

MD MAZBAH UDDIN

Address: 310 Rogers Road (S211), Athens, GA 30605, USA, Email: mdmazbah.uddin@uga.edu, Ph.:+1706-340-9713

Dedicated and experienced soft material professional with a proven track record of five years in the development, characterization, and performance evaluation of polymeric materials across diverse fields of applications (e.g., packaging, smart textiles, and biomedical). Proficient in state-of-the-art methodologies and techniques to effectively design, optimize, and characterize polymeric materials for practical applications. Specialized expertise in understanding and leveraging polymer properties, synthesis, and processing to tailor materials for multifaceted functionalities.

SKILLS & COMPETENCIES

Polymeric Materials Science & Engineering, Research & Development, Materials Synthesis & Characterization, Analytical & Instrumental Analysis, Nano-structured Materials, Thin Film and Fibrous Materials, Functional Coating, Flexible Packaging, Textile Materials Science & Business, Statistical Analysis, Quality Control & Quality Assurance, Performance Assessment & Review, Collaboration & Teamwork

CAREER HISTORY

University of Georgia (UGA) | Athens, GA

Graduate Research Assistant – Textiles, Merchandising and Interiors (TMI)

Jan 2022 – Present

Conducted impactful research endeavors, specializing in the development of bio-based, biodegradable functional coatings tailored for enhanced barrier and mechanical properties in paper packaging applications. Experienced in the synthesis of nanocellulosic hydrogels from diverse plant feedstocks, optimizing their integration as a functional coating for paper packaging applications. Synthesis of biodegradable polymer-based emulsions, contributing significantly to the improvement of paper packaging functionalities.

Graduate Teaching Assistant – TMI

Aug 2021 – Dec 2021

Facilitated effective learning experiences by providing instructional support, conducting tutorials, and offering guidance to students. Assisted in the preparation and grading of assignments and examinations, fostering a collaborative and engaging educational environment. Collaborated with faculty to implement innovative teaching methodologies and enhance the overall educational experience for students.

Graduate Fellow Research Assistant – TMI

Aug 2019 – Jul 2021

Specialized in the development of co-axial yarn-based electrical nanogenerators using flexible metal threads. Conducted research on melt extrusion coating-based triboelectric yarns for electrical energy generation. Explored nanofiber and thin film coating techniques, applying them to the fabrication of energy-generating piezoelectric yarns.

Ha-Meem Group | Dhaka, Bangladesh

Feb 2018 – Jun 2019

Trainee Merchandiser – Sourcing, Production, and Management

Integral contributor to the manufacturing of readymade woven garments for the PVH Corp division of Ha-Meem Group. Executed strategic responsibilities encompassing materials sourcing, product development, supply chain, and resource management. Orchestrated seamless production processes, emphasizing efficiency and timely product shipments.

Square Textiles Limited | Gazipur, Bangladesh

Jun 2017 – Aug 2017

Internship – Production and Quality Control

Engaged in an immersive training program focusing on the intricacies of yarn manufacturing, spanning from administrative workflows to the final packaging phase. Specialized training concentrated on a comprehensive array of yarn production techniques, including ring, rotor, vortex, mélanges, core-spun, metallic, and plied yarns. Emphasized exposure to quality control and assurance, finishing processes, and R&D initiatives.

EDUCATION

Ph.D. in Materials Science | Jul 2025

CGPA: 3.67/4.0

University of Georgia – Athens, GA

Master of Science in Polymer, Fiber, and Textile Sciences | Jul 2021

CGPA: 3.95/4.0

Thesis: Co-axial yarn-based electrical nanogenerators of flexible metal threads

University of Georgia – Athens, GA

Bachelor of Science, Textile Engineering | Apr 2018

CGPA: 3.86/4.0

Bangladesh University of Textiles – Dhaka, Bangladesh

TECHNICAL ACUMEN

Materials Characterization: DSC, TGA, FTIR, XRD, NMR, UV-Vis, SEM, TEM, Ellipsometry, AFM, Optical Microscopy, DLS/SLS, Rheometer, DMA, Universal Tester, Textiles and Packaging Performance Assessment (WVTR, OTR, Cobb, Oil/Grease, etc.), and So on.

Data analysis: OriginLab, Microsoft Office, JMP, ImageJ, ANOVA, and Python and R (Learning)

Instrumentation of lab-scale machinery: Autodesk AutoCAD and 3D printing

COMMUNITY INVOLVEMENT

Bangladeshi Student Association of UGA

General Secretary

Aug 2021 – July 2022

Facilitated effective communication with UGA's International Student Life (ISL) and organized targeted programs for member development, process optimization, and continuous improvement in line with organizational goals. Engaged proactively in leadership training initiatives, contributing to both personal and professional growth.

Treasurer

Aug 2019 – July 2021

Managed budget discussions with ISL for organizing BASA programs at UGA. Coordinated fund collection from ISL, students, alumni, and other sponsors. Oversaw budget planning for cultural and international events.

Graduate Student Committee | TMI, UGA

Aug 2019 – July 2021

Chair of Social Programming

Initiated, planned, and executed social events through effective communication with the graduate student committee, students, and department head.

AWARDS, HONORS, AND CERTIFICATIONS

Materials Characterization Workshop | 2023, PerkinElmer Analytical Solutions B.V.

Endsley-Peifer Student Research Award | 2023, Graduate School, UGA

Virginia Wilbanks Kilgore Scholarship | 2023, College of Family and Consumer Sciences, UGA

Jones Anderson Family Scholarship | 2022, College of Family and Consumer Sciences, UGA

The Graduate School Doctoral Fellow Award | 2021, Graduate School, UGA

Basic Introduction to Materials Testing: Static | 2020, Instron

AATCC Foundation Student Research Support Grant | 2019, AATCC

Georgia Impact Now Master's Fellows Program (GAIN) | 2019, Graduate School, UGA

SELECTED PUBLICATION

Tushar, S. I., Sayam A, **Uddin, M. M.**, Dip T.M., Anik H.R., Arin M.R.A., Sharma, S. Triboelectric nanogenerators assisted synthesis and detection of chemical compounds. *J. Mater. Chem. A*, 2023,11, 19244-19280. <https://doi.org/10.1039/D3TA03572G>

Dip, T. M., Arin, M. R. A., Anik, H. R., **Uddin, M. M.**, Tushar, S. I., Sayam, A., Sharma, S., Triboelectric Nanogenerators for Marine Applications: Recent Advances in Energy Harvesting, Monitoring, and Self-Powered Equipment. *Adv. Mater. Technol.* 2023, 2300802. <https://doi.org/10.1002/admt.202300802>

Uddin, M. M., Dip, T. M., & Sharma, S. "Wearable Nanogenerators". Nanogenerators: Basics, Design Strategies, and Applications. 2022, <https://dx.doi.org/10.1201/9781003187615-10>

Uddin, M. M., Blevins, B., Yadavalli, N. S., Pham, M. T., Nguyen, T. D., Minko, S., & Sharma. Highly flexible and conductive stainless-steel thread based piezoelectric coaxial yarn nanogenerators via solution coating and touch-spun nanofibers coating methods. Smart Materials and Structures, 31(3), 035028. <https://doi.org/10.1088/1361-665x/ac5015>

Uddin, M. M., Yadavalli, N. S., Nguyen, T. D., Minko, S., & Sharma. Melt coated flexible stainless-steel thread based co-axial triboelectric yarn nanogenerators. Mater. Technol., pp. 1–15, Feb. 2022. <https://doi.org/10.1080/10667857.2022.2038769>

Sikdar, P., **Uddin, M. M.**, Dip, T. M., Islam, S., Hoque, M. S., Dhar, A. K., & Wu, S. Recent advances in the synthesis of smart hydrogels. Mater. Adv, 2(14), 4532-4573. <https://doi.org/10.1039/D1MA00193K>

ADDITIONAL INFORMATION

- The following co-invented technologies are licensed to DNY, LLC, by the UGA Research Foundation:
 - Hydrophobic nano cellulose hydrogels and process of fabricating nanocellulose hydrogels from wood pulp and plant fibers; and sustainable and eco-friendly dyeing/coating of cotton textiles with nanocellulose-indigo gel, 2023
 - Nanocellulose-based coatings for textile sizing application, 2023
- Undergraduate research mentor: Conor Scanlon (BS, Chemistry, UGA, 2022), Chloe Lee (BS, Biology, UGA, 2022), Pooja Samir Patel (BS, Biology, UGA, 2023), Isabella Swanson (BS, Chemistry, UGA, 2023), Sara Mesihovic (Mechanical Engineering, UGA, 2026)
- Other professional engagement: Certified reviewer for Journal of Applied Polymer Science and Designed Monomers and Polymers, Panelist and reviewer for Georgia Junior Science & Humanities Symposium