

**Shamim Ara Begum, Ph.D., P.E.**  
Associate Professor of Chemical Engineering  
Tuskegee University, Tuskegee, AL 36088  
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**Education:**

|       |      |                                     |                                                                        |
|-------|------|-------------------------------------|------------------------------------------------------------------------|
| 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:**

|                       |                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------|
| June 2022 – Present   | Interim Department Head, Department of Chemical Engineering, Tuskegee University      |
| 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:**

|           |                                                                                |
|-----------|--------------------------------------------------------------------------------|
| 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                   |

**Board Certification:**

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

**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  
Thermodynamics I - MENG 311  
Unit Operations Laboratory I-CENG 0320 (i.e. Fluid Mechanics & Heat Transfer)  
Engineering Ethics – CENG 390  
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:**

- Water Environment Federation
- American Institute of Chemical Engineers

**Awards:**

- Faculty Performance Award for Engagement and Outreach, College of Engineering, Tuskegee University, 2023-2024
- 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**, Qwanikwia Hicklen, Taylor Crocker, AHM Golam Hyder, Ahnaf Hossain and Ben Oni. Utilization of Biochar for the Removal of Phosphorus and Chloride in Water. Presented a poster at the SETAC North America 44th Annual Meeting, Louisville, KY, USA, Nov. 12-16, 2023.
2. Ahnaf Hossain, **Shamim A. Begum** and Zhihua Jiang. Adsorptive Removal of Lead from Aqueous Solution Using Biochar. Poster was presented at the 2021 Virtual AIChE Annual Meeting, November 7-19.
3. **Shamim A. Begum**, AHM Golam Hyder, and Ben Oni. Adsorption Characteristics of Hexavalent Chromium from Aqueous Solution onto Biochars. Presented a poster at the 2020 Virtual AIChE Annual Meeting, November 16 -20.
4. **Shamim A. Begum**, Qwanikwia Hicklen, Taylor Crocker, AHM Golam Hyder and Ben Oni. Sorption Characteristics of Nitrogen and Phosphorus Onto Biochar from Aqueous Solution. Abstract accepted for a poster presentation at the 2018 AIChE Annual Meeting in Pittsburgh, PA, Oct. 28 - Nov. 2, 2018.
5. **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.
6. 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.
  7. 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.
  8. 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.
  9. **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.
  10. 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. Paper is presented in 2015 AIChE Annual Meeting, Salt Lake City, Utah, Nov. 8-13, 2015.
  11. Abdoul-Raimi Bouari, **Shamim A. Begum**, Ynoussa Maiga, Nosa O. Egiebor. Bioremediation of Cyanide Contaminated Wastewater using Novel Pseudomonas Species. Presented in the 88th Annual Water Environment Federation Technical Exhibition and Conference, McCormick Place, Chicago, IL, USA, September 26-30, 2015.
  12. 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.
  13. 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.
  14. 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.
  15. 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.
  16. **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.
  17. **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.

18. **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.
19. 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.
20. **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.
21. **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.
22. **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.
23. **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 chapter).

#### **Publications:**

1. **Shamim A. Begum**, A.H.M. Golam Hyder, Qwanikwia Hicklen, Taylor Crocker, Ben Oni, "Adsorption Characteristics of Ammonium onto Biochar from an Aqueous Solution". *Journal of Water Supply: Research and Technology-Aqua*, 70 (1): 113 – 122, 2021.
2. David Baah, Tamara Floyd-Smith, **Shamim A. 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*, 52 (2): 2018.
3. **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.
4. 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.
5. Tamara Floyd-Smith, **Shamim A. Begum**, Nader Vahdat, Qinghua P. He, Kyung Kwon, Jonathan Mbah, Allen Smith, "Chemical Engineering at Tuskegee University". *Chemical Engineering Education*, 49 (1), Winter 2015.
  6. 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.
  7. **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.
  8. 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.
  9. 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.
  10. 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.
  11. **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.
  12. **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.
  13. **Shamim A. Begum**, Jacimaria R. Batista, and William Shepherd, "Impacts of Denitrification on Biological Phosphorus Removal using Several Carbon Source Types", *Proceedings of the 82<sup>nd</sup> annual Water Environment Federation Technical Exhibition and Conference (WEFTEC)*, Orlando, Florida, October 10-14, 2009.
  14. Branislav Petrusevski, 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.
  15. **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:**

**Member**, College of Engineering Personnel Committee (Tenure & Promotion), October 11, 2023 - Present

**Chair**, COE Grading Review Committee, Fall 2022 and Spring 2023

**Co-Director**, MS and PhD programs in Agricultural and Environmental Sciences Engineering, June 2022 - Present

**Chair**, Faculty Hiring Committee, Chemical Engineering Department, TU, October, 2022 - Present

**Chair**, COE Ad hoc Grading Review Committee, from January 31, 2022 - February 14, 2022.

**Chair**, COE Ad hoc Committee on Student Performance Expectation, January 25, 2021

**Advisor**: "Omega Chi Epsilon" Honor Society, Tuskegee University (TU), January 2010-Present

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

**Member**: Graduate Council, May 25, 2023 - Present, TU

**Member**: Faculty Senate, TU, SP2016 – SP2018

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

**Member**: Civil Engineering Planning Committee, College of Engineering, TU, Spring 2011-Fall 2011

**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

**Member**: Faculty Search Committee, Chemical Engineering, TU, Fall 2013-present

**Member**: Biosafety Committee, TU, Tuskegee, October 2019 - 2022

**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**.

**Judge**: The "Eight Joint Annual Research Symposium", Tompkins Hall, TU, Tuskegee, March 17, **2017**.

**Judge**: The "Ninth Joint Annual Research Symposium", Tompkins Hall, TU, Tuskegee, March 16, **2018**.

**Judge**: The "Joint Annual Research Symposium 2019", Tompkins Hall, TU, Tuskegee, March 22, **2019**

**Judge**: **Senior division, Alabama Science and Engineering Fair, Auburn University, April 1, 2023.**

**Judge**: Greater East Alabama Regional Science and Engineering Fair (GEARSEF) High School Event, Student Center, Auburn University, Auburn, March 7, **2019**

**Reviewer for Refereed Journals**: 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,

**Panel Member**: National Science Foundation (NSF) proposals, 2016

**Panel Member**: DoD SMART Fellowship, 2017,

**Panel Member**: NSF-GRFP Fellowship, 2018, 2019, 2020, 2022, 2023

**Panel Member:** DoD NDSEG Fellowship, 2019, 2022

**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. (Arizona State University, AZ)  
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 Petrushevski  
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