

DR. MUHAMMAD ANISUZZAMAN TALUKDER

Professor, Department of Electrical and Electronic Engineering (EEE)

Bangladesh University of Engineering and Technology (BUET)

UNESCO Chairholder, “Industry Integration in Higher Education Systems”

President, BUET Teachers’ Association

Phone: +8801743731065; Email: anis@eee.buet.ac.bd

Website: anis.buet.ac.bd/; eee.buet.ac.bd/people/faculty/dmat

EXECUTIVE SUMMARY

Dr. Muhammad Anisuzzaman Talukder is a nationally recognized academic leader, research strategist, and institution builder with extensive experience in science, technology, and innovation governance. As a Professor at BUET—Bangladesh’s premier engineering institution—he combines deep scientific expertise with demonstrated leadership in policy alignment, standards development, and institutional reform.

He currently serves as President of the BUET Teachers’ Association, providing strategic leadership on academic governance, research autonomy, and institutional standards. As UNESCO Chairholder on “Industry Integration in Higher Education Systems,” Dr. Talukder advances structured university–industry–government integration aligned with global best practices. As President of the International Electrotechnical Commission (IEC) National Committee, Bangladesh, he has led the country’s engagement with global electrotechnical standards—an essential pillar for export competitiveness, industrial modernization, and regulatory harmonization.

He founded and directed the Research and Innovation Centre for Science and Engineering (RISE) at BUET (2020–2024), where he strengthened research strategy, industry partnerships, intellectual property frameworks, and translational innovation mechanisms—helping position BUET as a catalyst for national technological advancement. His leadership initiatives led to securing BDT 25+ crore in grants (7× growth), building 100+ industry–academic collaborations, and establishing the BUET Innovation Hub and prototype development facility. He spearheaded approval of BUET’s Intellectual Property Policy, introduced internal research funding schemes for faculty and students, developed a digital research management portal, and oversaw 350+ research projects, strengthening translational research and lab-to-market pathways. He also led the establishment of the BUET Institutional Review Board (IRB) and served as its founding Chairman.

Internationally, he was awarded the prestigious Marie Curie Individual Fellowship at the University of Leeds, UK, and has collaborated with leading global research institutions. Dr. Talukder has held several prestigious international academic positions, including Visiting Professor at the University of Maryland, USA (2011–2018), Honorary Fellow at the Hong Kong Polytechnic University (2013–2015), and Honorary Visiting Academic at City, University of London, UK (2013). In recognition of his research excellence, he was awarded the World Academy of Sciences (TWAS) Young Scientist Award (2011). With over 120 publications in esteemed journals and conferences, he has secured significant research grants in Bangladesh, the USA, and the European Union.

Dr. Talukder has played a leading role in conceptualizing large-scale national initiatives, including proposals for a National AI Institute, the development of a national scientific inventory, semiconductor research and training facilities, and AI-driven circular battery ecosystems. His leadership approach integrates research excellence, standards harmonization, institutional capacity building, and economic strategy. His research portfolio spans advanced energy systems, hydrogen technologies, lithium-ion battery innovation, semiconductor and nano-devices, photonics, and AI-enabled diagnostic and digital

platforms—areas directly relevant to national energy security, digital transformation, and high-value industrial growth.

He brings a rare combination of scientific credibility, governance experience, international exposure, and policy vision—positioning him to contribute effectively in high-impact national roles where technology, regulation, innovation, and economic transformation converge.

LEADERSHIP & ADMINISTRATIVE EXPERIENCE

- UNESCO CHAIRHOLDER on “*Industry Integration in Higher Education System*,” Jan 2024 to Dec 2027.
 - Spearheading global academic partnerships and policy frameworks for industrial integration in curricula.
- PRESIDENT, Executive Committee, BUET Teachers’ Association, January 1 – December 31, 2026.
- FOUNDING DIRECTOR, Research & Innovation Centre for Science & Engineering (RISE), BUET, Oct 2020 to Oct 2024: Leadership to support and enhance research and innovation, develop collaboration and partnerships, and build an innovation and startup ecosystem.
 - Attracted BDT 25+ Crore research grants: >7-times increase in research grants in 4 years.
 - Developed 100+ collaborations with industries and academia; several joint research projects and academic exchanges followed.
 - Established BUET Innovation Hub; developed a prototype development facility.
 - Drafted “Intellectual Property (IP) Policy of BUET” and got it approved by the BUET Syndicate; created awareness on IP protection for a lab-to-market research approach.
 - Introduced RISE Internal Research Grants for teachers (BDT 2 Crore/year) and students (BDT 50 Lac/year); championed student-centered research and innovation ecosystem.
 - Developed an online Research Portal for research project management and other research-related activities for teachers & students.
 - Provided administrative and financial management support to 350+ research projects.
- Founding Chairman, Institutional Review Board (IRB), BUET (Nov 2023 to Oct 2024).
- President, International Electrochemical Commission (IEC)-Bangladesh National Committee, 2019–2021: Led national review and responses to new IEC standards.
- Member-Secretary, Board of Postgraduate Studies, EEE, BUET (2014–2016).
- Leading the initiative in establishing the Bangladesh Semiconductor Training, Advancement and Research (STAR) Facility at BUET, modeled on global best practices in nano-fabrication and cleanroom operations.

EDUCATION

- POSTDOCTORAL RESEARCH (Jan 2016–Aug 2018), University of Leeds, UK.
- DOCTOR OF PHILOSOPHY (PhD) in Electrical Engineering (May 2010), University of Maryland, MD 21250, USA.
- MASTER OF SCIENCE (MSc) in Electrical & Electronic Engineering (May 2004), BUET, Bangladesh.
- BACHELOR OF SCIENCE (BSc) in Electrical & Electronic Engineering (May 2000), BUET, Bangladesh.

ACADEMIC POSITIONS

- PROFESSOR (Jul 2014–Present), ASSOCIATE PROFESSOR (Jul 2011–Jul 2014), ASSISTANT PROFESSOR (Sep 2004–Jul 2011), LECTURER (Feb 2001–Sep 2004), EEE, BUET.
- MARIE CURIE INDIVIDUAL FELLOW (Oct 2016–Sep 2018), School of Electronic and Electrical Engineering, University of Leeds, UK.
- VISITING PROFESSOR (Jun 2018–May 2021), VISITING ASSOCIATE PROFESSOR (Jan 2013–Dec 2017), VISITING ASSISTANT PROFESSOR (Nov 2010–Dec 2012), University of Maryland, MD 21250, USA.
- HONORARY FELLOW (Sep 2013–Aug 2015), Hong Kong Polytechnic University, Hong Kong.
- HONORARY VISITING ACADEMIC (Aug 2013–Oct 2013), City, University of London, UK.
- VISITING RESEARCHER (December 2010), Princeton University, USA.
- INTERNATIONAL VISITING ACADEMIC (July 2021–June 2022), Chandigarh University, Mohali, Punjab, India.

INDUSTRY POSITIONS & EXPERIENCE

- WRITING CONSULTANT for the Horizon 20 and Horizon Europe research grant project proposals, Technovative Solutions Limited, Manchester, UK (2021–2024).
- ADVISOR to the Federation of Bangladesh Chambers of Commerce and Industry (FBCCI) Innovation and Research Centre (2023–2026).
- CONTRACTUAL RESEARCH SCIENTIST, Banpil Photonics, CA, USA (2015–2017).
- SYSTEM ENGINEER, Grameen Phone Limited, Bangladesh (Oct 2000–Feb 2001).

RESEARCH LEADERSHIP AND IMPACT

- 57+ publications in highly reputed international journals; 55+ international conference proceedings.
- 63+ keynote and invited speeches at major national and international conferences, seminars, institutions, and forums.
- 25+ contributed presentations at international conferences and seminars.
- 1 awarded US patent; 2 filed patents (1 US, 1 UK).
- 13 funded research projects and BDT 7,50,00,000+ research funding secured from the government (University Grants Commission-HEQEP, Ministry of Science and Technology, Ministry of Education, ICT Division), international agencies (EU H2020, NSF-USA, UNESCO), and the industry (Banpil Photonics-USA, Poly Cables, Berger Bangladesh Limited, Neural Semiconductor Limited).
- Led development of AI-powered diagnostic and energy systems with real-world societal applications.
- Chairman of the Research Committee of BUET (Oct 2020–Oct 2024).
- Vice-President of Research & Development of the Executive Committee, BUET Alumni.
- Member-Secretary of Research and Innovation Committee of BUET (Jul 2020–present).
- Editor, Feature Issue on “Optics in South Asia” to be published in JOSA A and JOSA B (OPTICA Publishing Group) in April 2026.

SELECTED ENGAGEMENT WITH THE GOVERNMENT

- MINISTRY OF EDUCATION: National Steering Committee Member of the Grant for Advanced Research in Education (GARE), 2023–present; Evaluation and Monitoring Committee Member of GARE (2022–present); Bangladesh Scholar-2023 and PhD Fellow Selection Committee Member, Prime Minister’s Education Assistance Trust (2022, 2024).

- **MINISTRY OF SCIENCE & TECHNOLOGY:** Core Group Member of Strengthening STEM for Transforming Bangladesh (March 2026–present); Steering Committee Member, Bangladesh Innovation Fair 2026; Project Evaluation Committee Member, Bangladesh Innovation Fair 2026; Focal Point for BUET for the National Science and Technology Fellowship for students and Research & Development Grants for Teachers (Feb 2024–present); Peer Review Committee Member (Physical Science Group) of the Special Allocation for Research (2021–present); Evaluation Committee Member for Research Grant, Bangladesh Council of Scientific and Industrial Research (BCSIR) (2021, 2022, and 2023).
- **MINISTRY OF COMMERCE:** “ICT Industry, Digital Commerce, Freelancing, Entrepreneurship and Start-up” Technical Committee Member for the Subcommittee of the “Smart Bangladesh Taskforce,” Government of Bangladesh (Oct 2023–present). “ICT Industry, Digital Commerce, Freelancing, Entrepreneurship and Start-up” Subcommittee Member of the “Smart Bangladesh Taskforce,” Government of Bangladesh (Sep 2023–present).
- **MINISTRY OF INDUSTRY:** National Industry Award 2022 Evaluation Committee Member (2023); Electrical and Electronics Divisional Committee (EEDC) Member of Bangladesh Standards and Testing Institutions (BSTI) (2019–2021); Recruitment and Evaluation Committee Member, Bangladesh Institute of Management (2021–2022, 2025).
- **INFORMATION & COMMUNICATION TECHNOLOGY (ICT) DIVISION:** Bangladesh High Tech Park Authority (BHTPA): Focal Person for the establishment of BUET University Innovation Hub Project funded by BHTPA; Principal Coordinator for the BUET University Innovation Hub Cohort program. Bangladesh Computer Council (BCC): Enhancing Digital Government and Economy Project (EDGE) - Coordinator of Cyber Security Training for Department of ICT Officers (2024); Coordinator of Smart Land Management and Cyber Security Training for Land Ministry Officers (2024); Evaluation Committee for Course Curriculum Member for Digital Skills Training to Students (2024); Executive Committee Member for a2i Innovation Fund (2023–present).
- **UNIVERSITY GRANTS COMMISSION (UGC) OF BANGLADESH:** Research proposal evaluation (2019, 2022, 2025, 2026), Course curriculum evaluation for outcome-based education (2024–2025).
- **NOVOTHEATRE:** Governing Board Member (2020–2025); Technical Acceptance Committee Member (2022–present); Technical Expert Committee Member (2022–present); Tender/EOI Evaluation Committee Chair/Member (2022–present).

ACADEMIC & RESEARCH CAPACITY DEVELOPMENT

- Established “Photonics Laboratory” at the Department of EEE, BUET, using research grants received from the UGC and Government Ministries.
- Established “Electric Vehicles Research Laboratory” at the Department of EEE, BUET, using a research grant received from the industry.
- Established “Walton Industrial Research Laboratory” at RISE, BUET, with support from the Walton Digitech Industries Limited.
- Played a key role in establishing the “Bangladesh Energy and Power Research Laboratory (BEPRL),” BUET, sponsored by the Bangladesh Energy and Power Research Council (BEPRC).
- Spearheaded the initiative for drafting and approving the Intellectual Property (IP) Policy of BUET.
- Playing key roles as a member of the BUET Academic Council (Jul 2011–present); Program and Ordinance Committee of the Faculty of Postgraduate Studies (FPGS)

(2023–present); Board of Undergraduate Studies (BUGS), EEE, BUET (2001–present); Board of Postgraduate Studies (BPGS), EEE, BUET (2010–present).

- Playing key roles as a member of the Rajshahi University Academic Committee (2022–present), KUET Academic Council (Nov 2024–present), Rajshahi University of Engineering and Technology (RUET) (Jul 2026–present), Bangladesh Medical University Examination Committee (MD-Forensic Medicine) (2025), and the National Institute of Youth Academic Council (2021–present).
- Focal Person of BUET for D-8 Network of Pioneers for Research and Innovation (D-8 NPRI) (April 2024–present).
- Partner in UNESCO Greening Education initiative (Jul 2024–present).

HONORS AND AWARDS

- UNESCO Chair on “Industry Integration in Higher Education System”, 2024.
- Recognition for Securing the Second-Highest External Research Funding among BUET Teachers, 2021–2022.
- Marie Skłodowska-Curie Individual Fellowship 2015 under the European Union’s Horizon 2020 to conduct research at the University of Leeds, UK, for two years.
- Nominated as a High-Level Delegate of the Bangladesh Government to present a plenary talk at the “South Asian Workshop on Optics and Photonics” to commemorate the International Year of Light by UNESCO at the Indian Institute of Technology (IIT), Guwahati, India, Nov 17–18, 2015.
- Early career travel award to attend the “SIAM Conference on Nonlinear Waves and Coherent Structures (NW14),” Aug 11–14, 2014, Cambridge, United Kingdom.
- Invitation and Full support to attend the “Winter College on Optics: Fundamentals of Photonics – Theory, Devices and Applications,” International Center for Theoretical Physics (ICTP), Trieste, Italy, Feb 10–21, 2014.
- Honorary Fellow, Department of Electronic and Information Engineering, Hong Kong Polytechnic University, Hong Kong (2013–2015).
- Erasmus Mundus Strong-Ties Staff Level Mobility Scholarship 2013, City University London, UK.
- BAS (Bangladesh Academy of Sciences) – TWAS (The World Academy of Sciences) Young Scientist Award, 2011. The award was conferred by the Hon’ble Prime Minister.
- Dr. Fatema Rashid Best Paper Award, International Conference on Electrical and Computer Engineering (ICECE 2010), Dhaka, Bangladesh (Dec 2010).
- Significant Research Contributions Award 2008–2009, Mid-Infrared Technologies for Health and the Environment (MIRTHE), National Science Foundation Engineering Research Center (NSF-ERC), USA (2009).
- Best PhD Research Award 2008–2009, Computer Science and Electrical Engineering, University of Maryland, MD 21250, USA (2009).
- Second Place Award in Graduate Student Poster Competition 2008, IEEE Baltimore and Washington-Northern Virginia Photonics Society Chapter, Baltimore, MD, USA (2008).
- Student Travel Grant, University of Maryland, MD 21250, USA, to attend and present a paper in the IEEE Lasers and Electro-Optics Society Annual Meeting, Newport Beach, CA, USA (2008).
- Position in Dean’s List (1995–1999), Department of EEE, BUET.
- Dhaka Education Board Scholarship – Talent Pool (1995–2000) for securing the 8th position in the Higher Secondary Certificate (HSC) Examination (~250,000 students participated).
- Dhaka Education Board Scholarship – Talent Pool (1991–1993) for securing 9th position in the Secondary School Certificate (SSC) Examination (~350,000 students participated).

STUDENT ENGAGEMENT AND PROFESSIONAL DEVELOPMENT

- PhD: 1, MSc: 14, BSc: 51 theses supervision; academic advisor to 100+ students.
- Conducted faculty development workshops on research and innovation (2022, 2023).
- Supported 24+ research assistants from the research grants and helped their research and professional career development.
- Established bridges between industries and the departments of BUET for student internships and exchanges.
- Convener, Committee for Industrial Training/Internship for EEE undergraduate students, working to meet outcome-based education and accreditation requirements of the program.
- Introduced student-led research projects and developed a co-working space for incubation and startup growth at BUET.
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE); Photonics Society, IEEE; Electron Devices Society, IEEE.
- Member, Optical Society (Optica), American Physical Society (APS), Institute of Engineers Bangladesh (IEB).
- Vice-Chair (2015, 2019), Membership Development Coordinator (2011), Member (2013, 2014), Executive Committee, IEEE Electron Devices/Solid-State Circuits Society (ED/SSCS).
- Executive Committee Member, Optical Metrology Technical Group of the OSA (2018, 2019).

INSTITUTIONAL STRATEGY AND TRANSFORMATION

- Member of BUET Academic Master Plan Committee (2022–Present).
- Played a key role (member-secretary of the committee) in drafting the “Policy for Adjunct Faculty Members” for BUET and guidelines for the Institute of Robotics and Automation, BUET.
- Played key roles in establishing the “Research & Innovation Centre for Science & Engineering (RISE)” and the “Faculty of Postgraduate Studies (FPGS)” at BUET. Served as the member-secretary of the committee that formulated the guidelines and ordinances of RISE and FPGS.
- Played a key role (initiator and focal person) in establishing the BUET Innovation Hub to support innovation, incubation, and entrepreneurship led by BUET faculty members and students. Pioneered the entrepreneurial training program at BUET.
- Chaired implementation committees for the Incentives for Publications and Basic Research Grants for BUET Faculty members: >2.5-fold increase in Q1 publications in 4 years by BUET faculty members.
- Led transformative initiatives in research, curriculum reform, and internationalization. As Founding Director of RISE at BUET, established interdisciplinary research clusters, digital project governance, and faculty seed grants.
- Played a key role through RISE and other initiatives in BUET’s global ranking improvement. BUET was ranked 305th globally in Engineering and Technology by the QS World University Ranking, which was the best BUET ever achieved.
- As Chairholder of the UNESCO Chair, advanced SDG-aligned education and industry-integrated learning.
- Spearheaded curriculum modernization in EEE, embedding emerging technologies and outcome-based frameworks.
- Played a key role in conceiving the Bangladesh Semiconductor STAR Facility in BUET, integrating global standards in advanced chip design and nanofabrication.
- Proven ability to drive university-level changes through strategic partnerships, innovation ecosystems, and inclusive academic leadership.

NATIONAL/INTERNATIONAL/ACADEMIC/RESEARCH SERVICES

- External Member, Undergraduate Academic Committee, Electrical and Electronic Engineering, Rajshahi University of Engineering and Technology (RUET), July 2026–Present.
- External Examiner, PhD, University of Malaya, Malaysia, 2026.
- Board Member, Center of Research Excellence in Semiconductor Technology (CREST), December 2025–present.
- External Assessors for Promotion into the Professorial Cadre, University of Ilorin, Nigeria, November 2025–present.
- Selection Board Member for the appointment of Lecturers and Assistant Professors for the Department of EEE of the Jashore University of Science and Technology (JUST), Jashore, Bangladesh, 15 December 2025–14 December 2027.
- Selection Board Member for the appointment of Junior Lecturers for the Department of EEE of the Islamic University of Technology (IUT), November 2025.
- Selection Board Member for the appointment of Assistant Professor for the Department of EEE of the Islamic University of Technology (IUT), November 2025.
- Technical Committee Member, Security Equipment Installation for Security Enhancement, Chief Advisor's Office, Bangladesh, April 2025–present.
- Nominator, VinFuture Prize, 2025–present.
- Nominator, UNESCO-Russia Mendeleev International Prize in the Basic Sciences, 2024–present.
- Examiner (Viva voce and Practical), Residency Program, MD-Forensic Medicine Course, Bangladesh Medical University (2025).
- Academic Council Member, Khulna University of Engineering and Technology (KUET), November 2024–present.
- PhD Fellowship and Stipend under the Prime Minister's Education Assistance Trust Evaluation Committee Member, 2024.
- Research and Development Team Member, Atlas Bangladesh Limited, April 2024–present.
- Focal Person of BUET for D-8 Network of Pioneers for Research and Innovation (D-8 NPRI), April 2024–present.
- Focal Point for BUET for the National Science and Technology Fellowship for students and Research & Development Grants for Teachers by the Ministry of Science and Technology, Bangladesh, February 2024–present.
- Tender Evaluation Committee Member, 40 MW through Direct Purchase Method by a tri-party Power Sales Agreement (PSA) between Bangladesh Power Development Board, Nepal Electricity Authority (NEA) and NTPC Vidyut Byapar Nigam Limited (NVVN), India, 2024.
- Bangladesh Scholar-2023 Selection Committee Member, Prime Minister's Education Assistance Trust, 2023.
- Executive Committee (EC) Member of the a2i Innovation Fund, Aspire to Innovate (a2i) Programme, November 2023–present.
- “ICT Industry, Digital Commerce, Freelancing, Entrepreneurship and Start-up” Technical Committee Member for the Subcommittee of the “Smart Bangladesh Taskforce,” Commerce Ministry, Government of Bangladesh, October 2023–present.
- “ICT Industry, Digital Commerce, Freelancing, Entrepreneurship and Start-up” Subcommittee Member of the “Smart Bangladesh Taskforce,” Commerce Ministry, Government of Bangladesh, 11 September 2023–present.
- Advisor, FBCCI Innovation and Research Centre, September 2023–2026.

- Tender Evaluation Committee (Renewable Energy, TEC-07) Member, Bangladesh Power Development Board, Ministry of Power, Energy, and Mineral Resources, July 2023–Present.
- Tender Evaluation Committee Chair, Novotheatre Barishal, July 2023–Present.
- National Steering Committee Member, Grants for Advanced Research in Education (GARE), Ministry of Education, June 2023–present.
- Peer Review Committee on Physical Sciences (Phy-sc) for the Special Research Grant under the Science and Technology activity of the Ministry of Science and Technology, Bangladesh (2021–2025).
- Project Implementation Committee Member for the “Bangladesh: First Biennial Update Report (BUR1) to the UNFCCC,” undertaken by the Department of Environment, Bangladesh (2021–2023).
- Tender Evaluation Committee Member, Dhaka Electric Supply Company (DESCO) Limited for local and international purchases (2020–Present).
- Evaluation Committee Member, Bangladesh Industry Award 2022, Ministry of Industry (2023).
- Selection Board Member, North-West Power Generation Company Limited, Bangladesh (2022).
- Technical Specification Preparation Committee for Electric Bus Member, Bangladesh Road Transport Corporation (BRTC), 2022–2023.
- Member (External), Examination Committee, Electrical and Electronic Engineering, University of Rajshahi, 2022–Present.
- Member, Technical Program Committee, International Conference on Telecommunication and Photonics, Dhaka, Bangladesh, 2023.
- Executive Committee Member for Research, Directorate of Technical Education, Bangladesh, May 2023–Present.
- Tender Evaluation Committee Member, Novotheatre, Rajshahi, 2022–Present.
- Selection and Monitoring Committee Member, Grant for Advanced Research in Education, Bangladesh Bureau of Educational Information & Statistics (BANBEIS), Ministry of Education, 2022–Present.
- Technical Expert Committee Member, Novotheatre, Bangladesh, 2022–Present.
- Governing Board Member, Novotheatre, Bangladesh, August 2020–May 2025.
- President, International Electrotechnical Commission (IEC) Bangladesh National Committee, 2019–2021.
- Academic Council Member, National Institute of Youth Development, 2021–Present.
- Evaluation Committee Member for Research Grant, Bangladesh Council of Scientific and Industrial Research (BCSIR), 2021, 2022, and 2023.
- Technical Program Committee Member, International Conference on Micro-Electronics and Telecommunication Engineering (ICMETE-2016), 22–23 September 2016, Delhi, India (technically sponsored by IEEE EDS).
- Chair, “Session on Photonics,” 8th International Conference on Electrical and Computer Engineering, Dhaka, December 2014.
- Chair, “Seminar of The Fascinating World of Sensors,” 10 March 2014, BUET, Dhaka, Bangladesh.
- Chair, “Seminar on Wireless Cellular Network,” 5 February 2014, BUET, Dhaka, Bangladesh.
- Chair, “Seminar on Towards Realizing a Tandem Plasmonic Solar Cell: The Impact of Intermediate Metal Thickness,” 25 January 2014, BUET, Dhaka, Bangladesh.
- Chair, “Introduction to Quantum Cascade Detector Modeling and Temperature Effects on Performance Parameters,” 15 December 2013, BUET, Dhaka, Bangladesh.

- Chair, “Workshop on Mid-Infrared Sources and Detectors for Sensing Greenhouse Gases,” 31 July 2013, BUET, Dhaka, Bangladesh.
- Chair, Technical Sub-Committee for procurement of Air Conditioners for the sub-project (G4, CP-2091) under Higher Education Quality Enhancement Project (HEQEP), 2013.
- Chair, Technical Sub-Committee for procurement of Server Computer, Laptop Computers, Network Switch, and Software for the sub-project (CP-2091) under HEQEP, 2013.
- Chair, Technical Sub-Committee for procurement of Computers, Printers, and UPS for the sub-project (G2, CP-2091) under HEQEP, 2013.
- Reviewer, University Grants Commission of Bangladesh research project proposal for grants, 2012--2014, 2026.
- Member, Selection Board for the Recruitment of Assistant Engineers for Bangladesh Chemical Industries Corporations (BCIC) (2010).
- Member, Organizing Committee, International Conference on Electrical and Computer Engineering (ICECE 2006), Dhaka, Bangladesh (2006).
- Selection Board Member for the Recruitment of Sub-Inspector for Telecom Unit, Bangladesh Police (2006).
- Sub-Committee Member for the preparation of tender documents for the purchase of 800 MHz Digital trunking system: Walky-talky sets, fixed sets, and microwave link for Rapid Action Battalion (RAB), Bangladesh (2006).
- Performance Acceptance Committee Member for 800 MHz Digital and Secure Capable Trunked Wireless Communication System for RAB, Bangladesh (worth of approximately USD 2,500,000) (2005-2006).
- Project Organizer, Bangladesh Telegraph and Telephone Board (BTTB) billing project (worth approximately BDT 200,00,000), 2001.

RESEARCH GRANTS AND PROJECTS

Project Title	Grant	Funding Agency	Period
Development of Scientific Inventory for Bangladesh and Identify Challenges and Opportunities (Team Leader)	BDT 55,00,000	Economic Relations Division (ERD), Ministry of Finance, Bangladesh	2026-2027
AI-Powered Smartphone-based Hand-held Imaging Device for Critical Disease Diagnosis (Principal Investigator - PI)	BDT 20,00,000	ICT Innovation Fund, ICT Division, Bangladesh	2025-2026
Cool Paints and Coating Solutions: A multi-dimensional applicable coating for vertical and horizontal surfaces (PI)	BDT 18,00,000	Berger Paints Bangladesh Limited	2024-2026
Design of low-cost earth-abundant electrode incorporating FeOOH/MnO ₂ electrocatalyst for efficient H ₂ generation by water splitting (PI)	BDT 6,30,000	Neural Semiconductors Limited, Bangladesh	2024-2025
Development of smart charger and virtual testing platform for electric vehicle batteries (PI)	BDT 50,00,000	Poly Cables Industries Limited	2022-2024
Terahertz ultra-short pulses from self-induced transparency mode-	€195,454.80	European Commission	2016-2018

locked quantum cascade lasers (TERAULTRA) (PI)			
Development of design software for infrared photodetectors (PI)	USD 8,000.00	Banpil Photonics Inc., CA, USA	2016–2018
Plasmonic photovoltaics for next-generation solar cells (PI)	BDT 15,00,000	Ministry of Education, Bangladesh	2013–2016
Mid-Infrared sensors for monitoring greenhouse gases (Co-PI)	BDT 1,39,99,000	University Grants Commission, Bangladesh	2012–2014
Modeling gain dynamics of quantum cascade lasers (Co-PI)	USD 43,109.00	MIRTHE, National Science Foundation-Engineering Research Center, USA	2013–2014
Efficient photovoltaic energy conversion for solar cells toward sustainable future (PI)	BDT 10,00,000	Ministry of Science and Technology, Bangladesh	2012–2013
Active modelocking of quantum cascade lasers (Co-PI)	USD 47,375	National Science Foundation, USA	2012–2013
Active modelocking of quantum cascade lasers and quantum coherence (Co-PI)	USD 93,317	MIRTHE, National Science Foundation-Engineering Research Center, USA	2011–2013
Modelocking of quantum cascade lasers and quantum coherence effects (Co-PI)	USD 50,717	MIRTHE, National Science Foundation-Engineering Research Center, USA	2010–2011

RESEARCH GRANT APPLICATIONS UNDER REVIEW

Project Title	Requested Grant	Funding Agency	Period
Establishing a State-of-the-Art Research and Innovation Hub for Hydrogen and Carbon-neutral Energy Technologies (PI)	USD 25–35 million	OPEC Fund for International Development	2026–2029
Synergistically Doped Transition-Metal-Oxide Photoelectrodes with Engineered Interfaces for Efficient Solar Hydrogen Generation (PI)	BDT 29,97,750	Ministry of Education, Bangladesh	2026–2028
EDGE-AI Smart Charger for Electric Three-Wheelers and Solar Batteries (PI)	BDT 20,00,000	ICT Innovation Fund, ICT Division, Bangladesh	2026–2027
EDGE-BATT: Indigenous Edge-AI Battery Intelligence & Circularity Platform for Bangladesh (PI)	BDT 2,50,00,000	Bangladesh Industry Research Development & Innovation (BIRDI) Grants	2026–2027

INTERNATIONAL STRATEGY AND GLOBAL ENGAGEMENTS

- Received prestigious *Marie Curie Individual Fellowship* at the University of Leeds, UK (2016–2018), contributing to frontier research in terahertz technology for sensing and imaging.
- As Chairholder of the *UNESCO Chair in Industry Integration in Higher Education System*, actively contributing to UNESCO's strategic objectives in education reform and sustainable development.

- Engaged with the *UNESCO Greening Education Partnership*, supporting climate-responsive education systems with a focus on curriculum integration, technical education, and capacity building aligned with the SDGs.
- Played an active role in the *D-8 (Developing-8) Organization for Economic Cooperation*, working to advance academic and technological collaboration among member states, including Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Turkey.
- Served as a visiting scholar at globally reputed institutions, including *Princeton University, City University London, International Center for Theoretical Physics (ICTP), Trieste, Italy, and Hong Kong Polytechnic University*, contributing to joint seminars, knowledge exchange, and faculty development programs.
- Presented keynote lectures and technical sessions at conferences across Europe, North America, and Asia, representing Bangladesh in global academic fora.

COLLABORATIVE ENGAGEMENT

- **National:**
 - *Academia:* University of Dhaka, Khulna University (KU), Brac University, Ahsanullah University, United International University.
 - *Industry:* Bangladesh Council of Scientific and Industrial Research (BCSIR), Bangladesh Atomic Energy Commission (BAEC), Poly Cables Industries Limited, Berger Paints Bangladesh Limited, Neural Semiconductor Limited, Walton Digitech Industries Limited, Anwar Group of Industries Limited, Atlas Bangladesh Limited, Unilever Bangladesh Limited, Dhaka Chamber of Commerce and Industry (DCCI), Federation of Bangladesh Chambers of Commerce and Industry (FBCCI).
- **International:**
 - *Academia:* Princeton University, USA; University of Maryland, USA; Johns Hopkins University, USA; University of Illinois, USA; University of Leeds, UK; City, University of London, UK; Queen's University, Kingston, Ontario, CANADA; King Abdulaziz University, Saudi Arabia; Vellore Institute of Technology, Tamil Nadu, India; Indian Institute of Technology (IIT-ISM), Dhanbad, India; University of Engineering and Management, Kolkata, India; Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, China; Shaanxi University of Science and Technology, China.
 - *Industry:* Banpil Photonics Inc., CA, USA; US Army Research Laboratory, USA; Applied Physics and Photonics, Harrisburg, PA, USA; Technovative Solutions (TVS), Manchester Science Park, Manchester, UK; Precision Varionic International, Hillmead, Swindon, UK; Techno-India Group, Kolkata, India; CONTEC, a spin-off company from KARI (Korea Aerospace Research Institute), Korea; Digital Readiness and Intelligent Systems Ltd (D-Ready), Durham, UK; Chinese Enterprises Association in Bangladesh (CEAB).

PATENTS

- “Passively modelocked quantum cascade lasers,” (Awarded) United States Patent No.: US 7,940,818 B2.
- “Ultra-short pulses from QCLs with distributed gain and absorption,” USPA 62031225.
- “Quantum cascade laser,” United Kingdom PA 1814766.

PUBLICATIONS IN INTERNATIONALLY REPUTED JOURNALS

1. A. Sharma, P. Senthilkumar, K. Saha, I. Ashraf, **M. A. Talukder**, and A. Dhakal, “Optics in South Asia Feature Introduction,” *Journal of Optical Society of America B*, in press (2026).

2. M. R. Parvez and **M. A. Talukder**, “Voltage-controlled beam steering in liquid-crystal-integrated dual-mode plasmonic nanolaser,” *Optics Express* **34**, 12526–12541 (2026). (Q1, CiteScore: 7.3, IF: 3.2)
3. M. S. A. Rafi, **M. A. Talukder**, and M. K. Hasan, “Real-Time Data Reconstruction-based Joint Estimation of State-of-Charge and State-of-Health of Lithium-Ion Batteries Using Quantitative Feature Informed Deep Learning Framework,” *Journal of Energy Storage* **152**, 120618 (2026). (Q1, CiteScore: 13.3, IF: 9.8)
4. A. A. Mamun and **M. A. Talukder**, “Re-Engineering Hematite: Synergistic Co-Doping Routes to Efficient Solar Water Splitting,” *ACS Journal of Physical Chemistry C* **130**, 736–746 (2026). (Q1, CiteScore: 6.5, IF: 3.5)
5. A. O. Hussain, A. A. Mamun, F. Rahman, and **M. A. Talukder**, “Physics-Informed Electrochemical Model of Cathodic Corrosion in Alkaline Media,” *Electrochimica Acta* **546**, 147800 (2026). (Q1, CiteScore: 10.6, IF: 5.6)
6. F. Rahman, A. A. Mamun, A. O. Hussain, and **M. A. Talukder**, “Enhanced Hydrogen Evolution Using β -MnO₂ Monolayer on Ni Electrode with Engineered Oxygen Vacancies,” *ACS Journal of Physical Chemistry C* **129**, 17049–17060 (2025). (Q1, CiteScore: 6.5, IF: 3.5)
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9. M. Kundu, A. Ghosh, A. J. B. Iqbal, and **M. A. Talukder**, “Theoretical investigation of slow gain recovery of quantum cascade lasers observed in pump-probe experiment,” *Optical and Quantum Electronics* **57**, 395 (2025). (Q2, CiteScore: NA, IF: 3.3)
10. A. A. Mamun, A. H. Chowdhury, A. Billah, J. Karim, A. O. Hussain, F. Rahman, and **M. A. Talukder**, “Advancing Transition Metal Oxide Photoelectrodes for Efficient Solar-Driven Hydrogen Generation: Strategies and Insights,” *Advanced Energy Materials*, 2501766 (2025). (Q1, CiteScore: 41.9, IF: 24.4)
11. A. A. Mamun and **M. A. Talukder**, “Enhancing Electronic and Optical Properties of α -Fe₂O₃ Introducing B, Y, and Nb Dopants for Improved Photoelectrochemical Water Splitting,” *Materials Advances* **6**, 4755–4767 (2025). <https://doi.org/10.1039/D5MA00129C> (Q1, CiteScore: 7.6, IF: 5.2)
12. J. Tasnim, A. Rahman, **M. A. Talukder**, and M. K. Hasan, “Generalized real-time state of health estimation for lithium-ion batteries using simulation-augmented multi-objective dual-stream fusion of multi-bi-LSTM-attention,” *e-Prime - Advances in Electrical Engineering, Electronics and Energy* **11**, 100870 (2025). (Q1, CiteScore: 2.1, IF: NA)
13. M. Momtaj and **M. A. Talukder**, “Toward low-noise on-chip three-dimensional biological cell imaging based on surface plasmon coupled emission,” *Optics Express* **33**, 3901–3919 (2025). (Q1, CiteScore: 7.3, IF: 3.2)
14. S. Shahid and **M. A. Talukder**, “Beyond periodicity: Tailoring Tamm resonances in plasmonic nanohole arrays for multimodal lasing,” *New Journal of Physics* **27**, 013014 (2025). (Q1, CiteScore: 6.2, IF: 2.8)
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25. A. Mazumder, M. Mozammel, and **M. A. Talukder**, “Three-dimensional imaging of biological cells using surface plasmon coupled emission,” *Journal of Biomedical Optics* **27**, 106002 (2022). (Q2, CiteScore: 6.4, IF: 3.0)
26. **M. A. Talukder**, P. Dean, E. H. Linfield, and G. Davies, “Resonant two-photon terahertz quantum cascade laser,” *Optics Express* **30**, 31785–31794 (2022). (Q1, CiteScore: 7.3, IF: 3.2)
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39. S. Z. Uddin and **M. A. Talukder**, "Imaging of cell membrane topography using Tamm plasmon coupled emission," *Biomedical Physics and Engineering Express* **3**, 065005 (2017). (The paper has been the feature article of the issue, among the 2017 highlights of the journal, and one of the "most read" articles of the journal.) (Q3, CiteScore: 2.8, IF: 1.3)
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JOURNAL MANUSCRIPTS PROVISIONALLY ACCEPTED/UNDER REVIEW

1. A. A. Mamun and **M. A. Talukder**, "Tailoring the Frequency-Dependent Optical Response of Hematite through Mono- and Co-Doping: A First-Principles Study," *Journal of Physics and Chemistry of Solids*, under review (2026). (preprint available at: <http://arxiv.org/abs/2607.23409>).
2. K. Sarkar and **M. A. Talukder**, "Effects of Edge Atoms and Channel Width on Charge Storage in Nanoporous Carbon Supercapacitors," *Journal of Materials Chemistry A*, under review (2026).
3. A. A. Mamun, R. U. Mahmud, S. Aziz, M. S. Bashar, A. Sharif, and **M. A. Talukder**, "Mechanistic Insights into Enhanced Alkaline Oxygen Evolution on Zn-Al Alloy Electrodes," *Journal of Alloys and Compounds*, under review (2026).
4. **M. A. Talukder**, "Time- and frequency-resolved dynamics of a two-photon terahertz quantum cascade laser," *Optics Communications*, under review (2025). (preprint available at <https://arXiv.org/abs/2503.07336>). (Q2, CiteScore: 5.1, IF: 2.2)
5. A. Rahman, M. K. Hasan, and **M. A. Talukder**, "A Deep Learning-Enabled Rapid Battery Virtual Testing Framework for State-of-Health and Remaining Useful Life Estimation," *Energy Reports*, under review (2026).
6. S. Shahid and **M. A. Talukder**, "Cavity mode engineering for short pulse generation from Tamm Plasmon cavities: Multiple Tamm modes and a two-dye gain medium," under preparation (2026).
7. M. A. S. Siam, M. F. Hossain, A. Imtiaz, A. S. M. O. Mahmud, and **M. A. Talukder**, "Multi-Seasonal Assessment of Nanostructured Cool Paints for Passive Cooling in Tropical Climates," under preparation (2026).

8. A. O. Hussain, A. S. Dipro, and **M. A. Talukder**, “A Multiphysics CFD-Electrochemical Model for Bubble Dynamics and Performance Optimization of Microstructured Electrodes in Water Electrolysis,” under preparation (2026).

CONFERENCE PROCEEDINGS

1. A. Demic, T. B. Gill, **M. A. Talukder**, D. Indjin, P. Dean, “General Maxwell-Bloch modelling of self-induced transparency in N -level atom,” International Workshop on Computational Nanotechnology, Barcelona, Spain (2023).
2. **M. A. Talukder**, “Photovoltaic cells based on plasmonic structures,” (Invited) Micro-and Nanotechnology Sensors, Systems, and Applications IX in SPIE Commercial + Scientific Sensing and Imaging, Anaheim, CA, USA (2017).
3. **M. A. Talukder**, “Ultra-short pulses from quantum cascade lasers for terahertz time domain spectroscopy,” (Invited) Image Sensing Technologies: Materials, Devices, Systems, and Applications IV in SPIE Commercial + Scientific Sensing and Imaging, Anaheim, CA, USA (2017).
4. K. Mashooq and **M. A. Talukder**, “Effects of intermediate metal layer in ultra-thin-film tandem solar cells,” Photonics West, San Francisco, CA, USA (2017).
5. **M. A. Talukder**, C. R. Menyuk, and Y. Kostov, “Distinguishing between whole cells and cell debris using surface plasmon coupled emission,” Photonics West, San Francisco, CA, USA (2017).
6. S. Z. Uddin and **M. A. Talukder**, “Reduction of detection volume in total internal reflection fluorescence microscopy using graphene,” 9th International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh (2016).
7. **M. A. Talukder**, P. Dean, E. Linfield, A. G. Davies, “Cavity-induced slow gain recovery in pump-probe experiments of quantum cascade lasers,” International Quantum Cascade Lasers School and Workshop (IQCLSW), Cambridge, UK (2016).
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9. S. Hassan and **M. A. Talukder**, “Quantum cascade thermo photovoltaic structures for broadband energy conversion,” IEEE International Conference on Photonics (ICP), Sarawak, Malaysia (2016).
10. S. Hassan and **M. A. Talukder**, “Increased radiation absorption in thermophotovoltaic quantum cascade structures,” IEEE International Conference on Telecommunication and Photonics (ICTP), Dhaka, Bangladesh (2015).
11. M. R. K. Rachi, N. Jawad, and **M. A. Talukder**, “Enhancement of light absorption in a thin-film tandem solar cell with an intermediate layer of metal strips,” IEEE Photonics Conference (IPC 2015), Virginia, USA (2015).
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13. M. S. H. Sohel, A. F. M. S. Haq, and **M. A. Talukder**, “Design and simulation of three-wavelength terahertz GaN quantum cascade laser,” 8th International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh (2014).
14. M A Awal, Zabir Ahmed, and **M. A. Talukder**, “Semi-analytical model for enhanced surface plasmon polaritons in a corrugated interface,” 8th International Conference on Electrical and Computer Engineering (ICECE), Dhaka, Bangladesh (2014).
15. **M. A. Talukder** and C. R. Menyuk, “Suppression of spatial hole-burning and sub-picosecond pulses from two-section quantum cascade lasers,” IEEE Photonics Conference (IPC 2014), San Diego, CA, USA (2014).

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17. **M. A. Talukder** and C. R. Menyuk, "Modelocking quantum cascade lasers using quantum coherent saturable absorption," SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge, UK (2014).
18. C. R. Menyuk and **M. A. Talukder**, "Solitons, self-induced transparency, and quantum cascade lasers," SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge (2014).
19. **M. A. Talukder**, "Quantum coherent saturable absorption for mid-infrared ultra-short pulses," Winter College on Optics: Fundamentals of Photonics - Theory, Devices and Applications, ICTP, Trieste, Italy (2014).
20. S. N. Sourav, A. F. M. S. Haq, and **M. A. Talukder**, "Wideband photovoltaic energy conversion using group III-nitrides," International Conference on Advances in Electrical Engineering (ICAEE), Dhaka, Bangladesh (2013).
21. **M. A. Talukder**, "Ultra-short pulses from quantum cascade structures with distributed gain and absorption," IEEE Photonics Conference (IPC 2013), Washington, USA (2013).
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23. R. Faria, O. Hassan, F. Hayee, M. S. H. Sohel, A. Ahmed, and **M. A. Talukder**, "Study of design-dependent electroluminescence linewidth of quantum cascade lasers," Photonics Global Conference (PGC 2012), Singapore (2012).
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31. S. S. Shimu, A. Docherty, **M. A. Talukder**, and C. R. Menyuk, "Theoretical demonstration of stabilization of active modelocking in quantum cascade lasers with quantum coherent absorption," IEEE Photonics Conference (IPC 2012), California, USA (2012).

32. S. S. Shimu, A. Docherty, **M. A. Talukder**, and C. R. Menyuk, "Stabilization of active modelocking in quantum cascade lasers with quantum coherent absorption," MIRTHE-IRON-SensorCAT Virtual Conference, Princeton University, Princeton, USA (2012).
33. **M. A. Talukder** and C. R. Menyuk, "Temperature-sensitive gain recovery dynamics of quantum cascade lasers," International Conference on Intersubband Transitions in Quantum Wells (ITQW 2011), Sardinia, Italy (2011).
34. S. S. Shimu, A. Docherty, **M. A. Talukder**, and C. R. Menyuk, "Investigation of methods for improving the stability of active modelocking in quantum cascade lasers," Mid-Infrared Technologies for Health and the Environment (MIRTHE) Summer Workshop, Princeton University, Princeton, USA (2011).
35. **M. A. Talukder** and C. R. Menyuk, "Comprehensive quantum cascade lasers carrier transport modeling," MIRTHE NSF Site Visit, Princeton University, Princeton, USA (2011).
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41. C. R. Menyuk and **M. A. Talukder**, "A completely new way to make ultra-short pulses at midinfrared wavelengths," Computer Science and Electrical Engineering Research Review, University of Maryland Baltimore County (2010).
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48. **M. A. Talukder** and C. R. Menyuk, "Quantum cascade laser structures for self-induced transparency modelocking," Mid-Infrared Technologies for Health and the Environment

- (MIRTHE) National Science Foundation (NSF) Site Visit, Princeton University, Princeton, NJ, USA (2009).
49. **M. A. Talukder** and C. R. Menyuk, “Stability in self-induced transparency modelocking as system parameters vary,” IEEE Photonics Society Annual Meeting, New Port Beach, CA, USA (2008).
 50. **M. A. Talukder** and C. R. Menyuk, “Quantum cascade laser structures for self-induced transparency modelocking,” International Quantum Cascade Lasers School and Workshop, Monte Verita, Switzerland (2008).
 51. **M. A. Talukder** and C. R. Menyuk, “Stability of self-induced transparency modelocking in quantum cascade lasers,” Mid-Infrared Technologies for Health and the Environment (MIRTHE) Summer Workshop, Johns Hopkins University, Baltimore, USA (2008).
 52. **M. A. Talukder** and C. R. Menyuk, “Modelocking in quantum cascade lasers using self-induced transparency,” IEEE Photonics Society Annual Poster Competition, Baltimore and Washington-Northern Virginia Chapter, Baltimore, USA (2008) (won the 1st runner-up prize).
 53. **M. A. Talukder**, F.-S. Choa, C. R. Menyuk, K. J. Franz, S. S. Howard, and C. F. Gmachl, “Novel heat removal waveguide structure for high performance quantum cascade lasers,” Conference on Lasers and Electro-Optics (CLEO 2008), San Jose, CA, USA (2008).
 54. **M. A. Talukder**, F.-S. Choa, and C. R. Menyuk, “High power quantum cascade laser with buried heterostructure,” Mid-Infrared Technologies for Health and the Environment (MIRTHE) National Science Foundation (NSF) Site Visit, Princeton University, Princeton, NJ, USA (2008).
 55. **M. A. Talukder**, C. R. Menyuk, and F.-S. Choa, “Comprehensive quantum cascade laser model and applications,” Mid-Infrared Technologies for Health and the Environment (MIRTHE) National Science Foundation (NSF) Site Visit, Princeton University, Princeton, NJ, USA (2008).
 56. **M. A. Talukder**, Fow-Sen Choa, and C. R. Menyuk, “Structure design for quantum cascade laser core temperature reduction,” Mid-Infrared Technologies for Health and the Environment (MIRTHE) Summer Workshop, Princeton University, Princeton, NJ, USA (2007).
 57. **M. A. Talukder** and M. N. Islam, “Effect of self-phase modulation on optical communication system in presence of dispersion compensation,” International Conference on Electrical and Computer Engineering (ICECE 2004), Dhaka, Bangladesh (2004).
 58. **M. A. Talukder** and M. N. Islam, “Dependence of self-phase modulation impairments on input pulse shape over a dispersion-compensated transmission link using standard single-mode fiber,” IEEE 8th International Multitopic Conference (INMIC 2004), Lahore, Pakistan (2004).

SELECTED KEYNOTE PRESENTATIONS

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1. “Toward a Trillion-Dollar Bangladesh: Building an Innovation-Driven Knowledge Economy,” organized by the TMSS, Bogura, 11 June 2026.
 2. “Development of Scientific Inventory for Bangladesh,” organized by the Economic Relations Division (ERD) of the Ministry of Finance, 20 May 2026.
 3. “Creating, Protecting, and Commercializing Intellectual Property: A Roadmap for Bangladesh Universities,” organized by the Institutional Quality Assurance Cell (IQAC), Rajshahi University, Rajshahi, 19 May 2026.
 4. “Engineering Innovation and Intellectual Property: Building Bangladesh’s Technology Commercialization Ecosystem,” organized by the Rajshahi University of Engineering and Technology (RUET), Rajshahi, 19 May 2026.

5. “Research, Collaboration and Publication Ethics and Research Budget Management,” organized by the Institutional Quality Assurance Cell (IQAC), Dhaka University of Engineering and Technology (DUET), Gazipur, 19 November 2025.
6. “From Wonder to Wisdom: Using Planetariums to Ignite Space Science Education in Bangladesh,” organized by Novotheatre, Dhaka, 11 November 2025.
7. “Developing Intellectual Property Protection for Academia: A Roadmap for Bangladesh,” organized by Jahangirnagar University, Savar, Dhaka, 24 September 2025.
8. “Nikola Tesla: The Futurist Engineer,” organized by the Novotheatre, Dhaka, 29 June 2024.
9. “Alternate Sources of Energy: What Future Bangladesh Offers?” organized by the Ministry of Public Administration, Government of Bangladesh, 4 June 2024.
10. “A Roadmap for University-based IP Management System,” National Conference on Intellectual Property and Commercialization 2024 (NCIPC 2024), Dhaka, May 15, 2024.
11. “Smart Citizens for Smart Bangladesh: Areas for Building Rural Skilled Populations,” organized by the Bangladesh Academy for Rural Development (BARD), Cumilla, 11 March 2024.
12. “University-Industry Collaboration to meet 4IR and SDG,” organized by the Faculty of Engineering, University of Rajshahi, 2 September 2023.
13. “Planning, implementation, and Documentation of a research project,” Khulna University, organized by the IQAC and Research and Innovation Center of Khulna University, March 20, 2023.
14. “Increasing Awareness on Predatory Academic Practices,” National Young Academy of Bangladesh Seminar, 22 February 2022.
15. “Nanophotonics for enhanced photovoltaics, biosensing, and microscopy,” ICEECC 2019, India.

SELECTED INVITED PRESENTATIONS

1. “Research Tools: Capturing Lab-Based Data,” organized by the Directorate of Technical Education, Bangladesh, 30 November 2025 and 11 December 2025.
2. “Designing Lab-Based Research,” organized by the Directorate of Technical Education, Bangladesh, 30 November 2025 and 11 December 2025.
3. “Building Bridges Beyond Borders: The Role of Industry-Integrated Universities in a Global Science Ecosystem for Peace,” in the UNESCO Chairs Summit of Scientific Solidarity – Building Bridges Across Borders at MMDR-9, Karachi, Pakistan, 25 November 2025.
4. “The Art and Science of Research Proposal Writing,” organized by the Department of EEE, Khulna University of Engineering and Technology (KUET), 13 August 2025.
5. “IP practices in BUET,” at the Webinar on “IP Management at Tertiary Educational Institutions: Malaysia and Bangladesh,” organized by the Bangladesh High Tech Park Authority of the ICT Division, 20 July 2024.
6. “RISE in BUET – Trickling Down of Advanced Research to Undergraduate Curriculum,” at the National Symposium on “Transforming Education for the Industry: Engineer’s Perspective in Achieving Vision 2041,” organized by the Board of Accreditation for Engineering and Technical Education, Dhaka, Bangladesh, April 20, 2024.
7. “Fostering Industry-Academia Collaboration,” Teachers’ Appreciation Workshop, organized by the Directorate of Continuing Education, BUET, March 19, 2024.
8. “Intellectual Property Policy of BUET,” Japan-Sweden-Bangladesh Joint Seminar of IP Policy organized by the Osaka University, Japan, March 2, 2023.
9. “Nanophotonics for enhanced photovoltaics, biosensing, and microscopy,” International Faculty Development Program, Chandigarh University, India, July 5–10, 2021.
10. “Plasmonic photovoltaics, biosensing, and microscopy,” (Invited) in University of California, Irvine, CA, USA (2017).

11. “Photovoltaic cells based on plasmonic structures,” (Invited) SPIE Commercial + Scientific Sensing and Imaging, Anaheim, CA, USA (2017).
12. “Ultra-short pulses from quantum cascade lasers for terahertz time domain spectroscopy,” (Invited) SPIE Commercial + Scientific Sensing and Imaging, Anaheim, CA, USA (2017).
13. “Literary contents for conducting high impact research in engineering: challenges and prospects in the context of Bangladesh,” (Invited) in Seminar Series organized by the Library of BUET (2015).
14. “Mid-infrared light for health and environment,” (Invited) in the South Asian Workshop on Photonics, Indian Institute of Technology Guwahati, India (2015).
15. “Creating and controlling shades of light for health and environment,” (Invited) in the International Conference on Material Chemistry, Sylhet, Bangladesh (2014).
16. “Modelocking quantum cascade lasers using quantum coherent saturable absorption” (Invited) in the SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge, UK (2014).
17. “The quantum coherence and a novel approach to create ultra-short pulses in quantum cascade lasers” (Invited) in a Seminar organized by BUET and IEEE Bangladesh Section, Dhaka (2013).
18. “Quantum coherence and gain recovery dynamics in quantum cascade lasers” (Invited) in a Seminar organized by Princeton University, Princeton, USA (2010).
19. “Quantum cascade lasers: The ultra-fast dynamics” (Invited) in a Seminar organized by BUET and IEEE Electron Devices Society – Bangladesh Chapter, Dhaka (2009).
20. “Quantum cascade lasers: The art of band-structure engineering” (Invited) in a Seminar organized by East-West University, Bangladesh, and IEEE Electron Devices Society – Bangladesh Chapter, Dhaka (2009).
21. “Quantum cascade lasers, modelocking, and self-induced transparency” (Invited) in Electrical Engineering Graduate Seminar, University of Maryland, Baltimore County, Baltimore, MD, USA (2009).
22. “Analytical and computational study of self-induced transparency mode-locking in quantum cascade lasers” (Invited) in Computer Science and Electrical Engineering Research Review, University of Maryland, Baltimore County, Baltimore, MD, USA (2009).
23. “Quantum cascade laser: Design and numerical characterization” (Invited) in Electrical Engineering Graduate Seminar, University of Maryland, Baltimore County, Baltimore, MD, USA (2008).

SELECTED INVITED PANELIST/PANEL DISCUSSANT ENGAGEMENTS

1. “Establishment of high-power multipurpose nuclear research reactor in Bangladesh,” organized by the Bangladesh Atomic Energy Commission (BAEC), 27 July 2026.
2. “The effectiveness and implementation of GPS technology in public transport,” organized by the Bangladesh Road Transport Authority (BRTA), 29 June 2026.
3. “High-Level Strategic Roundtable Discussion on Nuclear Energy: Strategy, Reality and Bangladesh’s Path Forward,” organized by the Ministry of Science and Technology, 12-13 June 2026.
4. “Fintech in 2026 – from Disruption to Infrastructure,” organized by the Entrepreneurship Development in Higher Educational Institutions (HEI’s) project, Innovation, Creativity and Entrepreneurship Center (ICE), University of Dhaka, 13 May 2026.
5. “New way of electron heating of plasma to understand the origin of radar echoes,” organized by the Novotheatre, Dhaka, Bangladesh, 15 April 2026.
6. “Bridging the digital skills-to-jobs gap in Bangladesh,” organized by The World Bank’s Digital & AI team, Dhaka, Bangladesh, 8 April 2026.

7. “EEE Entrepreneurs: Opportunities and Challenges in Bangladesh and Beyond” at the BUETian Entrepreneurs Network (BUETEN) Summit 2026, 23 January 2026.
8. “Finalization of Research Tools and Questionnaire” to implement research projects on technical and vocational education (2025–26), organized by the Technical Education Department, 26 November 2025.
9. “FBCCI IRC: Brainstorming Session on Future Directions,” organized by the Innovation and Research Center of the FBCCI, Dhaka, 27 September 2025.
10. Roundtable on “Futuristic quality education to ensure youth empowerment, Innovation and Investment,” organized jointly by The Business Standard & United International University, Dhaka, 25 August 2025.
11. “Bangladeshi Semiconductor Talent Force – Pathways to Global Integration,” at the BEAR Summit & National Semiconductor Symposium 2025, Dhaka, 17 July 2025.
12. “SILK ROAD 4.0 – Global Future Summit,” Hosted by Design in Bangladesh in collaboration with Design in Global Foundation and the Ministry of Foreign Affairs, Dhaka, 16 May 2025.
13. “Strengthening the collaboration of the Private Sector and Academia: State & Future,” organized by the Dhaka Chamber of Commerce & Industry, Dhaka, 6 July 2024.
14. “Special Research Grant-Aided Projects: Seminar on Results and Applications,” organized by the Ministry of Science and Technology, Dhaka, 25 June 2024.
15. “Industry Academia Collaboration for Professional Development of CSE/IT Students,” jointly organized by eSRD-Lab, CSE, BUET and Bangladesh Innovation Forum, IAC, ECE Bhaban, BUET, 25 May 2024.
16. “Patentability of Innovation: Bangladesh and Global Context,” National Conference on Intellectual Property and Commercialization (NCIPC 2024), Dhaka, May 15, 2024.
17. “Empowering Women in Renewable Energy: A Feminist Perspective from Bangladesh and Beyond,” organized by ActionAid Bangladesh, May 8, 2024.
18. “Conference on Industry-Academia Collaboration,” organized by Bangladesh University of Professionals (BUP), Mirpur Cantonment, Dhaka-1216, Bangladesh (January 24, 2024).
19. “Formulation of Action Plan of the Novotheatre in Building Smart Bangladesh,” organized by the Novotheatre, Dhaka (17 December 2023).
20. “Bangladesh Decides: The Youth Speaks - Voice for a Sustainable Tomorrow,” organized by Her-Net Foundation in collaboration with the European Union and the French Embassy (5 December 2023).
21. “Public-Private-Academia Bridging for Skill Development, organized by the Prime Minister’s Office and FBCCI Innovation and Research Centre (18 November 2023).
22. “Energy Policy: Ensuring Access to Affordable, Reliable and Modern Energy Services,” at the Regional Climate Summit 2023, Dhaka, 8 September 2023.
23. “Special Research Grant-Aided Projects: Seminar on Results and Applications,” (Invited discussant on the project “Development of Solar Powered IoT-Based Smart Agriculture”) organized by the Ministry of Science and Technology, Dhaka, 17 May 2023.
24. “Skills for Smart Bangladesh,” organized by the Bangladesh Computer Council (BCC), Dhaka, 13 March 2023.
25. “Building Smart Novotheatre using 4IR,” organized by the Novotheatre, Dhaka, 25 February 2023.
26. “Industry-Academia Linkage: The New Frontier,” organized by the Dhaka Chamber of Commerce and Industry, Dhaka, 27 February 2021.

THESIS SUPERVISION

Doctor of Philosophy (PhD)

1. “Design and analysis of graphene surface plasmon biosensors,” defended by Md. Mahbub Hossain (2022).

Master of Science (MSc)

1. “Design and analysis of high-energy nanoporous carbon electrode-based supercapacitor,” to be defended by Koushik Sarkar (April 2026).
2. “Enhancing photocatalytic activity of hematite photoelectrode using doping for improved hydrogen generation by water splitting,” defended by Abdul Ahad Mamun (August 2025).
3. Design and analysis of a low-noise on-chip three-dimensional plasmonic biological cell imaging system,” defended by Maliha Momtaj (January 2025).
4. “Design of coupled two-dye gain medium-based nanolasers for short pulse generation,” defended by Shadman Shahid (January 2025).
5. “Design and analysis of efficient and tunable plasmonic lasers with directional radiation,” defended by Zabir Ahmed (August 2016).
6. “Analysis of bimetallic nanorod dimer biosensors for label-free molecule detection,” defended by Avijit Das (August 2016).
7. “Analysis of dispersion-dependent spectral response of mid-infrared InGaAs/GaAsSb photodetectors,” defended by Maruf Ahmed (May 2016).
8. “Design and analysis of ultra-broadband gain medium and waveguide structure for terahertz emission,” defended by Md. Shahadat Hasan Sohel (March 2015).
9. “Study of dynamics of mid-infrared quantum cascade lasers pumped by near-infrared light,” defended by Fariah Hayee (August 2014).
10. “Study of light trapping in a tandem plasmonic solar cell,” defended by Golam Md. Imran Hossain (July 2014).
11. “Analysis of a multi-color widely tunable quantum cascade laser with multi-segment cavity,” defended by Orchi Hassan (July 2014).
12. “Analysis of temperature dependence of nitride-based quantum cascade detectors,” defended by A. F. M. Saniul Haq (July 2014).
13. “Analysis of diffraction grating-induced distributed feedback for stable single-mode quantum cascade lasers,” defended by Asif Ahmed (May 2014).
14. “Development of a deep learning-based testing system for rapid health prediction of electric vehicle batteries,” to be defended by Azad Rahman (December 2025).

SELECTED CONSULTANCY

- “Development of Scientific Inventory for Bangladesh and Identify Challenges and Opportunities,” project undertaken by the Support to Sustainable Graduation Project (SSGP) of the Economic Relations Division (ERD), Ministry of Finance, Bangladesh (2026).
- “Ascertaining the proximate cause of loss and extent of damages sustained to the Building and Machinery of Nasir Glassware and Tube Industries Limited, Mirzapur, Tangail, Bangladesh,” (2023–2024).
- “Vetting of the Drawing, Design, and estimation for the Renewal/Renovation of the 11/0.415 kV Substation at Sadharan Bima Corporation Building, 33 Dilkusha C/A, Dhaka” (2022–2023).
- “Feasibility Study for Establishment of Digital Security Agency and Creation of Necessary Infrastructure in Bangabandhu Hi-Tech City, Gazipur,” (2020–2022).
- “Certification for tax-free clearance (SRO-70) of the imported materials from the customs house for Patuakhali 1320 (2X660) MW coal-fired thermal power plant project,” 2022–2023.
- “Certification as per SRO-70 (Special consideration) for permanently imported consignment for the construction of a 30 MW (AC) grid-tied solar PV power plant at Kaliganj, Lalmonirhat by Intraco Solar Power Limited,” 2022.
- “Technical Audit of Renewable Energy Systems,” undertaken by the Infrastructure Development Company Limited (IDCOL) (2019–2020).

- “Development of a SCADA System for Dhaka Power Distribution Company (DPDC) Limited,” 2015–2016.
- “Fire and Electrical Safety Assessment for Ready-Made Garments Factories in Bangladesh,” a project undertaken by the International Labor Organization (ILO), 2013–2014.
- “Development of a SCADA system for Bangladesh Power Development Board Executives,” 2013.
- “Development of a Light and Sound Show for Lalbagh Fort” work undertaken by the Department of Archaeology of the Government of Bangladesh, 2012–2013.
- Member, Bureau of Research, Testing, and Consultation (BRTC) of the Department of Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology (2004 to date).

PROFESSIONAL REFERENCES

1. Dr. Curtis R. Menyuk Professor	Computer Science and Electrical Engineering University of Maryland Baltimore, MD 21250, USA Email: menyuk@umbc.edu Phone: +1-410-455-3501
2. Dr. B. M. Azizur Rahman Professor	Electrical and Electronic Engineering City, University of London London EC1V 0HB, UK Email: B.M.A.Rahman@city.ac.uk Phone: +44 (0)20 7040 8123
3. Dr. M. Tamim Professor and Vice Chancellor	Independent University Bangladesh (IUB) Plot 16, Block B, Aftabuddin Ahmed Road Bashundhara Residential Area, Dhaka 1245 Email: vice.chancellor@iub.edu.bd Phone: 01552400224
4. Dr. Mohammad Rafiqul Islam Professor and Vice Chancellor	Islamic University of Technology Boardbazar, Gazipur, Bangladesh Email: vc@iut-dhaka.edu Phone: 01817571911