

NITESH KUMAR KASERA

Doctoral Student

Department of Biological and Agricultural Engineering

College of Agriculture and Life Sciences

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CAREER GOAL: To pursue a research career in environmental sustainability and green energy technologies.

SCHOLASTIC RECORDS

- **North Carolina State University, USA**
Ph.D. in Biological and Agricultural Engineering with **minor** in Chemical Engineering (2018-TBD)
CGPA: 4.00/4.00 (as of Fall'21)
- **University of Dhaka, Bangladesh**
B.S. (Hons.) in Applied Chemistry & Chemical Engineering (2013-2016)
CGPA: 3.54/4.00

RESEARCH INTERESTS

Waste Management, Green Energy, Energy Materials, Biofuels, Biomaterials, Membrane Separations

ACADEMIC PROJECTS

- **Ph.D. Dissertation: Conversion of agricultural wastes into high performance adsorbents (2019-Present)**
 - ✓ Pine bark chips are converted to biochar and doped with Nitrogen with different precursors.
 - ✓ The adsorptive properties of N-doped biochars are evaluated.
 - ✓ Computational studies are being employed to probe into mechanism of doping and adsorption.
- **M.S. Thesis: Textile waste treatment using membrane bioreactor (2017-2018, University of Dhaka; Not presented)**
 - ✓ Membrane bioreactor was designed. Textile waste was obtained from a local industry for the bioreactor experiments.
 - ✓ Biological organisms degraded the organic compounds and membrane filter was installed in reactor to separate treated water. The treated water quality was evaluated by measuring pH, conductivity, BOD, COD, and presence of biological organisms.
- **B.S. capstone design project: Medical Waste Management (2015-2016)**
 - ✓ Detailed study of the types of medical waste and ways of disposal and treatment according to international rules and prevailing scenario in Dhaka city was done.
 - ✓ A generalized model of a treatment plant was developed for the post-treatment recycling of medical wastes and their use in manufacturing commercial goods along with economic analysis.

PUBLICATIONS

- Kasera, N., Hall, S., & Kolar, P. (2021). Effect of surface modification by nitrogen-containing chemicals on morphology and surface characteristics of N-doped pine bark biochars. *Journal of Environmental Chemical Engineering*, 9(2), 105161.
- Kasera, N., Hall, S., & Kolar, P. (2021). Characterization data of N-doped biochars using different external nitrogen precursors. *Data in Brief*, 35, 106870.
- Paul, D., Kasera, N., Kolar, P., & Hall, S. G. (2020). Physicochemical characterization data of pine-derived biochar and natural zeolite as precursors to catalysts. *Chemical Data Collections*, 30, 100573.
- Augoustides, V., Kasera, N., Kolar, P. Chemical characterization data of raw Loblolly pine bark nuggets
- Kasera, N., Hall, S., & Kolar, P. Nitrogen-doped biochars as adsorbents for mitigation of heavy metals and organics from water: A review (**Submitted for peer review**)
- Kasera, N., Rahman A., Debnath M., Sarker M., Salem K. S. Characterization techniques for cellulose crystallinity: A review (**In preparation**)

TEACHING EXPERIENCE

- 3 lectures on **Extraction technology** in the course BAE-322 (Spring'20) entitled 'Introduction to Food Process Engineering' at Dept. of Biological and Agricultural Engineering, NCSU.
- Lab sessions on **Adsorption** in the course BAE-322 (Spring'21) entitled 'Introduction to Food Process Engineering' at Dept. of Biological and Agricultural Engineering, NCSU.
- Lectures, and lab sessions on **Adsorption** (Summer'19) for REU students at Dept. of Biological and Agricultural Engineering, NCSU.
- Lectures, and lab sessions on **Biodiesels, Biofuels, Adsorption, and Lignin** in Bioenergy Systems Summer Camp (Summer'19) for high school students at Dept. of Biological and Agricultural Engineering, NCSU.

PRESENTATIONS

- Lightning talk entitled "**Continuous fixed-bed column adsorption performance for the removal of methylene blue using rice husk biochar**" at ASABE Annual International Meeting, 2021
- Poster entitled "**Effect of Different Nitrogen-doped Precursors on Adsorptive Properties of Biochar**" at ASABE Annual International Meeting, 2020
- 3-minute thesis entitled "**Conversion of agricultural wastes into value added materials**" at Department of Biological and Agricultural University, NCSU, 2019

TRAINING AND COMPUTER SKILLS

- Training on "**Industrial Process Unit Operation and Process Control Technology**" conducted by Training Institute for Chemical Industries (TICI), BCIC, Bangladesh
- C Programming Language, MATLAB, R, Mathematica
- In-Plant Training (3rd December, 2017 – 30th December, 2017) at **Ashuganj Fertilizer & Chemical Company Limited**
- Instrumental Techniques – FTIR, ATR, UV-Vis, AAS, GC

FIELD TRIPS

As a part of our course curriculum field trips were performed at *People Ceramics Industries Ltd, Ghorashal Fertilizer Factory Ltd, Polash Urea Fertilizer Factory Ltd, Global Heavy Chemicals Ltd, Keya Soap and Detergent Industries, City Group of Industries*, all in Bangladesh. The objective of the field trips was to understand the process variables and technological aspects necessary for the functioning of an industry.

SCHOLASTIC ACHIEVEMENTS

- Secured **3rd Position** in the **Boyd-Scott Graduate Research Competition** at the ASABE Annual International Meeting, 2021
- Secured **1st Position** in the **Engineering Ethics Video Competition** at the ASABE Annual International Meeting, 2021
- Recipient of **William Hugh and Glenda Noble Johnson Graduate Engineering Fellowship Stipend Endowment** at NCSU, 2021
- Recipient of **Provost's Doctoral Fellowship** at NCSU, 2018
- Secured **3rd Position** in the class in 4th year B.Sc. (Hons.) Final Examination among 55 students.
- Secured **2nd Position** in the class during the training course at **TICI** among 55 students.

EXTRA-CURRICULAR ACTIVITIES

- **Graduate Students Libraries Representative** for the Dept. of Biological and Agricultural Engineering at NCSU (2019-2020 and 2020-2021)
- Event coordinator at **Bangladesh Student Association at NCSU** (2020-2021)
- Officer at **Bangladesh Student Association at NCSU** (2018-2019)

- Served as a volunteer at **Bangladesh Mathematics Olympiad**
- Participated in **Bangladesh Chemistry Olympiad**

ACADEMIC REFEREES

- *Dr. Praveen Kolar*, Professor, Biological and Agricultural Engineering, North Carolina State University; email - pkolar@ncsu.edu
- *Dr. Steven Hall*, Associate Professor and Extension Specialist, Biological and Agricultural Engineering, North Carolina State University; email - shall5@ncsu.edu