Dr. Mohidus Samad Khan

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

Professor

Department of Chemical Engineering
Bangladesh University of Engineering and Technology (BUET).
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and

Senior Fellow

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Field of Expertise:

Chemical Engineering, Environmental Engineering; Biotechnology; Project Management; Innovation.

Interest and Strength:

Project Management; Cleaner Production; Industrial Sustainability and Circularity, Food and Biotechnology; Chemical and Occupational Safety.

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 on 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 Eng, 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:

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).

Design and Consultancy – Provide consultancy services to Biotechnological and Environmental Projects funded by Govt 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 (confectionary) 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 ESTex Foundation which is a Non-Government Research Organization with a vision to foster environmental sustainability, resource optimization, workplace compliance and technological advancement in industries 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 ($) business conglomerate in Bangladesh with strong footprint in textile, pharmaceutical, 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 Beximco Group.

As the CSO closely working with Beximco Top Management and Admin, 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 group under the headquarters of WHO, such as: i) WHO TAG on PPE team, ii) WHO Prequalification of PPE, MDs and IVDs team, and iii) 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 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 developing Antibody active paper and cellulose beads to detect and filter **bacteriophage 'T7'**. The Theoretical research work aimed to perform molecular modelling of building blocks of Picloram antibody, 3D Homology modelling of Antibody Binding Fragments, and Quantum Calculation of Antibody-Antigen Interaction Energies at 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. Main focuses of the project were to deliver enzymes and proteins in a controlled pattern on paper, to investigate activity, stability, selectivity, aging, fixation and retention of enzymes on paper.

Jan'07 – May'2010: Casual Academic/Sessional Teacher, Monash University, Australia
Course Taught - CHE2165 (Bio-nano Engineering), MEC2404 (Fluids 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 pollution abatement. The project was funded by DFID (UK), USAID (US), Dept of Env (DoE) of Bangladesh Govt; and was undertaken by Bangladesh Centre for Advanced Studies (BCAS), Stockholm Env Inst (SEI) and Uni of Leeds, UK. This project worked to identify and reduce industrial water pollution in the Turaag River and 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:

- ✓ **WHO Grant on 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**
- ✓ **BCEF 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:

- ✓ 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 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 Biotehcnology.
- ✓ '*iCFP2016 Young Scientist Award*' in recognition of the Outstanding Young Research in 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 in national and international level.
- ✓ '*Award of Appreciation*' from the International Conference on Chemical Engineering 2008, Dhaka, Bangladesh, for the contribution to organize ICChE2008 Poster Competition for undergraduate students.
- ✓ BUET Technical Scholarship (2000-04); University Merit Scholarship (BUET).

* The blood typing work was further developed in Monash University and went to win Australian Eureka Prize for Innovation in Technology.

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:

- ✓ Advisory Board Member (March 2024), International Research Center on Sustainable Systems, University of Gyor, Hungary.
- ✓ Member (Nov 2022 onward), Evaluation Teams (ET) for the Engineering Programs un 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 un 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:

- ✓ 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:

- ✓ Assistant Provost (March 2018 onward), 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) ● Member, Institute of Engineers Bangladesh (MIEB).
- ✓ Alumni Association: Bangladesh Chemical Engineering Alumni Association.

Language: Fluent in English and Bengali.

Research Publications:

(Citations: 2450; h-index: 22, i10-index: 32; source: google scholar, date: 1-Sept-2024)

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. "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).
7. "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).
8. **M.S. Khan**, G. Garnier and W. Shen (2010), "Printing, Specificity and Stability of Enzymatic Bioactive Papers", VDM Publishing House Ltd (ISBN: 978-3-639-31878-4; DOI: 10.13140/RG.2.1.3675.2482).
9. **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:

10. **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).
11. 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).
12. 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).
13. 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).
14. 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).
15. 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).
16. M. M. R. Khandaker, **M. S. Khan** "Paper Based Detection Techniques for Food Analysis and Authentication" (2021), ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York, 2021, Chapter 12, pp. 249-282 (ISBN 978-3-030-68635-2 (print)), 978-3-030-68636-9 (Online) (DOI: 10.1007/978-3-030-68636-9).
17. **M. S. Khan**, S. K. Nabil, H. A. Mahbub, M. R. Khandaker (2020), "Bioactive Papers for Health, Food and Environmental Applications", in "Science and Technology Innovation for a Sustainable Economy", ed. M. Hossain, M. Islam, B. Roy, Publisher: Springer Nature, 2020, pp.155-177 (ISBN: 978-3-030-47165-1 (Print), 978-3-030-471668-8 (Online)).
18. M. S. Rahman, K-E. Afaf, Z. A-Attabi, **M. S. Khan,** I. M. Al Bulushi, N. Guizani, N. Al-Habsi, "Selected Sensor Technology Innovation in Food Quality and Safety" (2020), in "Science and Technology Innovation for a Sustainable Economy", ed. M. Hossain, M. Islam, B. Roy, Publisher: Springer Nature, 2020, pp.59-88 (ISBN: 978-3-030-47165-1 (Print), 978-3-030-471668-8 (Online)).
19. **M. S. Khan**, N. Mustari (2020), "Pesticide Residues in Foods: It's Sources and Reduction", in "Handbook of Food Preservation, Third Edition", ed. M. S. Rahman, Publisher: CRC Press, FL, USA, 2020, Chapter 59, pp 1019-1033 (ISBN: 978-1-4987-4048-7).
20. M. N. Islam, S. F. Bint-E-Naser, **M. S. Khan** (2017), "Pesticide Food Laws and Regulations", in "Pesticide Residue in Foods: Sources, Management, and Control", ed. M. S. Khan, M. S. Rahman, Publisher: Springer, 2017, pp. 37-51 (ISBN: 978-3-319-52681-2 (Print) 978-3-319-52683-6 (Online)).

21. M. Debnath, **M. S. Khan** (2017), "Health Concerns of Pesticide", in "Pesticide Residue in Foods: Sources, Management, and Control", ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York; 2017, pp. 103-118 (ISBN: 978-3-319-52681-2 (Print) 978-3-319-52683-6 (Online)).
22. L. Hossain, R. Rahman, **M. S. Khan** (2017), "Alternatives of Pesticides", in "Pesticide Residue in Foods: Sources, Management, and Control", ed. M. S. Khan, M. S. Rahman, Publisher: Springer, New York; 2017, pp. 147-165 (ISBN: 978-3-319-52681-2 (Print) 978-3-319-52683-6 (Online)).
23. L. Hossain, S. F. Bint-E-Naser, **M. S. Khan** (2017), "A Case Study: A Review on Prospects and Constraints of Bioethanol Production in Bangladesh", in "Biofuels: Advances & Perspectives", ed. G. Kaushik, S. Chaturvedi, A. Chel, Publisher: Studium Press LLC, USA, 2017, Chapter 5, pp. 69-86 (ISBN: 978-93-85046-22-3).
24. F. Ahmed, A. Ferdous, **M. S. Khan** (2017), "Algae in a vat may power the future: A Review on Algal biodiesel production", in "Biofuels: Advances & Perspectives", ed. G. Kaushik, S. Chaturvedi, A. Chel, Publisher: Studium Press LLC, USA, 2017, Chapter 10, pp. 193-220 (ISBN: 978-93-85046-22-3).
25. M. N. Islam, M. Mursalat, and **M. S. Khan** (2016), "A Review on the Legislative Aspect of Artificial Fruit Ripening", Advances in Food Additives, H. Naegeli, C. S. Huh, et al., Scientific Research Publishing, Chapter 3, pp. 45-69. (ISBN: 978-1-61896-278-2).
26. **M.S. Khan**, and G. Garnier (2014), "Novel Image Analysis Technique to Measure Enzymatic Activity and Stability on Paper Surfaces", Advances in Image Analysis Research, *Ed. R. M. Echon,* Nova Publishers, Chapter 10, pp. 217-238. (ISBN: 978-62948-602-4; DOI: 10.13140/RG.2.1.3413.1041).
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Manuscript Submitted/in Preparation:

110. M. Ahmad, M. A. Abir, M. S. Khan, "Integrated ultrafiltration and reverse osmosis process for recovering process water from textile wastewater: experimental, economic, and environmental analysis", Manuscript is submitted to ***Journal of Environmental Management*** *and under review* (publisher: Elsevier).
111. M. Momtaz, M. S. Khan, "Analysis of Chlorpyrifos Pesticide Residue in Locally Grown Cauliflower, Cabbage, and Eggplant Using Gas Chromatography – Mass Spectrometry (GC-MS) Technique" Manuscript is submitted to ***Foods*** *and under review*(publisher: MDPI)
112. T. Islam, S. Rahman, M. S. Khan, N Sanzida "Integrated Biological Treatment with Optimized Food-Mass Ratio and Hydraulic Retention Time: A Case Study of a Cost-Efficient Approach for Knit type Textile Wastewater", Manuscript submitted to ***Environment, Development and Sustainability*** *and under review* (publisher: Springer Nature).
113. S. Yesmin, M. Momtaz, **M. S. Khan**, "A Review on Health Impacts of Food Adulteration", Manuscript is under preparation and will be submitted to ***Agriculture & Food Security*** (publisher: Springer Nature).

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. ***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.
2. ***Visual Inspection for PPE (Gowns, Coveralls, Fabric Masks, Surgical Masks, N95/KN95 Respirators*.**
   Seminar on Workplace Biosafety, Institute of Engineers' Bangladesh, Dhaka, January 2021.
3. ***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.
4. ***Bioactive Papers: A Futuristic Tool for Health, Food, and Environmental Applications*.**
   Sixth International Conference on Chemical Engineering (ICChE 2020), Dhaka, December 2020.
5. ***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.
6. ***Leather Chemical Mapping: Consumption, Safety and Management*.**
   Promoting Safe Use of Chemicals (PSUC), Solidaridad Asia Network, Pan Pacific Sonargaon, Dhaka, Feb 2020.
7. ***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.
8. ***Workshop on Textile Chemical Safety and Management*.**
   TexChem Training Series, Bangladesh University of Engineering and Technology, BUET, April 2019.
9. ***Technical Workshop on Textile Effluent Management: Choosing, Monitoring and Managing ETPs*.**
   ETP Training Series, Bangladesh University of Engineering and Technology, BUET, December 2018.
10. ***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.
11. ***Zero Discharge of Hazardous Chemicals (ZDHC): Future of Environment Friendly Business*.**
    Dye+Chem Bangladesh Expo'17, International Convention City, Bashundhara, Dhaka, August 2017.
12. ***Workshop on Capacity Building on Environmental & Social Safeguard*.**
    Bangladesh Bank, Central Bank of Bangladesh, BRAC-CDM, Gazipur, September 2017.
13. ***Short Training on Effluent Treatment Plant Management for Industries and Buyers*.**
    Bangladesh PaCT, IFC World bank Group, Dhaka, November 2015.
14. ***Molecular Modelling of Antibody-Antigen Interactions to Guide Experimentation*.**
    Tony Whitehead Symposium, Otto Maass Chemistry Building, McGill University, June 2015.
15. ***Training on Good Laboratory Practice for Officials of the Department of Environment (DoE)*.**
    Department of Chemical Engineering, BUET. March-April 2015.
16. ***Workshop on Technical Presentation and Poster Preparation*.**
    Satyen Bose Science Club, BUET, Dhaka, March 2015.
17. ***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.
18. ***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.
19. ***3D Molecular Modelling of Antigen-Antibody Interactions***
    2013 BIO World Congress on Industrial Biotechnology, May 2013, Montreal, Canada.
20. ***Detection and Deactivation of T7 Bacteriophages using Antibody Conjugated Beads.***
    CSACS ECO Grant Winner Lecture, CSACS Annual Meeting, May 2013.

21. ***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.
22. ***Blood Typing Using Chromatographic Separation on Antibody Treated Paper.***
    International Conference on Chemical Engineering (ICChE) 2011, Dhaka, Bangladesh.
23. ***3D Molecular Simulation of Antigen-Antibody Interaction*.**
    The 85th Colloids and Surface Science Symposium, Montreal, Canada, 2011.
24. ***Semi-empirical Molecular Modelling of Picloram Specific Antibody*.**
    The 11th Annual CERMM Symposium, Montreal, Canada, 2011.
25. ***Molecular Modelling of Antigen-Antibody Interaction using the PM3 Semi-Empirical Method*.**
    Fundamental and Applied Pulp and Paper Modelling Symposium (FAPPMS) 2011, Montreal, Canada.
26. ***Managing Pollution from Small and Medium Scale Industries in Bangladesh*.**
    Sigma Xi Young Researcher Lecture, 2011, Sigma Xi Montreal Chapter, Montreal, Canada.
27. ***Stability and Reactivity of Enzymatic Papers*.**
    2009 AIChE Annual Meeting, Nashville, TN, USA.
28. ***Thermal Stability of Horseradish Peroxidase Enzymatic Papers*.**
    63rd Appita Annual Conference and Exhibition, 2009, APPITA, Melbourne, Australia.
29. ***An Analysis of Effects of Internal and Surface Sizing on Ink Jet Printing Quality*.**
    63rd Appita Annual Conference and Exhibition, 2009, APPITA, Melbourne, Australia.
30. ***Printing Biomoelcules Part-1: Achieving Total Control of Biomolecule Delivery Using Ink Jet Printing*.**
    Chemeca 2008, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW.
31. ***Ink Jet Printing of Biomolecules on Porous Surfaces*.**
    International Conference on Chemical Engineering (ICChE) 2008. Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.
32. ***The Inertial Effects on the Capillary Flow in Surface Grooves*.**
    Chemeca 2008, Engineers Australia, IChemE in Australia, City Hall, Newcastle, NSW, Australia.
33. ***Mechanism of Non-Coalescence for Liquid Droplets at the Air-Liquid Interface*.**
    Chemeca 2007, Engineers Australia, Melbourne, Australia.
34. ***Introductory of Effluent Treatment Plant (ETP) Network*.**
    Workshop on Supporting Improved Effluent Treatment in the Textile Sector in Bangladesh, BRACK INN, Dhaka, Bangladesh, 2005
35. ***Pollution Project: Investment Support to MACH*.**
    DUTCH Club, Dhaka, Bangladesh, 2005.

Major Engineering Projects:

01. 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.

02. 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.

03. 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

04. 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

05. Name of assignment or project: Low cost and Efficient Zero Discharge ETP
Year: 2014 - 2021
Location: Bangladesh (Nationwide)
Client: Local Industries (Textile, Pharmaceutical and Food Industries)
Main project features:
• Help industries to manage water use, to manage and monitor industrial pollution.
• To implement 3R options to reduce the use of ground water.
Position held: Consultant
Activities performed:

- To help industries calculating 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 managements to finalize the ETP-STP supplier/designer, and the technical proposal. To supervise ETP construction and installation.
- To supervise installing zero discharge (water reuse) options.
- To help optimizing chemical dosing and biological treatment. To help diagnosing the treatment performance of the major treatment units of their ETP-STP.

06. 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

07. 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

08. 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 assesses 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.

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

10. 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.

11. 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 antibody based filtration system to filter herbicide from water source.
- Computer 3D Homology modelling of Antibody Binding Fragments, and Quantum Calculation of Antibody-Antigen Interaction Energies at different physiological conditions.

12. 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 characterization of 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.

13. 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 at around Turaag River, and to develop local capacity to managing and reducing pollutions.
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 dozing, minimize operating cost and maximize the treatment performance. Provide training/advice to the ETP operators.
- Perform Environmental Audit to the interested industries.

14. 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 impact on national food safety due to bioethanol production from broken rice and maze.
- Analyse physico-chemical properties of bioethanol and bioethanol blend petrol and octane.