Shahin Sultana

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Education

M. Phil. in Chemistry — July 2005
Bangladesh University of Engineering and Technology (BUET), Dhaka

M.Sc. in Chemistry — July 1998
Jahangirnagar University, Savar, Dhaka

B.Sc. (Hons) in Chemistry
Jahangirnagar University, Savar, Dhaka — August 1996

Professional Experience

Designation	Place	From	To
Principal Scientific Officer	BCSIR Dhaka Laboratories, BCSIR, Dhaka-1205	19-12-2019	Till-date
Senior Scientific Officer	BCSIR Dhaka Laboratories, BCSIR, Dhaka-1205	04-03-2010	18-12-2019
Scientific Officer	BCSIR Dhaka Laboratories, BCSIR, Dhaka-1205	03-02-2005	03-03-2010
Research Chemist	BCSIR Dhaka Laboratories, BCSIR, Dhaka-1205	01-06-1999	02-02-2005

Research Grants (Selected)

- **Principal Investigator:** Utilization of waste polyvinyl chloride (PVC) cooling tower fills and natural waste fibers to produce new composite materials (2020-2021). BDT 2,50,000
- **Principal Investigator:** Recycling of Waste Polyolefin to Manufacture New Composite Materials Reinforced with Jute Fibers (2022-2023). BDT 3,00000
- **Principal Investigator:** Development of recycled polymer based molded products (2023-2024). BDT 3,00000

Publications (Selected)

1. Kaniz Fatema, Taslima Akter, Shabiba Parvin Shandhi, Md Khabir Uddin Sarkar, Mohammad Amirul Hoque, Mohammad Shahriar Bashar and **Shahin Sultana***, "Physico-mechanical evaluation of benzoyl peroxide-treated water hyacinth reinforced polyvinyl alcohol composites and DFT studies of the reaction of the monomer of cellulose" Smart Materials in Manufacturing, 4 (2026) 100123. https://doi.org/10.1016/j.smmf.2025.100123
2. **Shahin Sultana***, Zahidul Islam, Swapan Kumer Ray, Md Khabir Uddin Sarker , Mohammad Majedul Haque, Shamima Akther Eti , Samia Tabassum, Development and evaluation of urea formaldehyde resin-modified poly (vinyl alcohol)-based biocomposites reinforced with Corchorus olitorius cellulose microfiber, Smart Materials in Manufacturing 3 (2025)1-11, 100074. https://doi.org/10.1016/j.smmf.2025.100074
3. Taslima Akter, Kaniz Fatema, Zahidul Islam, Mohammad Shahriar Bashar, **Shahin Sultana***, M. Saiful Islam*, "Synthesis and physico-mechanical properties of phenol formaldehyde resin and its composites with water hyacinth and DFT study of the reaction of monomer of cellulose with sodium periodate", Industrial Crops & Products, 237 (2025) 122272. https://doi.org/10.1016/j.indcrop.2025.122272
4. Sarna Khanam, Swapan Kumer Ray, Riyadh Hossen Bhuiyan, **Shahin Sultana**, Nahid Sharmin, Qamrul Ehsan, "Advancing nutrient management in agriculture: Rice straw to nitrogen, phosphorus and potassium-containing hydrogel as slow-release fertilizer", Industrial Crops & Products 224 (2025) 120380. https://doi.org/10.1016/j.indcrop.2024.120380
5. Kaniz Fatema, Taslima Akter, Zahidul Islam, Mohammad Shahriar Bashar, **Shahin Sultana***, and M. Saiful Islam, "Physico-mechanical characterization and DFT studies of benzoyl peroxide treated water hyacinth reinforced polypropylene composites", Heliyon 10 (2024), e39412. https://doi.org/10.1016/j.heliyon.2024.e39412
6. Md. Rashed Hasan, Mohammad Majedul Haque, Md. Amirul Hoque, **Shahin Sultana**, Mohammad Mahbubur Rahman, Md. Aftab Ali Shaikh and Md. Khabir Uddin Sarker, "Antioxidant activity study and GC-MS profiling of Camellia sinensis Linn",Heliyon, 10 (2024),e23514. https://doi.org/10.1016/j.heliyon.2023.e23514
7. Mohammad Musfiqur Rahman, Md. Ershad Halim, **Shahin Sultana***, Zahidul Islam, Md. Khabir Uddin Sarker, and Md Aftab Ali Shaikh (2024). "Assessment of green biocomposites based on polyvinyl alcohol and grafted biopolymer tamarind kernel powder with polyacrylic acid" Results in Materials, (2024) 100601. https://doi.org/10.1016/j.rinma.2024.100601
8. Md Khabir Uddin Sarker, **Shahin Sultana***, Mohammad Majedul Haque , Swapan Kumer Ray, Md Rashed Hasan, and Md Aftab Ali Shaikh, "Utilization of factory tea (Camellia sinensis) wastes in eco-friendly dyeing of jute packaging fabrics", Heliyon, 10 (2024), e30948. https://doi.org/10.1016/j.heliyon.2024.e30948
9. Most. Afroza Khatun, **Shahin Sultana**, Mohammad Shahriar Kabir, Md. Sahadat Hossain, Husna Parvin Nur and A. M Sarwaruddin Chowdhury "Preparation and characterization of short date palm mat (DPM) fiber reinforced polystyrene composites: Effect of gamma radiation" Heliyon, 9 (2023) 1-13.https://doi.org/10.1016/j.heliyon.2023.e21373
10. **Shahin Sultana***, Shahnawaz Alom, Shamima Akhter Eti and Farzana Khan Rony, "Mechanical Behavior of Polysaccharide Based Biopolymer Synthesized From The Seed Kernel of Tamarindus Indica L" Advances In Materials Science, 23 91) (2023). DOI: 10.2478/adms-2023-0004

11. Shamima Akther Eti, Muhammad Saiful Islam, Jahid Hasan Shourove, Badhan Saha, Swapan Kumer Ray, **Shahin Sultana**, Md Aftab Ali Shaikh, Mohammad Mahbubur Rahman, "Assessment of heavy metals migrated from food contact plastic packaging: Bangladesh perspective" Heliyon, 9 (2023) e19667. https://doi.org/10.1016/j.heliyon.2023.e19667
12. Mohammad Amirul Hoque, **Shahin Sultana***, Md. Khabir Uddin Sarker, Zahidul Islam, "Recycling Waste Polypropylene To Produce New Composite Materials With Jute Reinforcements" Advances In Materials Science, 23 (2023) 21-32. DOI: 10.2478/adms-2023-0014
13. Most Afroza Khatun, **Shahin Sultana**, Zahidul Islam, Mohammad Shahriar Kabir, Md Sahadat Hossain, Husna Parvin Nur, A.M. Sarwaruddin Chowdhury, "Extraction of crystalline nanocellulose (CNC) from date palm mat fibers and its application in the production of nanocomposites with polyvinyl alcohol and polyvinylpyrrolidone blended films" Results in Engineering, 17 (2023) 101031. https://doi.org/10.1016/j.rineng.2023.101031
14. **S. Sultana***, M. K. U. Sarker and S. A. Eti, "Development and Testing of Waste Poly (Vinyl Chloride) Based Solvent Cement for Bonding of Poly (Vinyl Chloride) Pipes and Fitting", Journal of Science and Technology Research, 04 (1), (2022) 165-172.
15. Ajadur Rahman Shakil, Most. Laboni Begum, Md. Aftab Ali Shaikh, **Shahin Sultana**, Md. Shahidur Rahman, Md. Mahamudul Hasan Rumon, Chanchal Kumar Roy, and Md. Anamul Haque, "Jute Fiber Reinforced Hydrogel Composite for Removal of Methylene Blue Dye from Water" Dhaka Univ. J. Sci., 70 (2), (2022) 59-64. DOI:https://doi.org/10.3329/dujs.v70i2.62608
16. **Shahin Sultana***, Khaleda Akter, Md. Khabir Uddin Sarker, Riyadh Hossen Bhuiyan, Mohammad Majedul Haque, and Md. Rafiqul Islam, "Color Fastness and Tensile Properties of Cotton Fabric Dyed with Extract from Albizia Procera Sawdust" Fibers and Polymers (2022). DOI 10.1007/s12221-022-4707-x
17. **Shahin Sultana***, Md. Khabir Uddin Sarker, Zahidul Islam & Muhammad Saiful Islam,"Comparative Analysis of Compression Molded Products of Recycled Waste Poly(Vinyl Chloride) Fill Materials and Virgin Poly(Vinyl Chloride)" J. Eng. Technol. Sci., 54 (4), (2022). DOI: 10.5614/j.eng.technol.sci.2022.54.4.12
18. **Shahin Sultana***, Mehedi Mannan, Md. Jaynal Abedin, Zahidul Islam, Husna Parvin Nur, Purabi Rani Samaddar, "Physico-Mechanical and Thermal Properties of Thermoplastic Poly(Vinyl Alcohol) Modified Thermosetting Urea Formaldehyde Resin" Advances In Materials Science, 21 (2021). DOI: 10.2478/adms-2021-0024
19. Lutfun Naher Hilary, **Shahin Sultana***, Zahidul Islam, Md. Khabir Uddin Sarker, Md. Jaynal Abedin and Mohammad Majedul Haque "Recycling of waste poly(vinyl chloride) fill materials to produce new polymer composites with propylene glycol plasticizer and waste sawdust of Albizia lebbeck wood" Current Research in Green and Sustainable Chemistry, 4 (2021). https://doi.org/10.1016/j.crgsc.2021.100221
20. Tanvir Sultana, **Shahin Sultana**, Husna P. Nur and Md. Wahab Khan, "Studies on Mechanical, Thermal and Morphological Properties of Betel Nut Husk Nano Cellulose Reinforced Biodegradable Polymer Composites" J. Compos. Sci. 83 (2020)1-15; doi:10.3390/jcs4030083
21. Afroza Khatun M, **Sultana S**, Parvin Nur H and Sarwaruddin Chowdhury AM, "Physical, mechanical, thermal and morphological analysis of date palm mat (DPM) and palmyra palm fruit (PPF) fiber reinforced high density polyethylene hybrid composites" Adv. Mater Sci., 4 (2019) 1-6.
22. Tanvir Sultana, **Shahin Sultana**, Husna P. Nur and Md. Wahab Khan, "Impact on morphological, physicomechanical and thermal properties of polypropylene composites

reinforced with chemically modified betel nut husk fiber" Int. J. Adv. Res., 7 (2019) 1111-1119.

23. Mohammad Majedul Haque, Md. Rashed Hasan, Shakila Akter, Md. Khabir Uddin Sarker, Shamima Akther Eti and **Shahin Sultana**,"Phytochemical Screening, Proximate Composition And Heavy Metals Of Camellia Sinensis Leaves", Int. J. Adv. Res. 7 (2019) 195-201.
24. Tanvir Sultana, **Shahin Sultana**, Husna P. Nur and Md. Wahab Khan, "Chareacterization of Sodium *meta*-Periodate Modified Betel Nut Husk Fibers Reinforced HDPE Composites" European Journal of Advances in Engineering and Technology, 5(8) (2018) 572-575.
25. Pinku Poddar, **Shahin Sultana**, Md. Ali Akbar, Husna Parvin Nur, Sarwaruddin Chowdhury AM, "Environmentally sustainability of short Areca-nut leaf sheath fiber reinforced polypropylene composites" MOJ Poly Sci. 2(3) (2018) 48-50.
26. Iftkharul Islam, **Shahin Sultana***, Swapan Kumer Ray, Husna Parvin Nur, Md. Tofazzal Hossain and Walliullah Md. Ajmotgir, "Electrical and Tensile Properties of Carbon Black Reinforced Polyvinyl Chloride Conductive Composites" C Journal of Carbon Research, 4 (2018) 1-15; doi:10.3390/ c4010015.
27. Tanvir Sultana, **Shahin Sultana**, Husna P. Nur and Md. Wahab Khan, "Effects on the properties of low density polyethylene composites reinforced with treated and untreated betel nut husk fibers" Int. J. Adv. Res.,6 (2018) 202-209.
28. Pinku Poddar, Kamol Dey, Sumon Ganguli, **Shahin Sultana**, Husna Parvin Nur, A. M. Sarwaruddin Chowdhury, "Study of Naturally Woven Coconut Leaf Sheath-Reinforced Polypropylene Matrix Based Composites" J. Pure App. Chem Res. 7(3) (2018) 1-13.
29. Taslima Akter, Husna P. Nur, **Shanin Sultana***, Md. Rafiqul Islam, Md. Joynal Abedin and Zahidul Islam, " Evaluation of mechanical properties of both benzoyl peroxide treated and untreated teak sawdust reinforced high density polyethylene composites" Cellulose,2018 25(2),1171-1184. *;* https://doi. org/10.1007/s10570-017-1620-3.
30. **Shanin Sultana***, Md. Khayrul Islam Sumon, Husna Parvin Noor, Walliullah Md. Ajmotgir, Md. Khabir Uddin Sarker and Md. Rashed Hasan (2017); "Swelling and physico-mechanical properties of Synthesized sodium polyacrylate hydrogels" Int. J. Adv. Res., 5(7) (2017) 84-92.
31. Pinku Poddar, Muhammad Saiful Islam, **Shahin Sultana**, Husna Parvin nur and AM Sarwaruddin Chowdhury, "Mechanical and thermal properties of short arecanut leaf sheath fiber reinforced polypropylene composites: TGA, DSC and SEM analysis" J Material Sci Eng., 5(5) (2016) 1-7.
32. Pinku Poddar, Muhammad Asadulah Asad, Muhammad Saiful Islam, **Shahin Sultana**, Husna Parvin nur and AM Sarwaruddin Chowdhury, "Mechanical and morphological study of arecanut leaf sheath (ALS), coconut leaf sheath (CLS) and coconut stem fiber (CSF)" Adv Mater Sci.,1 (2) (2016) 1-4.
33. Farzana Khan Rony, Swapan Kumer Ray, Amirul Hoque, Asaduz Zaman, **Shahin Sultana**, Husna Parvin Nur, and Shams Tania Afroza Islam, "Zinc Stearate from Galvanizing Waste Materials and its use as Thermal Stabilizer in PVC Industries" Bangladesh J. Sci. Ind. Res.,2016, 41 (4), 261-270. DOI: https://doi.org/10.3329/bjsir.v51i4.30443
34. **S. Sultana***, M. Zahurul Haque and Husna P. Nur, "Preparation and application of different size materials on the cotton yarn and investigating the effect of sizing on the tensile properties of cotton yarn" Bangladesh J. Sci. Ind. Res., 49 (1) (2014) 25-30.

35. **Shahin Sultana**, Husna P. Nur, Tapati Saha and Manoranjan Saha, "Fabrication of raw and oxidized saw dust reinforced low density polyethylene (LDPE) composites and investigation of their physico-mechanical properties" Bangladesh J. Sci. Ind. Res., 47 (4) (2012) 365-372.

36. Husna P. Nur, M. Akram Hossain, **Shahin Sultana** and Md. Mamun Mollah, "Preparation of polymer composites using natural fiber and studies on their physico-mechanical properties" Bangladesh J. Sci. Ind. Res. 45 (2) (2010) 117-122. DOI: https://doi.org/10.3329/bjsir.v45i2.5708

37. **S. Sultana**, M. M. Huque and M. M. Helali, "Studies on the Physicomechanical Properties of Sodium Periodate Oxidized Jute Reinforced Polypropylene (PP) Composites" Polymer-Plastics Technology and Engineering, 2007, 46, 385-391.

Conference Presentations

- **Oral Presentations:** BCSIR Congress 2022, ICEPSD-2022, NAME-2023
- **Poster presentations:** ACC / RACI CENTENARY CONGRESS 2017, 1st International Dhaka Science Conference For Women -2023, ICSTB-2021, BCSIR Congress 2023

Thesis Supervision

- Supervised 12 theses on topics including polymer synthesis, development of composites and biocomposites, and recycled polymer based composites etc.

Analytical Services Rendered (Job Contribution)

About 15,000 ad-hoc problems have been solved throughout my service life. These include identification of different samples/chemicals referred by Government, Semi-government and Private sectors/offices like customs department, police department, air-port & sea-port authorities. These activities help our Government to fix taxes and vats, industrialists to set up industries and importers to import various chemicals. Ultimately these researches contribute substantially to strengthen the economic structure of our country.

References

Available upon request.