Tasfia Ferdoush

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Tasfia Ferdoush Tasfia Ferdoush

EDUCATION

Bangladesh University of Engineering and Technology Jul 2023 – Present
Master of Science in Chemical Engineering
CGPA- 3.42/4.00

Bangladesh University of Engineering and Technology Mar 2018 – May 2023
Bachelor of Science in Chemical Engineering
Specialization: Environmental Science
CGPA: 3.77/4.00 **Class Rank:** 11/60

STANDARDIZED TEST SCORES

Test of English as a Foreign Language (TOEFL)
Total score: 83/120, **Score Details:** Reading- 17, Listening- 21, Speaking- 20, Writing- 25

RESEARCH EXPERIENCE

Graduate Research Assistant (M.Sc. Thesis) Jul 2024 – Present
Techno-economic analysis of energy recovery pathways for single-use plastic wastes
- Performing characterization of single-use plastic waste, including elemental analysis and heating value measurements.
- Generating a single-use plastic waste recovery process simulation in Aspen PLUS software, integrating existing and novel technologies.
- Conducting economic analyses using Aspen model outputs to assess process economic feasibility.

Research Assistant Jul 2023 – Jun 2024
Department of Chemical Engineering, BUET
- Project title- '**Life cycle and techno-economic analysis of multi-layer packaging recycling supply chain for policy recommendation**'
- Developed a circular and sustainable material flow process for multi-layered packaging (MLP) waste integrating existing and novel plastic recovery processes.
- Performed life cycle and techno-economic analyses of the proposed MLP material flow process to assess economic feasibility in Aspen PLUS.
- Generated policy recommendations such as the inclusion of Extended Producer Responsibility(EPR) policy, based on Key Informant Interviews (KII) and field data collection.

Undergraduate Thesis May 2022 – Apr 2023
Fertilizer Potential of Landfill Municipal Solid Waste
- Assessed feasibility of using municipal landfill organic solid waste as a fertilizer based on physical and chemical properties, compost maturity parameter, and germination index (GI).
- Analyzed real municipal landfill solid waste samples using UV-Vis Spectroscopy, Atomic Absorption Spectroscopy, Cold Vapor Atomic Absorption Spectroscopy, and CHNS analysis.
- The maturity parameters- NPK ratio, germination index (GI) tested for radish seeds, macro and micronutrient concentrations, heavy metal concentrations, and C: N ratio suggested that the samples were mature enough to be used as organic fertilizer.

Undergraduate Capstone Project May 2022 – Apr 2023
Design of a 1200 TPD Ammonia Production Plant in Bangladesh
- Designed a 1200 TPD ammonia production plant (Haber Bosch method) in a group of 4 members.

- Worked collaboratively to perform critical tasks including construction of process flow diagram and process block diagram, material and energy balances, detailed design of key unit processes, economic analysis, environmental management plan development, and proposed plant construction plans.
- Used different tools such as Aspen HYSYS for process simulation, MS PowerPoint and AutoCAD for equipment design, MS Excel for economic analysis, material and energy balance.

Undergraduate Sessional Project Feb 2022

Modeling and optimization of biodiesel production from caper spurge using ASPEN HYSYS

- Led a group of 6 members to design a process for the production of biodiesel from caper spurge oil by reviewing existing models from the literature.
- Used Aspen HYSYS software to simulate and optimize the process for maximizing the product yield.
- The developed process showed a high yield for biodiesel produced from caper spurge oil and suggested that the product of the process could be a successful replacement for fossil fuel.

PROFESSONAL EXPERIENCES

Graduate Engineering Trainee Apr 2022

Sylhet Gas Fields Limited, Bangladesh

- Completed a two-week industrial attachment program, gaining hands-on experience in natural gas processing, condensate fractionation, and catalytic reforming operations.
- Acquired in-depth knowledge of chemical engineering principles, including plant operations, DCS control systems, and safety protocols.

PUBLICATIONS

Sustainable Management of Landfill Municipal Solid Waste: A Critical Case Study in Bangladesh

(Manuscript under review, Journal name: Heliyon, IF: 3.4, Q1)

Authors: **Tasfia Ferdoush**, Md Abdullah Al Masud, Nishat Tasnim Nimmu, Hridoy Roy, Ahaduzzaman Sourav, Raodatun Mubaswria, Rifat Ahmed Shanto, Azizul Hakim Manik, Md. Wahidur Rahman, Mashiur Rahman, Md. Mominur Rahman

AWARDS AND ACHIEVEMENTS

- Achieved **Deans List Award** and **University Merit Scholarship** for consecutive 4 years in undergraduate studies for outstanding results in academics.
- Competed in Olympiads at the National Level during high school (Gained **7th position** at **Science Olympiad** and **5th position** at **Chemistry Olympiad**).
- Finalist in the "**Sypnosis: A Problem Statement Competition**", a case competition arranged by AIChE NITR.
- Competed in "**Excelista**", an excel case competition arranged by the Department of Chemical Engineering, BUET.

SKILLS

Technical Skill

- Programming- MATLAB
- Simulation and Modelling- Aspen HYSYS, Aspen PLUS, Simulink
- Data analytics- MS Excel
- Documentation- MS Word, Google Docs
- Drawing, designing, and presentation- AutoCAD, MS Visio, MS PowerPoint

Laboratory Skill

- UV-Vis Spectroscopy
- Gas Chromatography
- Sample Characterization using ASTM Standards
- Elemental analysis using the digestion method (for metals, heavy metals)

Interpersonal Skill

- Critical thinking
- Communication
- Presentation