

Shamim Ara Begum, Ph.D., P.E.
Associate Professor of Chemical Engineering
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Education:

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| Ph.D. | 2009 | Civil and Environmental Engineering | University of Nevada Las Vegas (UNLV), USA |
| M.Sc. | 2003 | Sanitary Engineering | UNESCO-IHE institute for Water Education, Delft, The Netherlands |
| M.E. | 2001 | Environmental Engineering | Bangladesh University of Engineering and Technology, Dhaka, Bangladesh |
| B.Sc. | 1997 | Civil Engineering | Bangladesh University of Engineering and Technology, Dhaka, Bangladesh |

Academic Experience:

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| June 2016 – Present | Associate Professor, Department of Chemical Engineering, Tuskegee University |
| Oct. 2010 – May 2016 | Assistant Professor, Department of Chemical Engineering, Tuskegee University |
| Aug. 2009 – Sep. 2010 | Instructor, Department of Chemical Engineering, Tuskegee University |
| Aug. 2004 – Dec. 2006 | Teaching Assistant, Civil & Environmental Engg. Dept., University of Nevada Las Vegas |

Industrial Experience:

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| 2007-2009 | Program Assistant, Clark County Water Reclamation District, Las Vegas |
| 1999-2001 | Assistant Engineer, Department of Public Health Engineering, Dhaka, Bangladesh |
| 1998-1999 | Junior Engineer, House of Consultant Ltd., Dhaka, Bangladesh |

Research Interests:

- Biological treatment of wastewater for nutrient and cyanide removal.
- Microbial population dynamics in biological nutrient removal (BNR) system.
- Physico-chemical processes for water and wastewater treatment.

Courses Taught:

Introduction to Chemical Engineering- CENG 110
Material and Energy Balances-CENG 0210
Fluid Mechanics-CENG 0220
Unit Operations Laboratory I-CENG 0320 (i.e. Fluid Mechanics & Heat Transfer)
Introduction to Biochemical Engineering-CENG 0400

Bioseparation Engineering-CENG 415
Environmental Engineering Fundamentals -CENG 450
Industrial Pollution and Abatement Processes – CENG 460
Senior Design Project – CENG 490
Advanced Water and Wastewater Treatment- CENG 570

Professional Affiliations:

- American Water Works Association
- Water Environment Federation
- American Institute of Chemical Engineers

Awards:

- Faculty Performance Award for Service, College of Engineering, Tuskegee University, 2014-2015
- Carollo Engineers Graduate Scholarship, 2008.
- Nevada Power Fellowship, 2006-2007.
- Graduate and Professional Student Association (GPSA) grant of UNLV, 2005, 2007 and 2008.
- Graduate Research Training (GREAT) Assistantship, 2005.
- Fellowship of the Netherlands Fellowship Programme (NFP), 2001 to 2003.

Abstract Submission/Presentations at Conferences/Professional Meetings:

1. **Shamim A. Begum**, Tierra Webster, David Baah, Ben Oni. Synthesis of Various Biochars and their Applications in the Adsorptive Removal of Nitrogen from Water. Presented a poster in the SETAC North America 38th Annual Meeting, Minneapolis, MN, USA, Nov. 12-13, 2017.
2. Qwanikwia Hicklen, Taylor Crocker, **Shamim A. Begum** and Ben Oni. Sorption Characteristics of Nitrogen and Phosphorus onto Biochar from Aqueous Solution. DOE Project Scholars' Presentation of Summer 2017 Research, Engineering Auditorium, TU, Sep. 14, 2017.
3. Tierra Webster, David Baah, Ben Oni, **Shamim A. Begum**. Adsorption of Aqueous Ammonium-Nitrogen. Presented in the Eighth Joint Annual Research Symposium, Tompkins Hall, Tuskegee University (TU), Tuskegee, March 17, 2017.
4. Shaylynn Crum, Tierra Webster, **Shamim A. Begum**. Adsorption of Hexavalent Chromium using Biochar. Presented in the DOE Project Scholars' Presentation of Summer 2016 Research, TU, Sep. 13, 2016.
5. **Shamim A. Begum**, AHM Golam Hyder, Nader Vahdat. Adsorption Characteristics of Arsenic (V) from Water using Cattle Bone Char. Presented in the SETAC North America 36th Annual Meeting, Salt Lake City, Utah, Nov. 1-5, 2015.
6. Karyn Moses, Phillip Stringer, Kendra Green, Vanisree Mulabagal, **Shamim A. Begum**, Nader Vahdat. Optimization of Fenton's oxidation conditions for removal of chrysene in aqueous solutions. Abstract is accepted in 2015 AIChE Annual Meeting, Salt Lake City, Utah, Nov. 8-13, 2015.
7. Phillip Stringer, Kendra Green, **Shamim A. Begum**, Jonathan C. Mbah, Nosa O. Egiebor. Removal of Phenanthrene from Aqueous Solution using Fenton's Reagent as an Oxidant and Bio-Char as an Adsorbent. AIChE Annual Meeting, Atlanta, Nov.16-21, 2014.
8. Bianca Davis, Kiara Moorer, Nader Vahdat, **Shamim A. Begum**, Samuel Hernandez-Rivera, Jonathan Mbah. New Silver/Carbon Material for 2,4-Dinitrotoluene Detection. AIChE

- Annual Meeting, Atlanta, Nov.16-21, 2014.
9. Priscilla Lang, **Shamim A. Begum**, Kyung C. Kwon, Jonathan Mbah, Nader Vahdat. Fatty Acid Methyl Ester Biodiesel Fuels Produced from Soybean Oil with Honey Comb Monolithic Catalysts. AIChE Annual Meeting, Atlanta, Nov.16-21, 2014.
 10. **Shamim A. Begum**, Nosa O. Egiebor. "Generation and Characterization of Nano-sized Particles from Bone Char", Abstract was submitted for the Conference of Nanomaterials for Industry-2014, Energy, Environment and Products, April 7-9, 2014, San Diego, California.
 11. A. H. M. G. Hyder, **Shamim A. Begum**, Nosa O. Egiebor. "Sorption studies of Cr(VI) from aqueous solution using bio-char as an adsorbent", Abstract was accepted in the SETAC North America 34th Annual Meeting in Nashville, TN, Nov 17-20, 2013.
 12. **Shamim A. Begum**, Nader Vahdat and Nosa O. Egiebor. "Generation and Characterization of Nano-sized Bone char and Its Application for Water Treatment", Presented at 2iE-Tuskegee summer school in Burkina Faso, West Africa, June 11-21, 2012.
 13. **Shamim A. Begum**, Nader Vahdat, Nosa O. Egiebor, "Arsenic Removal from Water Using Bone Char", Abstract accepted and poster submitted in the American Water Works Association's (AWWA) Water Quality Technology Conference in Toronto, Ontario, Nov. 4-8, 2012.
 14. **Shamim A. Begum**, Nader Vahdat, and Nosa O. Egiebor. "Arsenic Removal from Aqueous Solution using Nano-Sized Bone Char", Presented at the Prairie View A & M University/Texas A & M University Professional Development Conference at Houston, TX, May 17-20, 2012.
 15. Ynoussa Maiga, **Shamim A. Begum**, Raymon Shange, Ramble Ankumah and Nosa O. Egiebor. "Biodegradation of Cyanide Compounds in Aqueous Solution by *Pseudomonas* Strains", Presented at the NOBCCHE (National Organization of Black Chemist and Chemical Engineers) Southeast Regional Meeting at Auburn, AL, November 11-12, 2011.
 16. **Shamim A. Begum**, Jaci R. Batista, and William Shepherd. "Impacts of Denitrification on Biological Phosphorus Removal using Several Carbon Source Types", Presented at the 82nd annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Orlando, Florida, October 10-14, 2009.
 17. **Shamim A. Begum**, Jaci R. Batista, and William Shepherd. "Impacts of Denitrification on Biological Phosphorus Removal using Several Carbon Source Types", Presented at the NWEA (Nevada Water Environment Association) annual conference at Las Vegas, NV, April 14-16, 2009.
 18. **Shamim A. Begum**. "The Influence of Carbon Types and Nitrate on the Performance of an Enhanced Biological Phosphorus Removal System", Poster presented in the Graduate and Professional Student Research Forum, UNLV, Las Vegas, March 29, 2008.
 19. **Shamim A. Begum**. "Identification of Polyphosphate Accumulating Organisms (PAOs) and Glycogen Accumulating Organisms (GAOs) in an EBPR System using Various Carbon Sources to Recognize the Failure of the System", Poster presented in the Graduate and Professional Student Research Forum, UNLV, Las Vegas, March 31, 2007.

Book Chapter:

1. Sugarcane Fiber for Engineering Applications: **Shamim A. Begum** and Mohammad K. Hossain. Sugarcane Production Systems, Uses and Economic Importance. Nova Science Publishers, Inc., New York, 2017. 978-1-53610-938-2 (ebook).

Publications:

1. David Baah, Tamara Floyd-Smith, **Shamim Ara Begum**, Allen J. Smith, Kyung C. Kwon, Nader Vahdat, "Towards Chemical Engineering Student Diversity: The Case of International Students Experiences at Tuskegee University". *Journal of Chemical Engineering Education*. Accepted in Nov. 8, 2017.
2. **Shamim A. Begum**, A.H.M. Golam Hyder, Nader Vahdat, "Adsorption Isotherm and Kinetic Studies of As(V) Removal from Aqueous Solution Using Cattle Bone Char". *Journal of Water Supply: Research and Technology - AQUA*. 65(3): 244- 252, 2016. DOI: 10.2166/aqua.2016.089.
3. Renaldo Walters, **Shamim A. Begum**, Elham H. Fini, Taher M. Abu-Lebdeh., "Investigating Bio-Char as Flow Modifier and Water Treatment Agent for Sustainable Pavement Design". *American Journal of Engineering and Applied Sciences*, 8(1): 138-146, 2015.
4. Tamara Floyd-Smith, **Shamim A. Begum**, Nader Vahdat, Qinghua Peter He, Kyung Kwon, Jonathan Mbah, Allen Smith, "Chemical Engineering at Tuskegee University". *Chemical Engineering Education*, 49 (1), Winter 2015.
5. A.H.M. Golam Hyder, **Shamim A. Begum**, Nosa O. Egiebor, "Adsorption Isotherm and Kinetics Studies of Hexavalent Chromium Removal from Aqueous Solution onto Bone Char". *Journal of Environmental Chemical Engineering*, 3(2):1329-1336, 2015. doi: 10.1016/j.jece.2014.12.005.
6. **Shamim A. Begum**, Jacimaria R. Batista, "Impact of Butyrate on Microbial Selection in Enhanced Biological Phosphorus Removal". *Environmental Technology*, 35(23): 2961-72, 2014. doi: 10.1080/ 09593330.2014.927531.
7. AHM Golam Hyder, **Shamim A. Begum**, Nosa O. Egiebor, "Sorption Studies of Cr (VI) from Aqueous Solution Using Bio-char as an Adsorbent". *Water Science and Technology*, 69 (11): 2265-2271, 2014. doi:10.2166/wst.2014.143.
8. Abdoul-Raimi Bouari, **Shamim A. Begum**, Ynoussa Maiga, Nosa O. Egiebor, "Biodegradation of Cyanide Complex Compounds in Aqueous Media by *Pseudomonas Resinovorans*". *Environmental Engineering Science*, 30 (12): 757-764, 2013.
9. Abdoul-Raimi Bouari, **Shamim A. Begum**, Nosa O. Egiebor, "Bioremediation of Complex Cyanide Contaminated Wastewater using *Pseudomonas Fluorescens* Pf-5". *International Journal of Engineering Research and Technology*, 2 (9):1485-1493, 2013. ISSN: 2278-0181. www.ijert.org.
10. **Shamim A. Begum**, Jacimaria R. Batista, "Impacts of Carbon Source Addition on Denitrification and Phosphorus Uptake in Enhanced Biological Phosphorus Removal Systems". *Journal of Environmental Science and Health: Part A*, 48: 464-473, 2013.
11. **Shamim A. Begum**, Jacimaria R. Batista, "Microbial Selection on Enhanced Biological Phosphorus Removal Systems Fed Exclusively with Glucose". *World Journal of Microbiology and Biotechnology*, 28: 2181-2193, 2012.
12. **Shamim A. Begum**, Jacimaria R. Batista, and William Shepherd, "Impacts of Denitrification on Biological Phosphorus Removal using Several Carbon Source Types", *Proceedings of the 82nd annual Water Environment Federation Technical Exhibition and Conference (WEFTEC)*, Orlando, Florida, October 10-14, 2009.

13. Branislav Petrusovski, Saroj Sharma, Ekramul Hossain, **Shamim A. Begum**, Jan C. Schippers, "Field Testing of IHE Arsenic Removal Filter in Bangladesh", *Proceedings of the International Water Association (IWA) Asia-Pacific Regional Conference*, Bangkok, Thailand, October 20-22, 2003.
14. **Shamim A. Begum**, Mohammad A. Ali, "Estimation of Arsenic Affected Population in Bangladesh," *Proceedings of the First International Conference and Annual Paper Meet on Civil Engineering*, S. M. Seraj, M. A. Ali and B. Ahmed eds., Organized by Institution of Engineers, Bangladesh (IEB) and FEISCA, IEB Chittagong Centre, 2-3 November, 2001.

Synergistic Activities:

Advisor: Omega Chi Epsilon, Tuskegee University (TU), January 2010-Present

Member: Faculty Senate, TU, April 17 - Present

Member: Award Committee, College of Engineering, TU, August 2011-present

Member: TU Judicial System, April 2015 - present

Member: Student Code of Conduct Review Committee, TU, June 2015 - Present

Member: Educational Policy Committee, College of Engineering, TU, November 2015 - Present

Academic Advisor: Chemical Engineering Department, TU, Spring 2010-Present

Judge: The "Sixth Joint Annual Research Symposium", Kellogg Hotel and Conference Center, TU, Tuskegee, on February 26-27, **2015**.

Judge: The "Seventh Joint Annual Research Symposium", Kellogg Hotel and Conference Center, TU, Tuskegee, March 17-18, **2016**.

Reviewer: Applied Microbiology and Biotechnology, Applied Sciences, Chemosphere, Environmental Technology, Journal of Hazardous Material, Journal of Environmental Chemical Engineering, Journal of Industrial and Engineering Chemistry, Journal of Nanomaterials, Molecules, Particle Science and Technology, Soil and Sediment Contamination, Water Science and Technology, World Journal of Microbiology and Biotechnology, SMART Scholarship Applications for Department of Defense, NSF-GRFP Scholarship Applications for NSF

Collaborators:

Amy B. Chan-Hilton, Ph.D. (Florida A & M University, FL)

Danuta Leszczynska, Ph.D. (Jackson State University, MS)

Elham (Ellie) Fini, Ph.D. (North Carolina A & T State University, NC)

Jacimaria Batista, Ph.D. (University of Nevada Las Vegas, NV)

Nosa O. Egiebor, Ph.D. (University of Mississippi, MS)

Stephanie Luster-Teasley, Ph.D. (North Carolina A & T State University, NC)

Ph.D. Thesis Advisor and Post Graduate Scholar:

Ph.D. Advisor: Dr. Jacimaria R. Batista

M.S. Advisor: Dr. Branislav Petrusovski

M.E. Advisor: Dr. M. Ashraf Ali

Thesis Advisors:

- 1) Abdoul-Raimi Bouari, Water and Environmental Engineering, 2iE, Burkina Faso, West Africa graduated on October 9, 2012 (Exchange Program)

- 2) AHM Golam Hyder, Environmental Engineering and Sustainable Development program, Royal Institute of Technology, Stockholm, Sweden graduated on March 2013 (Exchange Program)
- 3) Karyn Moses, Chemical Engineering Department, Tuskegee University, Tuskegee, AL graduated on May 7, 2016
- 4) Donald Johnson, Chemical Engineering Department, Tuskegee University, Tuskegee, AL graduated on May 7, 2016
- 5) A B M Samsuzzaman, Electrical Engineering Department, Tuskegee University, Tuskegee, AL graduated on May 7, 2016
- 6) Benozir Ahmed, Electrical Engineering Department, Tuskegee University, Tuskegee, AL graduated on June, 2017

Undergraduate Research Trainees:

Valerie Gordon, Jalyssa N. Turner, Tiffany Jackson, Terah Stockdale, Delphia Mandela Velma Williams, Philip Stringer, Kendra Green, Kayla Rhynes, D'Aundray Adams, Chelsea Azore, Chloe Whittington, Shaylynn Crum, Tierra Webster, Taylor Crocker, Qwanikwia Hicklen

Board Certification:

Professional Engineer (PE) - Alabama License No. 33963-E,