference themed collection)

3. 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", (Submitted to *Journal of Hazardous Materials)*

4. Wang, Q., Li, C.N., Mu, L., **Aich, N.,** Zhao, R., Wu, Y., "Intracellular and exosomal microRNAs as biomarkers for pulmonary toxicity induced by multiwall carbon nanotubes", (Submitted to *ACS Nano*)

5. Wang, D., Jin, Y., Park, C.M., Heo, J., Bai, X., **Aich, N.,** Su, C., "Investigation and modeling the transport of the 'new-horizon' reduced graphene oxide—metal oxide nanohybrids in water-saturated porous media", *Environ. Sci. Technol.*, **2018**. DOI: 10.1021/acs.est.7b06488. Journal Impact Factor: 6.198. (UB)

6. 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: 2.1. (UB)

7. 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", *Environ. Sci. Technol.,* **2017**, *51* (21), 12405-12415. DOI: 10.1021/acs.est.7b04037. Journal Impact Factor: 6.198. (UB)

8. 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: 1.586. (UB)

9. 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", *Sci Tot Envr,* **2016,** *568,* 926-932. DOI: 10.1016/j.scitotenv.2016.06.145. Journal Impact Factor: 3.976. (UB)

10. **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", *Environ. Sci. Technol.,* **2016**, *50* (7), 3562–3571. DOI: 10.1021/acs.est.5b05447. Journal Impact Factor: 5.393. (UB/UT)

11. 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: 4.165. **(Invited Article).** (UT)

12. 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", *Environ Chem,* **2015**, 12, (6), 652-661. DOI: 10.1071/EN14176. Journal Impact Factor: 2.455. (UT)

13. 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", *Environ Sci: Nano*, **2015,** 2, 11-18. DOI:

10.1039/C4EN00104D. Journal Impact Factor: 5.896. **(Cover Article)**. (UT)

14. **Aich, N.,** Plazas-Tuttle, J., Lead, J.R., Saleh, N.B., "A critical review of nanohybrids: synthesis, applications, and environmental implications", *Environ Chem,* **2014,** 11, 609-623. **(Cover Article)** DOI: 10.1021/acs.est.5b05447. Journal Impact Factor: 5.393. (UT)

15. 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: 2.690. (UT)

16. **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: 1.975. (UT)

17. 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", *Environ Sci Technol,* **2014**, 48, 761-769. DOI: 10.1021/es403969x. Journal Impact Factor: 5.393. (UT)

18. **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: 3.573. (UofSC)

19. 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: 3.698. (UofSC)

20. **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: 1.975. **(One of the top five downloaded papers from the journal in 2013)**. (UofSC)

21. **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", *J Res Updates Poly Sci,* **2012**, 1, (1), 14-23. Journal Impact Factor: Not Found. (UofSC)

22. **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: 3.573. (UofSC)

Book Chapters (Supervised student's name is underlined)

1. **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, 2017; pp: 65-87. Dr. Aich is the leading author.

2. **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. Dr. Aich is the corresponding author.

3. **Aich, N.**, Saleh, N.B., and Plazas-Tutle, 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.

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 Biotoxicity*, John Wiley and Sons, Inc., 2016; pp: 139-159. ISBN: 978-1-119-27582-4.

5. 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.

6. 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.

Patent

Saleh, N., 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 application no. 13/892,780.

Peer Reviewed Conference Papers

1. 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.

2. 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 ChemicInal Engineering (ICChE, 2014),* December 29-30, Dhaka, Bangladesh.

3. Zohhadi, N., **Aich, N.**, Khan, I.A., Matta, F., Saleh, N., and Ziehl, P., "Graphene nanoplatelet reinforcement for cement composites", 2015, accepted, *Proc. 5th International Symposium on Nanotechnology in Construction (NICOM-5)*, May 24-26, 2015, Chicago, IL, Sobolev, K. and Shah, S.P. (Eds.).

4. Zohhadi, N., **Aich, N.**, Khan, I.A., Matta, F., Saleh, N., 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.

Talks and Presentations

Invited Seminars

1. **Aich, N.,** "Sustainable design of multifunctional nanohybrids for innovative water treatment', May 8, 2018, Department of Environmental Engineering Sciences, University of Florida, Gainesville, NY.

2. **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.

3. **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.

4. **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.

5. **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.

6. **Aich, N.**, "Environmental implications of nanomaterials and nanohybrids", December 17, 2013, Department of Chemical Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh.

Other Talks

7. **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.

8. **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.

Conference Proceedings and Presentations

1. 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.

2. 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.

3. **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.

4. 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.

5. Shepard, Z., Masud, A., **Aich, N.,** "Environmental application of nano zero valent iron (nZVI) conjugated with 2D MoS_2 nanosheets", Sixth Sustainable Nanotechnology Organization Conference 2017, November 5-7, Los Angeles, CA.

6. 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.

7. 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.

8. **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.

9. Shepard, Z., Masud, A., **Aich, N.,** "Iron nanoparticle conjugation onto 2D MoS_2 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.

10. Masud, A., Atkinson, J., **Aich, N.,** "Iron nanoaparticle 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.

11. 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.

12. 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.

13. 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.

14. 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.

15. **Aich, N.,** Rigdon, W.A., Das, D., Plazas-Tutle, 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.

16. **Aich, N.,** Rigdon, W.A., Das, D., Plazas-Tutle, 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.

17. 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.

18. **Aich, N.,** Rigdon, W.A., Das, D., Plazas-Tutle, 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.

19. 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.

20. 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.

21. 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.

22. **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.

23. Saleh, N.B., **Aich, N.,** Plazas-Tutle, 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. **Aich, N.,** Flora, J. R. V., Boatang, L., Saleh, N.B. "Size tuned aqueous nC_{60}s and nC_{70}s stabilized with biocompatible surface coatings", 245th ACS National Meeting, April 7-11, 2013, New Orleans, LA.

29. 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.

30. 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.

31. 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.

32. **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.

33. 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.

34. **Aich, N.,** Saleh, N.B., "Aggregation kinetics of higher order fullerenes in aquatic environment", 241st ACS National Meeting, Mar 27-31, 2011, Anaheim, CA.

35. **Aich, N.,** Saleh, N.B., "Aggregation Kinetics of Fullerene-Single-walled Carbon Nanotube Hybrids", 240th ACS National Meeting, Aug 22-26, 2010, Boston, MA.

36. 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.

37. 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.

Professional Services

1. Reviewing Activities

   Journal Manuscript: ACS Nano; Journal of Colloids and Interface Science; Environmental Science: Nano; Chemosphere; Chemical Research in Toxicology; Environmental Science and Technology; Environmental Nanotechnology, Monitoring, and Management; Journal of Hazardous Materials; International Journal of Nanomedicine; Advanced Science Focus; Ecotoxicology and Environmental Safety; Water Science and Technology; Environmental Development; Environmental Science: Water Research and Technology; Journal of Materials in Civil Engineering; Allied Journals; Journal of Nanoparticle Research.

   Proposal: National Science Foundation - CBET 2016, CMMI 2018.

   Others: AEESP SSC Academic Job Application Review 2016 and 2017.

2. Co-Guest Editor, Special Issue on Advances in Smart Nanomaterials: Environmental Perspective, Journal of Nanomaterials, 2018-Present.

3. Member, SNO Newsletter committee, Sustainable Nanotechnology Organization, 2018-Present.
4. Session Moderator, Sustaining Communities through Energy & Resource Recovery (II), AEESP 2017, June 20-22, 2017.
5. Session Co-Chair, Environmental and Biological Systems, Fifth Sustainable Nanotechnology Organization Conference, November 10-12, 2016.
6. Outreach Program, Science is Elementary, Westminster Charter School, Buffalo, NY, May 5, 2016.
7. Judge, Cockrell School Undergraduate Poster Exhibition, UT Austin, April 21, 2015.
8. Panelist, Equal Opportunity in Engineering: Considering Graduate School, University of Texas at Austin, October 29, 2014.

University Services

1. PhD Committee Member for Mr. Yanbin Cui in CSEE.
2. Poster Judge, 10th Annual Postdoctoral Symposium, University at Buffalo (SUNY), June 13, 2018.
3. 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.
4. Judge, UB SEAS Graduate Poster Competition, 2018.
5. Member, Faculty Committee, Women in Science and Engineering (WiSE) Program, University at Buffalo (SUNY), Fall 2017-Present.
6. Participant, UB's Women in Science and Engineering (WiSE) Early Move-in Program, University at Buffalo (SUNY), Fall 2017.
7. Member, Fulbright Scholar Interview Committee, Fall 2017.
8. Member, Faculty Search Committee, Department of Civil, Structural and Environmental Engineering, University at Buffalo (SUNY), Spring 2017.
9. Principal Organizer, Environmental and Water Resources Engineering Seminar, University at Buffalo (SUNY), 08/2016-12/2017.
10. Faculty Consultant, International Graduate Student Recruitment, Office of Graduate Education, School of Engineering and Applied Sciences (SEAS), University at Buffalo (SUNY).
11. UB RENEW Seed Proposal Review, Fall 2016.
12. 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.
13. Poster Judge, 8th Annual Postdoctoral Symposium, University at Buffalo (SUNY), June 10, 2016.

Workshops

1. Participant, NSF-AEESP Grand Challenges Workshop, Redefining Environmental Engineering and Science, Rice University, March 30-April 1, 2016.
2. Participant, NUE: Workshop on Problem-Based Learning for Nanotechnology, Columbia, SC, August 19-20, 2013.

Student Mentoring

Graduated 1 MS student. Currently mentoring 2 PhD, 1 MS, and 3 undergraduate students.

Spring 2016-Present (PhD Student at UB, Graduated with MS: Spring 2017)
Arvid Masoud, Civil, Structural and Environmental Engineering, University at Buffalo (SUNY)
Research Area: Additive manufacturing for nano-enabled water treatment.
MS Project: Iron nanoparticle impregnated 1-D and 2-D carbon nanostructures prepared with ultrasonic spray pyrolysis for Cr (VI) removal

Spring 2017-Present (PhD Student at UB)
Novin Mehrabi, Civil, Structural and Environmental Engineering, University at Buffalo (SUNY)

Research Area: Multifunctional nano-enabled membranes for water treatment and energy generation

Fall 2016-Summer 2018 (MS Student at UB, Gratuated with MS: Spring 2018)
Tashfia Mohona, Civil, Structural and Environmental Engineering, University at Buffalo (SUNY)
MS Thesis: Aggregation behavior of 2D nanomaterials beyond graphene

Summer 2017-Present (Undergraduate Student at UB)
Brianna Scharf, Civil, Structural and Environmental Engineering, University at Buffalo (SUNY)
Research Area: Understanding the role of aggregation of nanohybrid toxicity

Summer 2017-Present (Undergraduate Student at UB)
Anika Tabassum, Civil, Structural and Environmental Engineering, University at Buffalo (SUNY)
Research Area: Nanohybrid aerogel synthesis and characterization for water treatment

Summer 2017-Present (Undergraduate Student at UB)
Mourin Jarin, Chemical and Biological Engineering, University at Buffalo (SUNY)
Research Area: Nanohybrid synthesis and characterization for porous media transport

Summer 2017 (REU Fellow at UB)
Zachary Shepard, Chemistry, Assumption College
Research Area: Green synthesis of MoS_2/Fe nanohybrids for environmental application

Summer 2017 (Summer Intern at UB)
Anusha Gupta, Civil Engineering, IIT Gandhinagar, India.
Research Area: Aggregation kinetics of MoS_2 nanosheets in aquatic systems

Summer 2016 (REU Fellow at UB) and Spring 2015 (Independent Supervision at UT)
Moyosore Afolabi, Chemical Engineering, University of Texas at Austin
Research Areas: Nanohybrids for pollutant degradation. Aggregation Kinetics of Higher Order Fullerene.
Joined Georgia Tech University as NSF Graduate Fellow in Environmental Engineering in Fall 2017

Fall 2014 (Independent Supervision at UT)
Anannya Anu, Civil, Architectural, and Environmental Engineering, University of Texas at Austin
Research Area: Environmental Interactions of Nanohybrids
Fall 2013 (Supervised and trained in advisor's lab)

Lewis Stetson Rowles III, Civil and Environmental Engineering, University of South Carolina
Research Area: Carbon Nanotubes Based Nanohybrid Synthesis for Environmental Remediation
NSF Graduate Fellow, Environmental and Water Resources Engineering, University of Texas at Austin

Spring 2011 to Fall 2012 (Supervised and trained in advisor's lab)
English Player, Civil and Environmental Engineering, University of South Carolina
Research Area: Graphitic Nanomaterial Functionalization for Nano-Reinforced Concretes

Fall 2012 (Supervised and trained in advisor's lab)
Tyler A Clark, Civil and Environmental Engineering, University of South Carolina
Research Area: Hybrid Carbon Nanomaterials

Professional Affiliations

Association of Environmental Engineering & Science Professors (AEESP), Sustainable Nanotechnology Organization (SNO), American Water Works Association (AWWA), American Institute of Chemical Engineers (AIChE), American Chemical Society (ACS), Material Research Society (MRS).

Last Updated on July 17, 2018.