

Dr. Mohidus Samad Khan

PhD (Monash Uni, AUS), Post-Doc (McGill Uni, CAN)

Director

Institute of Appropriate Technology
Bangladesh University of Engineering and Technology (BUET).
and

Professor

Department of Chemical Engineering
Bangladesh University of Engineering and Technology (BUET).
Dhaka-1000, Bangladesh.

Web: www.buet.ac.bd

e-mail: dir@iat.buet.ac.bd, mohid@che.buet.ac.bd, mohid.khan@hotmail.com

Phone: +8801755587980, +8801552352461

Orchid: <https://orcid.org/0000-0001-7528-953X>

Google Scholar: <https://scholar.google.com/citations?user=p3prMjMAAAAJ&hl>



Field of Expertise: Industrial Sustainability; Chemical Engineering; Biotechnology; Food.

Interest and Strength: Project Management; Cleaner Production; Industrial Sustainability and Circularity, Appropriate Technology for Waste Management, Chemical and Occupational Safety; Biotechnology; Food.

Education:

Jun'10 – Sept'13: Post-Doctoral Fellowship on Bio-surface Engineering and Biomolecular Simulation, McGill University, Canada

under the supervision of Prof. Theo van de Ven and Prof. Tony Whitehead (Department of Chemistry, McGill University).

Oct'06 – Mar'10: PhD in Bio-surface and Biotechnology Engineering, Monash University, Australia

PhD Project, 'Bioactive Papers: Printing, Activity and Stability', under the supervision of Prof. Gil Garnier and Prof. Wei Shen (Department of Chemical Engineering, Monash University).

Sep'99 – Jul'04: BSc in Chemical Eng, Bangladesh Uni of Eng. and Tech. (BUET), Dhaka

Undergrad Thesis (one year) project, 'Study of Wastewater Treatment Process of a Synthetic Fabric Dyeing Plant', under the supervision of Prof. Sabder Ali (BUET).

Professional Experiences:

May'2025 onward: Director, Institute of Appropriate Technology (BUET)

This work encompasses heading the academic and administrative activities of IAT BUET. The objective of IAT BUET includes:

- Identification of policies for the appropriate choice, generation, and dissemination of technologies for development,
- Identification of technologies appropriate to local resources, available skills, and social conditions,
- Development of technologies (in selected sectors) appropriate to local resources, available skills, and social conditions,
- Identification and development of appropriate mechanisms for the transfer and dissemination of technologies.

Teaching – Courses Taught: AT 6010 (Technology Convergence and New Product Development)

Apr'2023 onward: Professor, Dept of Chem Eng, Bangladesh Uni of Eng and Tech (BUET)

This work encompasses Teaching, Research, Consultancy, and Departmental activities.

Teaching – Courses Taught: ChE 6501 (Biomaterials), ChE 6504 (Fermentation Technology), ChE 6505 (Biochemical Engineering), ChE 473 (Biochem Eng I), ChE 475 (Biochem Eng II), ChE 485 (Industrial Pollution Control), ChE 481 (Environmental Engineering I), ChE 431 (Food Processing and Preservation), ChE 411 (Economics and Management of Chemical Process Industries), ChE 203 (Chem Eng Thermodynamic I), ChE 103 (Chem Eng Thermodynamic).

Design and Consultancy – Provide consultancy services to Biotechnological and Environmental Projects funded by the Government of Bangladesh, IFC-World Bank, JICA, European Funding Agencies, and Local Industries.

Industrial Waste Management, Water Management, Sustainability and Circularity, Chemical Safety and Management, Environmental and Social Impact Assessment (ESIA), Bioprocess Engineering, etc.

- Working on Sustainability, Circularity, Industrial Waste Management, Chemical Management, and Environmental issues since 2004.
- Hands-on experience in designing and troubleshooting textile (dyeing and washing), food (confectionery), and pharmaceutical Effluent Treatment Plants (ETPs); and ETP sludge characterization, recycle, and reuse
- Provide training and consultancy on Industrial Energy Efficiency, industrial effluent management, industrial water management, Water Footprint, Carbon Footprint, GHG emission, Cleaner Production Options.
- Technological assessment of Green Energy and Biofuel production options.
- Certified trainer (CSP-US Department of State) for chemical inventory, management, and accountability
- Prefers to mix Technical Consultancy with Research Approach

Research – supervising different research projects on Health, Food, Sustainability and Circularity, such as: Food Processing and Preservation, Low-Cost Diagnostics to Detect Biomarkers in Biofluid, Hospital Textile, Biofuel Production from Biomass, Resource Recovery from Solid Waste, Sustainability and GHG Emission, etc.

Apr'2022 onward: Senior Fellow, ESTex Foundation

Dr. Khan is the founding member and Senior Fellow of the ESTex Foundation, a Non-Governmental Research Organization with a vision to foster environmental sustainability, resource optimization, workplace compliance, and technological advancement in industries, enabling them to excel in the Fourth Industrial Revolution. The missions of ESTex Foundation include: i) to promote environmental sustainability and workplace compliance in industries; ii) to help industries reducing ecological footprint through process and resource optimization; iii) to build a sustainable and thriving industrial network; iv) to foster industries achieving sustainability development goals (SDGs) (specially 6, 9, 12, 13, 17), and v) to facilitate industries excel in the fourth industrial revolution.

Jun'2021 – Apr'2023: i) Chief Sustainability Officer, Bangladesh Export Import Company (BEXIMCO) Ltd. and ii) Executive Director and Head of Operations, Beximco PPE Limited.

Beximco is a multi-billion-dollar (\$) sized business conglomerate in Bangladesh with a strong footprint in textiles, pharmaceuticals, Health, Solar Power Generation, LPG, Ceramics, TV Media, Sports, Travel & Tourism, etc.

i) The work responsibility as the Chief Sustainability Officer of Beximco Limited includes leading, planning, and executing Sustainability Initiatives and Projects of the Beximco Group.

As the CSO works closely with Beximco's Top Management and Administration, Company HR and Compliance, Engineering, Utility and Maintenance Units, Supply Chain, Marketing and Merchandising, Power Generation, Chemical Storage, and Waste Management teams on industrial and environmental sustainability issues.

ii) The job responsibility of the Executive Director and Head of Operations of Beximco Health and PPE includes heading product development, computer-aided design (CAD), industrial engineering (IE), production, quality control, commercial, supply-chain and connectivity, marketing, and merchandising related issues.

Nov'2020 – Dec'2021: Member of Technical Advisory Group, Access to Medicines and Health Products Division, WHO Geneva (HQ).

This technical advisory work supports different work groups under the headquarters of WHO, such as i) the WHO TAG on PPE team, ii) the WHO Prequalification of PPE, MDs, and IVDs team, and iii) the WHO Local Production and Technology Transfer of PPE, MDs and IVDs team, to develop prequalification requirements and technological assessment of PPE items and manufacturers.

Apr'2020 – Jul'2021: National Consultant for Identification of Local Options for Quality Testing of Personal Protective Equipment (PPE) during the COVID-19 Pandemic, World Health Organization (WHO)

This work supports national health authorities in Bangladesh to develop a national quality control system for priority PPE items, which will inform procurement decisions by government and other agencies (DGDA, WHO, USAid, and JICA) through the identification of local solutions for testing PPE according to internationally accepted standards, outlined by WHO in the disease commodity package for COVID-19.

Mar'2018 – Mar'2023: Associate Professor, Dept of Chem Eng, Bangladesh Uni of Eng and Tech (BUET)

Nov'2013 – Mar'2018: Assistant Professor, Dept of Chem Eng, Bangladesh Uni of Eng and Tech (BUET)

Oct'2016 – Jan'2017: Visiting Research Scholar, Texas A&M University, USA

Jun – July'2015: Visiting Professor, McGill University, Canada

Jun'2010 – Sept'2013: Post-Doctoral Fellow, McGill University, Canada

This work encompassed Theoretical and Experimental research. The Experimental research work aimed at developing antibody-active paper and cellulose beads to detect and filter **bacteriophage 'T7'**. The Theoretical research aimed to perform molecular modelling of the building blocks of the Picloram antibody, 3D homology modelling of Antibody Binding Fragments, and Quantum Calculations of Antibody-Antigen Interaction Energies under different physiological conditions.

Feb-May'2010: Post-Doctoral Researcher, Monash University, Australia

This project developed bioactive enzymatic papers and low-cost paper diagnostics for blood typing. The primary objective of the project was to deliver enzymes and proteins in a controlled manner onto paper, and to investigate their activity, stability, selectivity, aging, fixation, and retention on paper.

Jan'07 – May'2010: Casual Academic/Sessional Teacher, Monash University, Australia

Course Taught - CHE2165 (Bio-nano Engineering), MEC2404 (Fluid Mechanics), CHE3161 (Chemistry and Chemical Thermodynamics), CHE3164 (Reaction Engineering), CHE4180 (Chemical Engineering Project), CHE4163 (Transport Phenomena and Numerical Methods).

May-Sept'2006: Environmental Consultant and Engineering Design, Renata Ltd., BD

Work independently to design the '*Effluent Treatment Plant, ETP*' and to develop the '*Waste Management Plan*' for *Renata Limited*, a prominent pharmaceutical industry in Bangladesh (www.renata-ltd.com).

Sep'04-Aug'2006: Project Engineer, ETP, ISM Project

ISM was an international research project aiming at pollution abatement. The project was funded by the UK's Department for International Development (DFID), the US Agency for International Development (USAID), the Department of Environment (DoE) of the Bangladesh Government, and was undertaken by the Bangladesh Centre for Advanced Studies (BCAS), the Stockholm Environment Institute (SEI), and the University of Leeds, UK. This project aimed to identify and mitigate industrial water pollution in the Turaag River and its surrounding wetlands. Key Responsibilities: Identifying and measuring water pollution in the Turaag River; Helping industries to establish and troubleshoot Effluent Treatment Plants; Report Writing; Scientific Publication; Presenting Research works to the Industry and Local community.

2007-2008: Monash University

- Safety and Lab Manager: Chemistry Lab (2007-08) and Humidity Controlled Lab (2008-09), APPI, Monash University.
- Member of Safety Committee, Dept of Chem Eng, Monash University.

Jul'1998 – Jun'2000: Lab Assistant Demonstrator, Physics Lab, Notre Dame College

- Demonstrate different lab experiments; ● Marking reports; ● Maintain lab equipment

Major Grants:

- ✓ **UNICEF Grant of BDT 63.8 million (year 2026; ~USD \$51,000)** for the project: Groundwater management initiatives under Field trial of water efficiency and effluent discharge quality measurement toolkits at the Apparel Industry in Shreepur (Gazipur); Applicant: **M.S. Khan (PI)**.
- ✓ **Lien Environmental Fellowship (year 2025-26; SGD \$118,000)** for the project: Assessment of Pollution Impact on Surface and Ground Water Quality, Water Footprint, and Health of Residents in the Textile Industrial Zone of Greater Dhaka; Applicant: **M.S. Khan (PI)**.
- ✓ **WHO Grant of BDT 6.28 million (year 2020-21; ~USD \$73,930)** for the project: Technical assistance to develop specification and guiding documents for quality assurance and market surveillance of PPE during the Covid-19 pandemic; Applicant: **M.S. Khan (PI)**.
- ✓ **European Research Fund of €188,950 Euro (year 2020-21)** for the project: Developing Accredited Local Facilities to Test Biological Parameters & Support the Local RMG Sector for Producing Medical PPE; Applicant: **M.S. Khan (PI)**.
- ✓ **European Research Fund of €1,137,925 Euro (year 2018-21)** for the project: Environmental Sustainability through Local Capacity in Textile Chemical and Waste Management; Applicant: **M.S. Khan (PI)**.
- ✓ **Departmental Development Grant (Bio-incubator) of BDT 99.6 million (year 2019-2022; ~USD \$1,171,765)** by the Ministry of Education, People's Republic of Bangladesh for the project: Establishment of an Applied Bioengineering Research Incubator (ABRI) at BUET (বাংলাদেশ প্রকৌশল বিশ্ববিদ্যালয়ে একটি এপ্লাইড বায়োইঞ্জিনিয়ারিং গবেষণা

ইনকিউবেটর স্থাপন); Applicants: S. Ahmed, M. A. A. S. Choudhury, **M. S. Khan**, N. Islam, S. S. Razia and G. M. T. Islam.

- ✓ **Solidaridad Research Fund of BDT 31,70,000/- (year 2017-19)** for the project: [Measuring Water Footprint and Sustainable Use of Water in the Leather Cluster of Savar in Bangladesh](#); Applicant: M.S. Khan.
- ✓ **BCEF Academic Research Fund of BDT 9,50,000/- (year 2014-16)** for the project: [Paper-Based Detection of Health Hazard Components in Chemically Adulterated Foods](#); Applicant: **M.S. Khan**.
- ✓ **CASR-BUET Research Grant of BDT 3,46,000/- (year 2014-16)** for the project: [Low-cost Paper Diagnostics for the Qualitative and Quantitative Detection of Harmful Chemicals Used in Food Processing and Preservation](#); Applicant: **M.S. Khan**
- ✓ **Abbott Vascular, Inc. Research Fund of USD \$5,000 (year 2014)** for the project: [Computational analysis of radio frequency thermal ablation of tissue](#); Applicant: **M.S. Khan**.
- ✓ **CpmBCEF Academic Research Fund of BDT 90,000/- (year 2013)** for the project: [Computational Modelling in Biotechnology](#); Applicant: **M.S. Khan**.
- ✓ **CSACS (Centre for Self-Assembled Chemical Structures) ECO Grant of \$20,000 CAD**, for Feb 2011 to Jan 2012; Applicants: T.G. van de Ven (PI) and **M.S. Khan**.
- ✓ **SENTINEL Summer Student Grant 2012 and 2013**; Applicants: T.G. van de Ven (PI) and **M.S. Khan**.

Major Awards, Scholarships, and Achievements:

- ✓ Lien Environmental Fellow (year 2025-26), Lien Environment Fellowship (LEF) Programme, Nanyang Environment and Water Research Institute, Singapore.
- ✓ Featured and celebrated as 'Victorian Alumni Leader 2024', Government of Victoria, Australia.
- ✓ Winner of 'Young Innovator Award 2012' entitled 'TR35@Singapore Awards' organized by the 'MIT Technology Review Inc' to recognize the top innovators in the *Asia-Pacific regions* under the age of 35 for *Developing Paper Diagnostic for Blood Typing* *.
- ✓ Vice-Chancellor's commendation (2010) for Doctoral Thesis Excellence (known as: *Mollie Holman Doctoral Medal*) as a recognition of Excellence in PhD Research.
- ✓ Kenneth Hunt Medal (2010) from *Monash Engineering Faculty* for the Best Engineering PhD Thesis.
- ✓ Finalist for '*ICHEME 2010 Award: the Young Engineer*' of the Year sponsored by GlaxoSmithKline (GSK) and the Institute of Chemical Engineers (IChemE), UK.
- ✓ State Winner (VIC) in '*2009 AusBiotech-GSK Student Excellence Awards*' for the PhD work on 'Bioactive Papers'; AUS national award is for the postgrad (PhD) students working in Biotechnology.
- ✓ '*iCFP2016 Young Scientist Award*' in recognition of the Outstanding Young Research in the 2nd International Conference on Food Properties (iCFP2016), Bangkok, Thailand, 2016.
- ✓ Monash Post Graduate Publication Award (2009); Monash Postgraduate Research Travel Grant (2009); Monash Graduate Scholarship (2006-09); Monash Departmental Scholarship (2006-09); Monash Research Scholarship.
- ✓ Selected as one of the '*Ten High Achieving International Students*' from the Engineering Faculty, Monash University in 2008, as a recognition of Academic Achievements.
- ✓ iCFP2016 Best Paper Award on *Mass Transfer Properties, Mass-volume-area related Properties & Mechanical Properties Track* for the paper entitled: 'Analyzing Diffusivity of Formaldehyde in Formalin Treated Fish Samples: 'Catla catla'', at the 2nd International Conference on Food Properties (iCFP2016), Bangkok, Thailand, 2016.
- ✓ iCFP2016 Best Paper Award on *Health and Wellness & Medicinal Properties Track* for the paper entitled: 'Measuring and Analyzing Dental Erosion Caused by Beverages and Bottled Drinking Water in Bangladesh', at the 2nd International Conference on Food Properties (iCFP2016), Bangkok, Thailand, 2016.
- ✓ Selected and featured in the special edition (21st Anniversary, 2012) of Daily Star Bangladesh as one of the 'Young and Future Leaders of Bangladesh' working at the national and international levels.
- ✓ '*Award of Appreciation*' from the International Conference on Chemical Engineering 2008, Dhaka, Bangladesh, for the contribution to organizing the ICChE2008 Poster Competition for undergraduate students.
- ✓ BUET Technical Scholarship (2000-04); University Merit Scholarship (BUET).

Research Laboratory Development:

- ✓ Established a new laboratory, “Textile Analytical Laboratory” in the Department of Chemical Engineering at BUET, with personal research funds (PI) received from WHO and EU sources, Research Funds (~€1.4M). This laboratory has different biological, environmental and analytical test facilities: GC-MS, FTIR, TXRF, Double Beam UV-Vis, Biosafety Cabinet 2, Autoclave, Ozone Sterilization Chamber, Rotary Evaporator, TCLP System for Leaching Test, Automatic CBR Test Machine (for compaction test), Mask Synthetic Blood Penetration Tester, Mask Bacterial Filtration Efficiency Tester, Protective Clothing Blood Penetration Resistance Tester, Protective Clothing Blood Borne Pathogen Penetration Resistance Tester, Temperature Controlled Water Bath, Ultrapure Water Systems: Ultrapure water for critical laboratory applications.
- ✓ Departmental Team member (Co-PI) to establish Bio-incubator laboratory in the Department of Chemical Engineering at BUET with Departmental Development Fund (~\$1.2M) from Ministry of Education. This laboratory has biological test facilities: Optical Microscope, Fluorescence Microscope, CO2 Incubator for Mammalian Cell, LC-MS/MS, ART-FTIR, AAS, SEM, HPLC, 3D Printer for Microfluids, RT-PCR Machine, Automated DNA Extractor, Gel Electrophoresis, Gel Doc, Dynamic Contact Angle Analyzer, Ultrasonic Cleaning Baths, Thermal mixer, etc.

Professional Work at National and International Level:

- ✓ Member and Technical Lead (Feb 2026 onward), Committee for Developing the Regulatory Framework for Water Reuse and Recycling in the Industrial Sector, Ministry of Environment, Forest and Climate Change, Government of the People’s Republic of Bangladesh
- ✓ Member (July 2025 onward), Working Group on Integrated Development, Conservation, and Proper Management of Groundwater Resources, Water Resources Planning Organization (WARPO), Ministry of Water Resources in Bangladesh (www.warpo.gov.bd).
- ✓ Member and Technical Lead (May 2025), Bangladesh Alliance for Water Reuse and Recycle (A4R), World Bank Group, and WARPO, Dhaka, May 2025.
- ✓ Advisory Board Member (March 2024 onward), International Research Center on Sustainable Systems, University of Gyor, Hungary.
- ✓ Technical Team Member (July 2023 onward), ETP efficiency and Waste Guideline Project, ZDHC (www.roadmaptozero.com).
- ✓ Member (Nov 2022 onward), Evaluation Teams (ET) for the Engineering Programs in the Chemical Engineering Sector, Board of Accreditation for Engineering and Technical Education (BAETE), IEB Bangladesh.
- ✓ Member (Sept 2022 onward), Sectoral Committee (SC) for the Engineering Programs in the Chemical Engineering Sector, Board of Accreditation for Engineering and Technical Education (BAETE), IEB Bangladesh.
- ✓ Member (Dec 2020 onward), Technical Committee for Circular Economy and Riverine Plastics Pollution Management, Ministry of Water Resources (Bangladesh Water MSP) (Ref: Gazette No. 42.00.0000.039.15.527 dated December 3, 2015 of Ministry of Water Resources)
- ✓ Technical Team Lead (Apr 2020 onward), Standardization and Quality Control of Personal Protective Equipment (PPE) as Emergency Response of COVID-19 Pandemic, UNDP-WHO-USAid-DGDA.
- ✓ Member and Co-Chair (May 2017 onward), ‘Fine Chemicals’ Committee, Bangladesh Standards and Testing Institute (BSTI), Ministry of Industries, Government of the People’s Republic of Bangladesh.
- ✓ Technical Team Lead (Aug 2017 onward), Technical Working Group formed by Solidaridad Network Asia Limited to “Measuring Water Footprint and Sustainable Use of Water in the Leather Cluster of Savar in Bangladesh”.
- ✓ Member (2016 onward), The National Steering Board of Bangladesh Water Multi-Stakeholder Partnership, Ministry of Water Resources (Bangladesh Water MSP) (Ref: Gazette No. 42.00.0000.038.18.039/15 dated December 6, 2015 of Ministry of Water Resources)
- ✓ Member (2017 onward), Industrial Water and Wastewater Management Work Stream, Bangladesh Water MSP, Prime Minister’s Office, Government of the People’s Republic of Bangladesh.
- ✓ Member (2017), Committee to develop guideline for ‘Production, Processing, Packaging and Exporting Charcoal from Jute Stick’, Ministry of Textiles and Jute, Government of the People’s Republic of Bangladesh.
- ✓ Member, Committee to Develop Guideline to Establish Bio-Ethanol Plants in Bangladesh (2016-17), Ministry of Power, Energy and Mineral Resources, Government of People’s Republic of Bangladesh.

Editor and Reviewer:

- ✓ Topic Editor (Sept 2026 onward), "Appropriate Technology and Sustainability", publisher: MDPI, covered in Multimodal Technologies and Interaction (IF: 3.3), Processes (IF: 3.3), Sustainability (IF: 3.4), and Technologies (IF 4.1).
- ✓ Editor, "Pesticide Residue in Foods: Sources, Management, and Control", 2017, Publisher: Springer, New York (ISBN: 978-3-319-52681-2 (Print) 978-3-319-52683-6 (Online)).
- ✓ Member, Proceedings Sub-Committee, 4th International Conference on Chem Eng (ICChE) 2014, Dec 29-30, 2014, Dhaka, Bangladesh.
- ✓ Editor, Program and Abstract Booklet, 85th Annual ACS Colloid and Surface Science Symposium 2011, Montreal, Canada.
- ✓ Editor, Book entitled: *Cascades Festschrift in Honour of Professor Emeritus M.A. (Tony) Whitehead including The Richard Hart Symposium Scientific Papers and Reminiscences* (Revised First Edition), Cascades Inc., Quebec (ISBN-13: 978-2-9808323-6-9).
- ✓ Editor, 'ChE Thoughts' (www.chethoughts.com), the Chemical Engineering and Science.
- ✓ Journal Reviewer, 'Molecular Pharmaceutics' (ACS Publication), 'Sensors' (MDPI Publication).

Short Course and Workshop:

- ✓ Instructor, Workshop on Industrial Pollution Control, the Central Bank, Bangladesh, 2017.
- ✓ Instructor, Short Training on Effluent Treatment Plant Management, PaCT Bangladesh, IFC-World Bank, 2015.
- ✓ Instructor, Good Laboratory Practices 2015: Water Quality Analysis, Department of Environment, GoB.
- ✓ Instructor, Technical Writing and Presentation Workshop 2013, Department of Chemical Engineering, BUET, Dhaka.
- ✓ Instructor, Technical Writing and Presentation Workshop 2011, Department of Chemical Engineering, BUET, Dhaka.

Organizational Activities and Experiences:

- ✓ Co-Chairman, International Conference on Appropriate Technology and Sustainability (ICATS) 2027 (www.icatbuett.com), Jan 19-21 2027, Dhaka 1000, Bangladesh.
- ✓ General Secretary, BUET Teachers Association 2026, Bangladesh University of Engineering and Technology, Dhaka 1000, Bangladesh.
- ✓ Treasurer, BUET Teachers Association 2025, Bangladesh University of Engineering and Technology, Dhaka 1000, Bangladesh.
- ✓ Advisory Board Member (June 2024 onward), International Research Center on Sustainable Systems, University of Győr, Hungary
- ✓ Assistant Provost (2018 - 2021), Ahsanullah Hall, BUET.
- ✓ Member, Organizing Committee, 4th International Conference on Food Security and Nutrition (ICFSN 2017), Prague, Czech Republic, 2017.
- ✓ Member Secretary, 4th International Conference on Chem Eng (ICChE) 2014, Dhaka, Bangladesh.
- ✓ Member, Organizing Committee, CSACS 11th Annual Meeting, May 9, 2013, Montreal, Canada.
- ✓ Member, Organizing Committee, CSACS 10th Annual Meeting, May 9-10, 2012, Montreal, Canada.
- ✓ Member Secretary, 'Sigma Xi Montreal Chapter', from Jul 2011 to June 2013.
- ✓ Convener, Student Poster Session and Poster Competition, 3rd ICChE Conference 2011, Dhaka, Bangladesh.
- ✓ Convener, Student Poster Session and Poster Competition, 2nd ICChE Conference 2008, Dhaka, Bangladesh.
- ✓ Moderator, 'ChemicalBUET', an organization dedicated to the students, academics and alumni of the Department of Chemical Engineering, BUET.

Professional Accreditation and Association:

- ✓ Professional Engineer: Member, Institute of Engineers Australia (MIEAust)
- ✓ Fellow (Life Member), Institute of Engineers Bangladesh (FIEB).
- ✓ Alumni Association: Bangladesh Chemical Engineering Alumni Association.

Language: Fluent in English and Bengali.

Referee: References available upon request.

Research Publications:

(Citations: 3628; h-index: 25, i10-index: 42; source: google scholar, date: 10-Sept-2026)

Patents:

1. **M.S. Khan**, M. N. Islam, I. Ahmed, M. I. Anik and M. S. Ferdous, "A Device & the Apparatus for (Uric Acid) Analysis of Bio-fluid", Bangladesh Patent, 1006215, 05 Mar, 2020; US Provisional Patent, 62672580.
2. **M.S. Khan**, M. N. Islam, and M. Mursalat, "Low-Cost Paper Diagnostics for the Qualitative and Quantitative Detection of Formaldehyde (Formalin, Primary Aldehyde) in Food, Water and other Biofluids", Bangladesh Patent, 1006040, 16 Sept, 2018; US Provisional Patent, 62457901, 12 Feb, 2017.
3. **M.S. Khan**, X. Li, G. Thuas, W. Shen and G. Garnier, "Testing Device for Identifying Antigens and Antibodies in Biofluids", PCT/AU2010/001255, 24 Sept, 2009; US20120322086 A1, US11391746B2 (Jul 19, 2022), CN102576017A, EP2480885A1, EP2480885A4, WO2011035385A1.
4. W. Shen, J. Tian, X. Li, **M.S. Khan**, G. Garnier, "Methods for Fabricating Microfluidic Systems", PCT/AU2009/000889, 10 July, 2009; US20120009662, CN102119056A, EP2300165A1, WO2010003188A1.
5. W. Shen, J. Tian, X. Li, **M. Khan**, G. Garnier, "Method of Fabricating Paper-Based Microfluidic Systems by Printing", Australian Provisional Patent, 2008905776, 7 Nov, 2008.

Books:

6. **M. S. Khan**, M. M. Shuhita, S. R. Hasan, M. S. I. Maruf and S. Sultana (2024), "Chemical Management for Cleaner Production in Textiles", version 01, pp: i-iii, 1-275, Publisher: Solidaridad Network Asia (www.solidaridadnetwork.com) (ISBN: 978-984-37-0109-1).
7. "Techniques to Measure Food Safety and Quality", ed. **M. S. Khan**, M. S. Rahman, 2021, Publisher: Springer, New York (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
8. "Pesticide Residue in Foods: Sources, Management, and Control", ed. **M. S. Khan**, M. S. Rahman, 2016, Publisher: Springer, New York; 2017. (Hardcover ISBN 978-3-319-52683-2; eBook ISBN 978-3-319-52683-6).
9. **M.S. Khan**, G. Garnier and W. Shen (2010), "Printing, Specificity and Stability of Bioactive Papers", VDM Publishing House Ltd (ISBN: 978-3-639-31878-4; DOI: 10.13140/RG.2.1.3675.2482).
10. **M.S. Khan**, J. Knapp, A. Clemett, M. Chadwick, M.A. Mahmood (2006), "Managing and Monitoring Effluent Treatment Plants", *Booklet series, Managing Industrial Pollution from Small and Medium Scale Industries in Bangladesh*, R8161-ETP, Department for International Development (DFID), UK (ISBN: 984-8121-08-0; DOI: 10.13140/RG.2.1.1840.2408).

Book Chapters:

11. **M. S. Khan**, M. S. Rahman (2021) "Introduction on Techniques to Measure Food Safety and Quality" (2021), in "Introduction on Techniques to Measure Food Safety and Quality", ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 1, pp. 1-10 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
12. F. Nowshad, N. Mustari, **M. S. Khan** "Overview of Microbial Contamination of Foods and Associated Risk Factors" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 2, pp. 11-30 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
13. S. K. Nabil, N. Mustari, **M. S. Khan** "Sources and Health Impacts of Chemical Contaminants in Foods" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 3, pp. 31-68 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
14. F. Haque, S. Y. Bubli, **M. S. Khan** "UV-vis Spectroscopy for Food Analysis" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 8, pp. 169-194 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
15. S. Y. Bubli, F. Haque, **M. S. Khan** "Gas Chromatography and Mass Spectroscopy (GC-MS) Technique for Food Analysis" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 9, pp. 195-218 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
16. F. Nowshad, **M. S. Khan** "Electronic Tongue for Food Safety and Quality Assessment" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 11, pp. 229-248 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
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98. **Khan, M. S.**, Thouas, G., Whyte, G., Shen, W. and Garnier, G. (2011). "Blood Typing Using Chromatographic Separation on Antibody Treated Paper." *International Conference on Chemical Engineering (ICChE) 2011*, Dhaka, Bangladesh. pp. 275-280. (DOI: 10.13140/RG.2.1.2913.3928).
99. **M.S. Khan**, D. Fon, X. Li, J. Forsythe, G. Thouas, G. Garnier, W. Shen (2008), "Printing Biomolecules Part-1: Achieving Total Control of Biomolecule Delivery Using Ink Jet Printing", in: D. Chen (Ed.), *Chemeca 2008*, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW, 2008, pp. 744-753. (DOI: 10.13140/RG.2.1.5141.6163).
100. **M.S. Khan**, D. Fon, X. Li, J. Forsythe, G. Garnier, W. Shen (2008), "Ink Jet Printing of Biomolecules on Porous Surfaces", in: N. Ahmed (Ed.), *2nd International Conference on Chemical Engineering 2008*, Bangladesh University of Engineering & Technology, Dhaka, Bangladesh, 2008, pp. 171-176. (DOI: 10.13140/RG.2.1.4715.6329).
101. D. Kannangara, **M.S. Khan**, W. Shen (2008), "The Inertial Effects on the Capillary Flow in Surface Grooves", in: G. Webber (Ed.), *Chemeca 2008*, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW, 2008, pp. 865-875. (DOI: 10.13140/RG.2.1.2356.3369).
102. **M.S. Khan**, D. Kannangara, W. Shen, G. Garnier (2007), "Mechanism of Non-Coalescence for Liquid Droplets at the Air-Liquid Interface", in: M. Rhodes (Ed.), *Chemeca 2007*, Engineers Australia, Melbourne, 2007, pp. 101-109. (DOI: 10.13140/RG.2.1.3806.3205).
103. Kabir, K. B. and **Khan, M. S.** (2007). "Engineering Education in Bangladesh: Some New Approaches." *National Symposium on Engineering and Technological Education*, Dhaka, Bangladesh. (DOI: 10.13140/RG.2.1.1447.0245).
104. **Khan, M. S.**, Ali, M. S., and Ahmed, S. (2007). "An Experimental Investigation of the Performance of an Effluent Treatment Plant." *APIEMS & CIIE Conference 2007*, Dept. of Industrial Engineering and Management, National Yunlin University of Science and Technology, Kaohsiung, Taiwan, T1-R05. (DOI: 10.13140/RG.2.1.4330.6083).

Industrial/Technical Reports:

105. **WHO Technical Report** (Feb 2022) on "Manufacturing and Quality Control Handbook of Fabric Masks - Specifications, Quality Control Parameters, Manufacturing and Usage Guidelines for Non-Medical Fabric Masks for Community Use", World Health Organization (www.who.int).
106. **WHO Technical Report** (Dec 2021) on "Manufacturing and Quality Control Handbook of Fabric Masks - Specifications, Quality Control Parameters, Manufacturing and Usage Guidelines for Non-Medical Fabric Masks for Community Use", World Health Organization (www.who.int).
107. **WHO Technical Report** (Sept 2021) on "Prequalification - Medical Devices and Personal Protective Equipment", World Health Organization (www.who.int).
108. **Working Paper** (August 2021) on "Transforming the Medical PPE Ecosystem – Joint action can protect healthcare workers with effective and high-quality personal protective equipment", The Global Fund (www.theglobalfund.com).
109. **WHO Interim Guidance** (23 December 2020) "Rational use of personal protective equipment for COVID-19 and considerations during severe shortages", World Health Organization (www.who.int).
110. **Technical Reports and Regulatory Guidelines for DGDA in collaboration with WHO, JICA, USAid-USP as a part of Emergency Response of Covid-19** (Aug – Nov 2020) – i. Medical Device Registration Regulatory Systems Strengthening: Checklist/

Guidance for Ventilator; **ii.** Develop Guidance for Manufacturers based on Quality Considerations included in Visual Inspection Checklist: Fabric Mask and Gowns, **iii.** Guidance for Procurement Agents based on Quality Considerations - Acceptable Quality Limit (AQL) Inspection for: Gowns, Coveralls and Fabric Mask; **iv.** Medical device registration Regulatory Systems Strengthening; **v.** Medical device registration Regulatory Systems Strengthening: Checklist/Guidance for Ventilator, Directorate General of Drug Administration (www.dag.gov.info), World Health Organization (www.who.int), Japan International Cooperation Agency (www.jica.go.jp), and United States Agency for International Development (www.usaid.gov), United States Pharmacopeia (www.usp.org).

111. **Technical Report** (August 2020) on "Identification of local options for quality testing of personal protective equipment (PPE) during COVID-19 Pandemic", United Nations Development Programme (UNDP) (www.undp.org).
112. **USAid-USP report on Technical Report and Guidelines on** (2020) "Emergency Response of Covid-19 – Visual Inspection Checklist for – Gowns, Coveralls, Fabric Masks, Surgical Masks, N95/KN95 Respirators", United States Agency for International Development (www.usaid.gov), United States Pharmacopeia (www.usp.org).
113. **Technical Report** (January 2020) for Solidaridad "Promoting Safe Use of Chemicals (PSUC): Mapping and Risk Assessment of Chemicals use in the Leather Industry of Bangladesh", Solidaridad Network Asia (www.solidaridadnetwork.org).
114. **Technical Report** (August 2018) for Solidaridad "Analysing the Prospect of Sustainability Leather Production in Bangladesh – A Comprehensive study on production process, chemical consumption, water footprint calculation, pollution impact assessment, cleaner production options and business model development for Bangladesh Leather Sector", Solidaridad Network Asia (www.solidaridadnetwork.org).
115. **Khan, M. S.**, Knapp, J., Clemett, A., and Chadwick, M. (2006). "Improving Effluent Treatment and Management." *Report, Key Document, R8161 - Section 7*, Research for Development, Dept for Intl. Development (DFID), UK. (DOI: 10.13140/RG.2.1.3282.0327).
116. **Khan, M. S.** (2006), "Waste (Effluent) Management Plan and Effluent Treatment Plant Design." Confidential Report, Renata Ltd.

Dissertations:

117. **M.S. Khan**, "Bioactive Papers: Printing, Activity and Stability", PhD Thesis, Monash University, Melbourne, 2009, pp i-xxvi, 1-288, A1-89. (DOI: 10.13140/RG.2.1.1242.2240)
118. S. Ahmed and **M.S. Khan**, "Study of Wastewater Treatment Process of a Synthetic Fabric Dyeing Plant", B.Sc. Eng. (Chem) Thesis, Bangladesh University of Engineering and Technology (BUET), Dhaka, 2004, pp 1-97. (DOI: 10.13140/RG.2.1.3937.3921)

Manuscript Submitted/in Preparation:

119. M. M. Rahman, S. C. Shanko, S. C. Das, S. A. Esha, **M. S. Khan**, "Towards a Sustainable and Circular Apparel Supply Chain: Opportunities, Challenges, and an Industry Scenario, Manuscript will be submitted to **Sustainability** (publisher: Elsevier).
120. R. Jahan, **M. S. Khan**, "IA Comparative Analysis of Fiber Performances and Environmental Impacts in Medical Textiles Produced from Sustainable Natural Bast Fibers", Manuscript will be submitted to **Textile** (publisher: MDPI).
121. M. Momtaz, S. Yesmin, **M. S. Khan**, "A Comprehensive Review on Analytical Techniques for Food Quality Monitoring", Manuscript is under preparation and will be submitted to **Agriculture & Food Security** (publisher: Springer Nature).
122. M. A. Uddin, **M. S. Khan**, "A Comprehensive Assessment of Microplastics in Textile Sector: Generation, Impacts, Management, and Mitigation", Manuscript is under preparation and will be submitted to **Journal of Environmental Management** (publisher: Elsevier).
123. M. A. Shakib, **M. S. Khan**, "Advancements and Scopes of Point of Care Diagnostics for the Early Detection of Thalassemia", Manuscript is under preparation and will be submitted to **Diagnostics** (publisher: MDPI)
124. S. Rush, T. Mahmud, **M. S. Khan**, A. Rahman, M. Arifuzzaman, "S. C. Chaity, Noor-E-Meem, M. A. Shakib, A. Hossain, N. Tahman, M. S. Khan, M. A. Hossain, M. Sultana, "Development and Validation of a Comprehensive Multi-Antigenic Later-Flow-Based Diagnostic Platform for Detection of Foot-and-Mouth Disease Virus in Bovine Sera Samples", Manuscript Submitted to Journal of Water Process (publisher: Springer Nature)
125. S. C. Chaity, Noor-E-Meem, M. A. Shakib, A. Hossain, N. Tahman, **M. S. Khan**, M. A. Hossain, M. Sultana, "Development and Validation of a Comprehensive Multi-Antigenic Later-Flow-Based Diagnostic Platform for Detection of Foot-and-Mouth Disease Virus in Bovine Sera Samples", Manuscript is under preparation and will be submitted to **Clinical Chemistry** (publisher: ACS)
126. S. C. Chaity, Noor-E-Meem, M. A. Shakib, A. Hossain, N. Tahman, **M. S. Khan**, M. A. Hossain, M. Sultana, "Development and Validation of a Comprehensive Multi-Antigenic Later-Flow-Based Diagnostic Platform for Detection of Foot-and-Mouth Disease Virus in Bovine Sera Samples", Manuscript is under preparation and will be submitted to **Clinical Chemistry** (publisher: ACS)

Non-reviewed Articles and Abstracts/Extended Abstracts in Conference Proceedings:

1. M.M. Uddin, S.K. Amit, S.R. Islam, R. Rahman, S. Sameera, **M.S. Khan**, "Analyzing Time Dynamic Concentration of Formaldehyde in Fresh and Formalin Treated Fish 'Labeo rohita'", 4th International Conference on Chemical Engineering (ICChE) 2014, Dhaka, Bangladesh, 2014, pp. 277-282. (DOI: 10.13140/RG.2.1.5117.0409)
2. **M.S. Khan**, M.A. Whitehead, T.G. van de Ven, "Semi-empirical Molecular Modelling of Picloram specific Antibody", *The 11th Annual CERMM Symposium*, Montreal, Canada, 2011.
3. **M.S. Khan**, M.A. Whitehead, T.G. van de Ven, "3D Molecular Simulation of Antigen-Antibody Interaction", *The 85th Colloids and Surface Science Symposium*, Montreal, Canada, 2011.

4. **M.S. Khan**, W. Shen, G. Garnier, "Thermal Stability of Horseradish Peroxidase Enzymatic Papers", in: R. Coghill (Ed.), *63rd Appita Annual Conference and Exhibition*, APPITA, Melbourne, Australia, 2009, pp. 273-280.
5. D. Kannangara, **M.S. Khan**, W. Shen, "An Analysis of Effects of Internal and Surface Sizing on Ink Jet Printing Quality", in: R. Coghill (Ed.), *63rd Appita Annual Conference and Exhibition*, Melbourne, Australia, 2009, pp. 195-200.
6. **M.S. Khan**, W. Shen, G. Garnier, "Stability and Reactivity of Enzymatic Papers", *2009 AIChE Annual Meeting*, Nashville, TN, pp. 190a. (DOI: 10.13140/RG.2.1.4330.6083)
7. D. Fon, **M. S. Khan**, W. Shen, M.K. Horne, C. Parish, D.R. Nisbet, J.S. Forsythe, (2009) "Neural Stem Cell Response to Hydrophilic Patterned Electrospun PCL", *11th Pacific Polymer Conference*, Carins, Australia, 2009.

Major Conference, Workshop and Public Lectures:

1. **Hazard Analysis and Safety Protocols for Analytical Laboratory.**
Keynote Lecture, Agricultural and Rural Transformation for Nutrition, Entrepreneurship, and Resilience Project, Bangladesh Jute Research Institute (BJRI), Dhaka, June 2026.
2. **The Whitepaper on Water Reuse and Recycling in Bangladesh.**
Keynote Lecture, Dissemination Workshop on the Whitepaper on Water Reuse and Recycling in Bangladesh, World Bank Group and WARPO, May 2026, WARPO, Dhaka..
3. **Innovation, Invention and Intellectual Property: Triple Helix of University-Industry-Government Relationship in Bangladesh Context.**
Keynote Lecture, Workshop on Strengthening Intellectual Property Rights Practices in Higher Education, Institutional Quality Assurance Cell (IQAC), Shahjalal University of Science and Technology (SUST), Sylhet, May 2026.
4. **Innovation, Invention and Intellectual Property: Triple Helix of University-Industry-Government Relationship in Bangladesh Context.**
Keynote Lecture, Intellectual Property Day - 2026, University Grants Commission (UGC), Dhaka, Apr 2026.
5. **Innovation, Invention and Intellectual Property: Triple Helix of University-Industry-Government Relationship in Bangladesh Context.**
Keynote Lecture, Intellectual Property Day - 2026, University Grants Commission (UGC), Dhaka, Apr 2026.
6. **Scenario of Textile Wastewater Management in Bangladesh.**
Invited Lecture, Seminar on Water Efficiency, Recycling and ZLD, BESTSELLER, Dhaka, Apr 2026.
7. **Process Systems Engineering Approaches for Sustainable Apparel Manufacturing.**
Invited Lecture, 4th International Process Systems Engineering Workshop, Istanbul, Turkey, Mar 2026.
8. **Scopes and Barriers to Utilize Treated Water for Industrial Purposes.**
Invited Lecture, Challenges and Opportunities for Effective and Safe Reuse of Treated Wastewater Generated from Water and Sanitation Facilities in Bangladesh, UNICEF, Hotel Sheraton, Dhaka, Nov 2025.
9. **Managing Intellectual Property: The Role of the State and Organization in Innovation.**
Invited Lecture, Workshop on Intellectual Property Management, Research and Innovation Centre for Science and Engineering (RISE), Bangladesh University of Engineering and Technology (BUET), Dhaka, Nov 2025.
10. **Inception Action Plan: White Paper on Water Reuse and Recycling in Bangladesh.**
Keynote Presentation, Inception Workshop of Developing White Paper on Water Reuse and Recycle in Bangladesh, World Bank Group and WARPO, Nov 2025, WARPO, Dhaka.
11. **Water Resue and Recycle: Challenges, Learnings and Opportunities.**
Keynote Presentation, Conference on Water Reuse and Recycle: Launching and National Alliance, World Bank Group and WARPO, Dhaka, May 2025.
12. **Opportunities of Cleaner Production in the Textile Sector of Bangladesh.**
Keynote Lecture, Conference on Towards a Sustainable Future - Waste Management and Recycling in Bangladesh, organized by German Asia-Pacific Business Association, German RETexch partnership and Embassy of the Federal Republic German, Dhaka, May 2025.
13. **Circularity and Sustainability in Apparel Sector: Constraints and Opportunities.**
Keynote Lecture, Conference on Sustainability, University of Gyor, Hungary, Nov 2024.
14. **Applied Research in Biotechnology and Industrial Sustainability: A Chemical Engineering Perspective.**
Research Lecture, Department of Chemical and Petroleum Engineering, Sharif University of Technology, Sept 2024.
15. **Biotechnology Research in Chemical Engineering.**
Research Lecture, Department of Chemical Engineering, King Fahd University of Petroleum and Minerals (KFUPM), Aug 2024.
16. **Quality Assurance of PPE in Emergency Response of COVID-19.**
Webinar on Living with Covid 19: Issue, Challenges and the Way Forward, BUET Alumni Association, February 2021.
17. **Visual Inspection for PPE (Gowns, Coveralls, Fabric Masks, Surgical Masks, N95/KN95 Respirators).**
Seminar on Workplace Biosafety, Institute of Engineers' Bangladesh, Dhaka, January 2021.
18. **Quality Assurance of PPE in Emergency Response of COVID-19: Challenges and Lessons Learned.**

Webinar on Technical and regulatory aspects of Personal Protective Equipment (PPE) in the COVID-19 Response in Bangladesh, Director General of Drug Administration (DGDA), Dhaka, December 2020.

19. **Bioactive Papers: A Futuristic Tool for Health, Food, and Environmental Applications.**
Sixth International Conference on Chemical Engineering (ICChE 2020), Dhaka, December 2020.
20. **Chemical Mapping in Textile and Leather Sector: Consumption, Safety and Management.**
International Symposium on Chemical Safety and Security Management 2020, Shena Malancha, Dhaka Cantonment, February 2020.
21. **Leather Chemical Mapping: Consumption, Safety and Management.**
Promoting Safe Use of Chemicals (PSUC), Solidaridad Asia Network, Pan Pacific Sonargaon, Dhaka, Feb 2020.
22. **Industrial Water and Sanitation: Choosing and Managing ETP, STP and Rainwater Harvesting for Textile Industries.**
ETP Training Series, Bangladesh University of Engineering and Technology, BUET, May 2019.
23. **Workshop on Textile Chemical Safety and Management.**
TexChem Training Series, Bangladesh University of Engineering and Technology, BUET, April 2019.
24. **Technical Workshop on Textile Effluent Management: Choosing, Monitoring and Managing ETps.**
ETP Training Series, Bangladesh University of Engineering and Technology, BUET, December 2018.
25. **Evaluation of Present and Future Wastewater Impacts of Textile Dyeing Industries in Bangladesh.**
2nd Water Bangladesh Int'l Expo, International Convention City, Bashundhara, Dhaka, Oct 2018.
26. **Zero Discharge of Hazardous Chemicals (ZDHC): Future of Environment Friendly Business.**
Dye+Chem Bangladesh Expo'17, International Convention City, Bashundhara, Dhaka, August 2017.
27. **Workshop on Capacity Building on Environmental & Social Safeguard.**
Bangladesh Bank, Central Bank of Bangladesh, BRAC-CDM, Gazipur, September 2017.
28. **Short Training on Effluent Treatment Plant Management for Industries and Buyers.**
Bangladesh PaCT, IFC World bank Group, Dhaka, November 2015.
29. **Molecular Modelling of Antibody-Antigen Interactions to Guide Experimentation.**
Tony Whitehead Symposium, Otto Maass Chemistry Building, McGill University, June 2015.
30. **Training on Good Laboratory Practice for Officials of the Department of Environment (DoE).**
Department of Chemical Engineering, BUET. March-April 2015.
31. **Workshop on Technical Presentation and Poster Preparation.**
Satyen Bose Science Club, BUET, Dhaka, March 2015.
32. **Bioactive Papers: Past, Present and Future.**
April 2013: Biomedical Engineering Department, Faculty of Medicine, McGill University.
March 2013: Department of Chemical Engineering, Bangladesh University of Engineering and Technology.
February 2012: Sigma Xi Lecture, Sigma Xi Montreal Chapter, Montreal, Canada.
33. **Development of Antibody Based Filters: Theoretical and Experimental Approaches.**
May 2013: 2013 BIO World Congress on Industrial Biotechnology, Montreal, Canada.
May 2013: CCG UGM & Conference 2013, Montreal, Canada.
February 2013: PaperWeek Canada 2013, Montreal, Canada.
34. **3D Molecular Modelling of Antigen-Antibody Interactions**
2013 BIO World Congress on Industrial Biotechnology, May 2013, Montreal, Canada.
35. **Detection and Deactivation of T7 Bacteriophages using Antibody Conjugated Beads.**
CSACS ECO Grant Winner Lecture, CSACS Annual Meeting, May 2013.
36. **Technical Writing and Presentation.**
April 2013: *Workshop on Technical Writing and Presentation for the Undergrad Students* of Dept. of Chem Eng, BUET.
Jan 2010: *Workshop on Technical Writing and Presentation for the Undergrad Students and Fresh Graduates* of Dept. of Chemical Engineering, BUET.
37. **Blood Typing Using Chromatographic Separation on Antibody Treated Paper.**
International Conference on Chemical Engineering (ICChE) 2011, Dhaka, Bangladesh.
38. **3D Molecular Simulation of Antigen-Antibody Interaction.**
The 85th Colloids and Surface Science Symposium, Montreal, Canada, 2011.
39. **Semi-empirical Molecular Modelling of Picloram Specific Antibody.**
The 11th Annual CERMM Symposium, Montreal, Canada, 2011.

40. ***Molecular Modelling of Antigen-Antibody Interaction using the PM3 Semi-Empirical Method.***
Fundamental and Applied Pulp and Paper Modelling Symposium (FAPPMS) 2011, Montreal, Canada.
41. ***Managing Pollution from Small and Medium Scale Industries in Bangladesh.***
Sigma Xi Young Researcher Lecture, 2011, Sigma Xi Montreal Chapter, Montreal, Canada.
42. ***Stability and Reactivity of Enzymatic Papers.***
2009 AIChE Annual Meeting, Nashville, TN, USA.
43. ***Thermal Stability of Horseradish Peroxidase Enzymatic Papers.***
63rd Appita Annual Conference and Exhibition, 2009, APPITA, Melbourne, Australia.
44. ***An Analysis of Effects of Internal and Surface Sizing on Ink Jet Printing Quality.***
63rd Appita Annual Conference and Exhibition, 2009, APPITA, Melbourne, Australia.
45. ***Printing Biomolecules Part-1: Achieving Total Control of Biomolecule Delivery Using Ink Jet Printing.***
Chemeca 2008, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW.
46. ***Ink Jet Printing of Biomolecules on Porous Surfaces.***
International Conference on Chemical Engineering (ICChE) 2008. Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.
47. ***The Inertial Effects on the Capillary Flow in Surface Grooves.***
Chemeca 2008, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW, Australia.
48. ***Mechanism of Non-Coalescence for Liquid Droplets at the Air-Liquid Interface.***
Chemeca 2007, Engineers Australia, Melbourne, Australia.
49. ***Introductory of Effluent Treatment Plant (ETP) Network.***
Workshop on Supporting Improved Effluent Treatment in the Textile Sector in Bangladesh, BRACK INN, Dhaka, Bangladesh, 2005
50. ***Pollution Project: Investment Support to MACH.***
DUTCH Club, Dhaka, Bangladesh, 2005.

Major Engineering/Consultancy Projects:

17. Name of assignment or project: Groundwater management initiatives under Field trial of water efficiency and effluent discharge quality measurement toolkits at the Apparel Industry in Shreepur (Gazipur)

Year: 2026 -2027

Location: Industrial Clusters (Shreepur, Gazipur, Bangladesh)

Client: UNICEF

Main project features:

- Industrial Water Metering and Auditing,
- Flow Segregation for Pollution Load Management,
- Water Recycling and Reuse within Industries,
- Industrial Mapping, Inventory, and Classifications,
- Integrated Groundwater and Surface Water Modeling (Shreepur (Gazipur) Focus),
- Regulatory Framework Development and Publication.

Position held: Project Lead.

Key Activities:

- Baseline Assessment: i) Literature Review, ii) Data Collection, and iii) Policy Review,
- Wastewater Assessment,
- Technological Design and Piloting,
- Governance Framework,
- Policy Recommendation on Water Reuse and Recycling,
- Policy Recommendation on Solid Waste Management.

16. Name of assignment or project: Wastewater Management in Chottogram Bangladesh – A pre-feasibility study

Year: 2025 -2026

Location: Industrial Clusters (Chottogram, Bangladesh)

Client: The Embassy of the Netherlands (EKN), Bangladesh

Consortium Partners: Haskoning, ICTS, EY, SNV

Main project features:

- Developing Wastewater Management Framework for Chottogram, Bangladesh,
- Technical Assessment of Sludge Management Practices,
- Market information/market intelligence,
- Assessing Financial Impact,
- Governance Framework,
- Operational Framework,
- Create a marketing and communication plan to promote sludge products and reuse strategy,
- Provide implementation roadmap: phases, timeline, resources, stakeholders, and monitoring plan.

Position held: Technical Consultant (PPP and Wastewater).

Activities performed:

- Baseline Assessment: i) Literature Review, ii) Data Collection, and iii) Policy Review,
- Governance Framework,
- Policy Recommendation on Water Reuse and Recycling,
- Policy Recommendation on Solid Waste Management.

15. Name of assignment or project: Whitepaper on Water Reuse Potential in Bangladesh

Year: 2024 -2026

Location: Industrial Clusters (Dhaka, Savar, Tongi, Gazipur, Narayanganj)

Client: World Bank Group

Main project features:

- Developing a Whitepaper on Water Reuse Potential in Bangladesh to facilitate cross-sectoral water reuse in Bangladesh
- Developing ToR for National Alliance on Water Reuse and Recycling (A4R)

- Developing a case study to reuse Dasherbandi STP-treated water for Industrial and Household purposes
- Developing case studies for setting up a central water recycling plant in industrial belt(s)
- Contribute to Developing National Water Policy
- Contribute to Developing Groundwater Management Policy
- Developing Industrial Water Information Network (iWIN)
- Setting Framework for Centre for Water Reuse and Recycling
- Stakeholder Consultations and Workshops
- Developing National Water Pricing Guideline.

Position held: Lead Consultant.

Activities performed: Design training modules on

- Baseline Assessment: i) Literature Review, ii) Data Collection, and iii) Policy Review;
- Gap Analysis;
- Economic and Financial Analysis;
- Social and Environmental Impact Assessment;
- Policy Recommendation on Water Reuse and Recycling;
- Policy Recommendation on Water Pricing;
- Develop ToR for Water Reuse Alliance.

14. Name of assignment or project: Industrial Consultancy Projects on Waste Management, Designing/Selecting Appropriate Technologies for Effluent Treatment Plant (ETP), ETP Assessment and Monitoring, Water Mapping, Cost-Benefit Analysis, Setting-up Science-Based Target Initiatives (SBTi), Higg Reporting

Year: 2014 onward

Location: Bangladesh (Nationwide)

Client: Local Industries (Textile, Pharmaceutical, and Food Industries)

Main project features:

- Help industries to manage and monitor waste management
- Help industries to identify Appropriate Technology for waste management
- Help industries reporting Higg, SBTi, Leed, ZDHC
- Water Mapping and Implementing 3R options to reduce the use of groundwater.

Position held: Consultant

Activities performed:

- To help industries calculate existing Pollution Load and ETP-STP Design basis.
- To meet potential ETP-STP suppliers/designers, and to critically review submitted ETP design proposals and related documents.
- To work with the ETP-STP supplier/designer to finalize ETP-STP design basis, plant design, sizing of different treatment units and accessories, flow segregation options, and water recycle options.
- To work with industry management to finalize the ETP-STP supplier/designer and the technical proposal. To supervise ETP construction and installation.
- To supervise the installation of zero-discharge (water reuse) options.
- To help optimize chemical dosing and biological treatment. To help diagnose the treatment performance of the major treatment units of their ETP-STP
- Water Mapping and Cost-Benefit Analysis.
- Setting-up Science-Based Target Initiatives (SBTi) and i-REC Certification
- Higg Reporting

13. Name of assignment or project: Reclaiming Sustainability - Developing training modules for Chemical Management and Safety Issues of Apparel Sector

Year: 2023 -2024

Location: Apparel Manufacturing Countries (Bangladesh, India, Pakistan, Vietnam, China, etc)

Client: Solidaridad Network Asia

Main project features:

- To provide the capacity building of chemical safety and effective use of chemicals in the Apparel Sector.
- To ensure that all target groups of the apparel sector are aware of the best chemical practices in the industry (floor workers, Technician Level, Senior Management/Owners).

- To ensure that the content is owned delivered and contextualized to the real life situation.

Position held: Lead Consultant;

Activities performed: Design training modules on

- Introduction of Process Sequence and Chemical Use of Knit Dyeing;
- Introduction of Process Sequence and Chemical Use of Cotton Woven Dyeing;
- Introduction of Process Sequence and Chemical Use of Denim Dyeing;
- Safe Procedures of Chemical Storage;
- Safety and Security of Textile Chemicals;
- Health Hazard and Environmental Impact of Textile Chemicals;
- Restricted Substances List: Chemical Compliance and Legislations.

12. Name of assignment or project: Environmental Sustainability Through Local Capacity in Textile Chemical and Waste Management (ESTex) (www.estexbd.com)

Year: 2018 -2021

Location: Bangladesh (Dhaka, Chittagong, Gazipur, Tongi, Shafipur, Kaliakoir, Narayanganj)

Client: European Fund (€1.14M for 3yrs)

Main project features:

- Wastewater Management: Capacity Building and Promoting Local Innovation
- Chemical Survey: Chemical Mapping;
- ETP Sludge Characterization and Management: Sludge Mapping
- Organizing Workshops, Seminars and Training on Chemical Safety, Management;
- Laboratory Analysis of Toxic and Restricted Substances in Chemicals: Capacity Building of Local Laboratories;

Position held: Project Manager (and Principal Investigator);

Activities performed:

- To supervise and coordinate project team.
- Develop and execute program activities.
- Set meeting and collaboration with donor agencies, industries, business associations, and government agencies.
- Arrange trainings, workshops, seminars and symposium for stakeholders.
- Prepare annual reports and audit documents for funding agencies.

11. Name of assignment or project: The National Steering Board of Bangladesh Water Multi-Stakeholder Partnership, Ministry of Water Resources (Bangladesh Water MSP) (Ref: Gazette No. 42.00.0000.038.18.039/15 dated December 6, 2015 of Ministry of Water Resources)

Year: 2016 - 2021

Location: Bangladesh (Nationwide)

Client: Ministry of Water Resources

Main project features: Help local government to develop policy to manage water use, to manage and monitor pollution.

Position held: Member

10. Name of assignment or project: Industrial Water and Wastewater Management Work Stream, Bangladesh Water MSP, Prime Minister's Office, Government of the People's Republic of Bangladesh.

Year: 2017 - 2021

Location: Bangladesh (Nationwide)

Client: Prime Minister's Office, Government of the People's Republic of Bangladesh.

Main project features: Help local government to develop policy to manage industrial water use, to manage and monitor industrial pollution.

Position held: Member

09. Name of assignment or project: Measuring Water Footprint and Sustainable Use of Water in the Leather Cluster of Savar in Bangladesh

Year: 2017 - 2019

Location: Bangladesh

Client: Solidaridad Network Asia

Main project features: To develop National Database on Environmental Pollution Impact and Water Footprint caused by BD Tanneries

Position held: Consultant

Activities performed:

- Stakeholder consultations and Focus Group Discussion (FGD)
- Conduct survey on current scenario of Bangladesh leather sector
- Analyze waste generation from different stages of production
- Analyze water footprint of Bangladesh leather sector
- Pollution impact assessment of Bangladesh leather sector
- Analyze sustainable production options
- Business model development

08. Name of assignment or project: Development of National Mercury Profile and Minamata Initial Assessment Report for the Ratification of the Minamata Convention in the People's Republic of Bangladesh (MIA Project)

Year: 2018

Location: Dhaka

Client: United Nations, and Department of Environment, Bangladesh

Main project features: To develop National Mercury Profile and Minamata Initial Assessment Report for the Ratification of the Minamata Convention in the People's Republic of Bangladesh

Position held: Consultant

Activities performed:

- Nationwide/sector wise inventory of Mercury.
- Prepare and present reports on nationwide Mercury profile

07. Name of assignment or project: Bangladesh Energy Efficiency Opportunity: Roadmap for Implementation

Year: 2015-2017

Location: Dhaka

Client: World Bank Group

Main project features: To assess the energy efficiency and conservation (EE&C) potential of sixteen EE end-use technologies and subsectors (for both primary energy (oil, gas and coal) and electricity) in Bangladesh vis a vis "business-as-usual"

Position held: Consultant

Activities performed:

- To help energy auditing of different industrial sectors of Bangladesh including
 - Textile and Garments. To help identifying energy conservation measurements to reduce Energy Consumption.
- To help projecting energy consumption of Bangladesh up to 2030 with and without adopting mitigation options.

06. Name of assignment or project: Environmental Impact Assessment for Western Bangladesh Bridge Improvement Project

Year: 2014

Location: Bangladesh (Nationwide)

Client: JICA

Main project features: Conduct EIA study to develop environmental baseline conditions for Western Bangladesh Bridge Improvement Project (bridges at 105 points).

Position held: Consultant

Activities performed:

- Develop methodologies to measure Water Pollution, Air Pollution, and Noise Pollution at 106 points of bridges in Western Bangladesh.
- Help with sampling to measure Water Pollution, Air Pollution, and Noise Pollution at 106 bridge points in Western Bangladesh.

- Laboratory analysis of samples to measure Water Pollution, Air Pollution, and Noise Pollution at 106 points of bridges in Western Bangladesh. Executive Report preparation.

05. Name of assignment or project: Industrial Chemical Safety and Management

Year: 2016-2017

Location: USA, Bangladesh

Client: Mary Kay O'Connor Process Safety Center, Texas A&M University, USA

Main project features:

- Develop and Analyse Process Safety Management for BD Renewable Industry and Textile Industries.
- Position held: Visiting Research Scholar
- Activities performed:
- Developing Process Safety Management for Bioethanol Production and Distribution.
 - Analysing Chemical Safety and Management Systems for BD Textile Industries.

04. Name of assignment or project: Developing Antibody active paper and cellulose beads for Health and Environmental Applications.

Year: 2010-2013

Location: Canada

Client: McGill University, Canada

Main project features:

- Conduct EIA study to develop environmental baseline conditions for Western Bangladesh Bridge Improvement Project (bridges at 105 points).
- Position held: Post-Doctoral Fellow, Visiting Professor
- Activities performed:
- To develop paper-based sensors to detect and deactivate viruses.
 - To develop antibody active paper and cellulose beads to detect and filter viruses (bacteriophage 'T7').
 - To develop an antibody-based filtration system to filter herbicides from the water source.
 - Computer 3D Homology modelling of Antibody Binding Fragments, and Quantum Calculation of Antibody-Antigen Interaction Energies at different physiological conditions.

03. Name of assignment or project: Biosurface Engineering to Develop Paper Diagnostics for Health and Environmental Applications

Year: 2006-2010

Location: Australia

Client: Monash University, Australia

Main project features: Developing and characterizing bioactive papers for point-of-care diagnosis and health care applications.

Position held: Post-Doctoral Fellow, PhD Researcher

Activities performed:

- To develop low-cost paper diagnostics for instantaneous blood typing.
- Biosurface engineering through ink jet printing.
- To develop enzymatic papers as paper-based biosensors.

02. Name of assignment or project: Managing Pollution from Small-and Medium-Scale Industries in Bangladesh

Year: 2004-2006

Location: Dhaka, Gazipur, Kaliakoir

Client: DFID, USAID, Dept of Env (DoE), Gov. of Bangladesh

Main project features: Qualitative and quantitative identifications of industrial pollution around the Turaag River, and to develop local capacity to manage and reduce pollution.

Position held: Project Engineer

Activities performed:

- Investigate water pollution problems in the Turaag River and the surrounding wetlands.
- Investigate the current practices of effluent treatment in the (composite) textile dyeing industries situated on the bank of the Turaag river.

- Help the industries with Cleaner Production Options.
- Help the industries to select the appropriate Effluent Treatment Plant (ETP) by giving them advice on the treatment process and ETP design/requirement.
- Help the existing ETPs to optimize their chemical dosing, minimize operating cost, and maximize the treatment performance. Provide training/advice for the ETP operators.
- Perform an Environmental Audit for the interested industries.

01. Name of assignment or project: Assessment and Analysis of Bioethanol Production from Grain (Broken Rice and Maize)

Year: 2015 - 2016

Location: Bangladesh

Client: Ministry of Energy/Sunypun Organics Ltd.

Main project features: Prospects and future projection of bioethanol production in BD from grain as a replacement of fossil fuel.

Position held: Consultant (and Principal Investigator)

Activities performed:

- National policy development to produce and distribute bioethanol as a replacement of petrol and octane.
- Assess the impact on national food safety due to bioethanol production from broken rice and maize.
- Analyse physico-chemical properties of bioethanol and bioethanol blend petrol and octane.

Prof. Dr. Mohidus Samad Khan

Director and Professor,
Institute of Appropriate Technology (IAT)
and
Professor
Department of Chemical Engineering
Bangladesh University of Engineering and Technology (BUET)
Dhaka 1000, Bangladesh.