Md. Helal Miah

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Work Experiences

- Currently working as an Assistant Professor at the Department of Physics in Gopalganj Science and Technology University, Gopalganj from April 25, 2021 to present, where I joined as a lecturer on December 03, 2017.

- Served as an Assistant Professor of physics in a private university named Bangladesh University of Business and Technology, Dhaka, under the Department of Electrical and Electronic Engineering since January 01, 2016 to November 30, 2017. Before that I served as a lecturer at the same department from October 01, 2012 to December 31, 2015.

Publications

1) **Md. Helal Miah,** Mayeen Uddin Khandaker, Yahaya Saadu Itas, Amran Hossain, Phannee Saengkaew, Arshid Numan, Mohammad Aminul Islam, Mohammad Nur-E-Alam: First-Principles Study of Rare-Earth-Free Cs_4SrI_6:Tl: A Zero-Dimensional Halide Perovskite for Scintillation Applications, **RSC Advances** ***(May 05, 2026***) doi: 10.1039/D6RA00836D

2) Yahaya Saadu Itas, **Md. Helal Miah**, Sultan Albarakati, Turki Alkathiri, Mazen R. Alrahili, Mayeen Uddin Khandaker: DFT-based investigation on Si- and Ni-doped $CsSrI_3$ dielectric materials for energy storage in MIM capacitors, **Journal of Physics and Chemistry of Solids** ***(February 28, 2026),*** **Elsevier**, https://doi.org/10.1016/j.jpcs.2026.113634

3) Khemipa Sanklaa, Phannee Saengkaew, Sirasit Sreesai, Rhett Simon Tabbada, Tossaporn Lertvanithphol, Prutthipong Tsuppayakorn-aek, **Md. Helal Miah,** Mayeen Uddin Khandaker, Kittidhaj Dhanasiwawong, Mati Horprathum, Rawat Jaisutti, Wasin Chevajarassakul: Modification of optical and electrical properties in sputtered CsI films by dopant incorporation, **Journal of Materials Science: Materials in Engineering** ***(February 17, 2026), Springer,*** https://doi.org/10.1186/s40712-026-00416-x

4) **Md. Helal Miah**, Mayeen Uddin Khandaker, Phannee Saengkaew, Arshid Numan, Mohammad Aminul Islam: Advances in Perovskite Based Scintillation Materials for Gamma ray spectroscopy: Issues and Opportunities, **RSC Advances** ***(November 10, 2025*****), Royal Society of Chemistry,** https://doi.org/10.1039/D5RA04980F

5) Md. Jakir Hossen, Md. Bulu Rahman, M. Shahinuzzaman, **Md. Helal Miah**, Noor-E Ashrafi, Rahim Abdur, Suhana Binti Mohd Said, Sharifah Wan Muhamad Hatta, Mohammad Aminul Islam: Single Step and Solution Process Fabrication of Mesoporous ZnOS Thin Film as an Effective Electron Transport Layer for the Cs-based Halide Double PSCs, **Energy Science & Engineering** ***(September 21, 2025),*** **Wiley,** https://doi.org/10.1002/ese3.70301

6) Md. Jakir Hossen; Md. Shahinuzzaman; MS Jamal; Suhana Mohd Said; S F W M Hatta; **Md. Helal Miah**; Mayeen Uddin Khandaker; Mohammad Nur-E Alam; Mohammad Aminul Islam: CuI-Derived Cu_xO Thin Films via Thermal Oxidation for Lead-Free Perovskite Solar Cells, **Journal of Electronic Materials** ***(September 18, 2025),*** **Springer,** https://doi.org/10.1007/s11664-025-12386-5

7) **Md. Helal Miah**, Yahaya Saadu Itas, Phannee Saengkaew, Mohammad Aminul Islam, Mayeen Uddin Khandaker: First-principles study of high-performance scintillators: Tl-doping in CsSrI3 perovskite, **Materials Chemistry and Physics** ***(September 08, 2025),*** **Elsevier,** https://doi.org/10.1016/j.matchemphys.2025.131532

8) **Md. Helal Miah,** Mayeen Uddin Khandaker, Md. Jakir Hossen, Noor–E-Ashrafi, Ismat Jahan, Md. Shahinuzzaman, Mohammad Nur-E-Alam, Mohamed Y. Hanfi, Md. Habib Ullah, Mohammad Aminul Islam: Lead-Free Alternatives and Toxicity Mitigation Strategies for Sustainable Perovskite Solar Cells: A Critical Review, **Materials Advances** ***(March 13, 2025),*** **Royal Society of Chemistry,** https://doi.org/10.1039/D5MA00010F

9) Md. Jakir Hossen, Md. Bulu Rahman, **Md. Helal Miah,** Noor-E-Ashrafi, Hairul Mardiah Hamzah, Suhana Mohd Said, S F W M Hatta, Mohammad Aminul Islam: Modeling and optimization of high efficiency Pb-free Cs-based halide double perovskite solar cell using SCAPS-1D, **Journal of Optics** ***(March 11, 2025),*** **Springer,** https://doi.org/10.1007/s12596-025-02550-9

10) **Md. Helal Miah**, Md. Bulu Rahman, Mohammad Nur-E-Alam, Mohammad Aminul Islam, M. Shahinuzzaman, Md Rezaur Rahman, Md. Habib Ullah, Mayeen Uddin Khandaker: Key degradation mechanisms of perovskite solar cells and strategies for enhanced stability: issues and prospects, **RSC Advances** ***(January 07, 2025),*** **Royal Society of Chemistry,** https://doi.org/10.1039/D4RA07942F

11) Md. Jakir Hossen, Hairul Mardiah Hamzah, Md. Shahinuzzaman, MS Jamal, Suhana Mohd Said, S F W M Hatta, **Md. Helal Miah,** Mayeen Uddin Khandaker, Mohammad Aminul Islam: Recent Progress on the Efficiency and Stability of Lead-free Cs2AgBiBr6 Double Halide Perovskite Solar Cells, **Physica Scripta** ***(December 06, 2024)*** **IOP**, https://doi.org/10.1088/1402-4896/ad9b59

12) Nadia Hartini Suhaimi, Mohammad Nur-E-Alam, Boon Kar Yap, K Sobayel, **Md Helal Miah**, Mohammad Aminul Islam, Sieh Kiong Tiong, Narottam Das, Mayeen Uddin Khandakher, Nowshad Amin: Chronological progress in enhancing CIGS solar cell performance through window layer development: Fundamentals, synthesis, optimization, **Surfaces and Interfaces** ***(September 20, 2024),*** **Elsevier**, https://doi.org/10.1016/j.surfin.2024.105145

13) Hairul Mardiah Hamzah, **Md. Helal Miah***, Md. Jakir Hossen, Norhayati Binti Soin, Yasmin Abdul Wahab, Mayeen Uddin Khandaker, Mohammad Aminul Islam*: Current Status of Pb-free PSCs and Infer the Highest Achievable PCE Via Numerical Modeling, and Optimization of Novel Structure FAMASnGeI$_3$ Based PSCs, **Materials Research Express**, ***(June 04, 2024),*** **IOP**, https://doi.org/10.1088/2053-1591/ad4fe0

14) Noor–E-Ashrafi, **Md. Helal Miah**, Md. Bulu Rahman, Mohammad Aminul Islam, Mayeen Uddin Khandaker: Revealing the High-Performance of a Novel Ge-Sn based Perovskite Solar Cell by Employing SCAPS-1D, **Physica Scripta,** ***(May 07, 2024)*** **IOP**, https://doi.org/10.1088/1402-4896/ad482c

15) **Md. Helal Miah,** Mayeen Uddin Khandaker*, Md. Bulu Rahman, Mohammad Nur-E-Alam, Mohammad Aminul Islam: Band Gap Tuning of Perovskite Solar Cells for Enhancing the Efficiency and Stability: Issues and Prospects, **RSC Advances (*April 27, 2024*), Royal Society of Chemistry,** https://doi.org/10.1039/d4ra01640h

16) **Md. Helal Miah,** Noor-E- Ashrafi, Md. Bulu Rahman, Mohammad Nur-E-Alam, Mohammad Aminul Islam, K.A. Naseer, Mohamed Y. Hanfi , Hamid Osman , Mayeen Uddin Khandaker: First-principles study of the structural, mechanical, electronic, optical, and elastic properties of non-toxic XGeBr3 (X=K, Rb, and Cs) perovskite for optoelectronic and radiation sensing applications, **Materials Chemistry and Physics, (*April 23, 2024*) Elsevier,** https://doi.org/10.1016/j.matchemphys.2024.129377

17) **Md. Helal Miah,** Mayeen Uddin Khandaker, Mohammad Aminul Islam, Mohammad Nur-E-Alam, Hamid Osman, Md. Habib Ullah: Perovskite Materials in X-ray Detection and Imaging: Recent Progress, Challenges, and Future Prospects**, RSC Advances (*February o7, 2024*), Royal Society of Chemistry,** https://doi.org/10.1039/D4RA00433G

18) Md. Bulu Rahman, Noor-E-Ashrafi, **Md. Helal Miah***, Mayeen Uddin Khandaker and Mohammad Aminul Islam*c: Selection of a compatible electron transport layer and hole transport layer for the mixed perovskite $FA_{0.85}Cs_{0.15}Pb\ (I_{0.85}Br_{0.15})_3$, towards achieving novel structure and high-efficiency perovskite solar cells: a detailed numerical study by SCAPS-1D, **RSC Advances (*May 26, 2023*), Royal Society of Chemistry,** https://doi.org/10.1039/D3RA02170J

19) **Md. Helal Miah,** Md. Bulu Rahman, Fatema Khatun, Mayeen Uddin Khandaker, Sharifah Fatmadiana Wan Muhammad Hatta, Norhayati Binti Soin, Mohammad Aminul Islam: Optimization and detail analysis of novel structure Pb-free CsGeI3-based all-inorganic perovskite solar cells by SCAPS-1D, **Optik** (***March 24, 2023***), **Elsevier**, https://doi.org/10.1016/j.ijleo.2023.170819

20) **Md. Helal Miah,** Md. Bulu Rahman, Mohammad Nur-E-Alam, Narottam Das, Norhayati Binti Soin, S. F. W. Muhammad Hatta, Mohammad Aminul Islam: Understanding the Degradation Factors, Mechanism and Initiatives for Highly Efficient Perovskite Solar Cells, **ChemNanoMat** (***December 28, 2022***), **Wiley-VCH Verlag**, https://doi.org/10.1002/cnma.202200471

21) **Md. Helal Miah,** Md. Rakib Hossain, Md. Saiful Islam, Tahmina Ferdous and Farid Ahmed: A theoretical study of allopurinol drug sensing by carbon and boron nitride nanostructures: DFT, QTAIM, RDG, NBO and PCM insights, **RSC Advances (*November 15, 2021*), Royal Society of Chemistry,** https://doi.org/10.1039/D1RA06948A

22) Siraj Ud Daula Shamim, **Md. Helal Miah**, Md Rakib Hossain, Md Mehade Hasan, Md Kamal Hossain, Md Abul Hossain, Farid Ahmed: Theoretical investigation of emodin conjugated doped $B_{12}N_{12}$ nanocage by means of DFT, QTAIM and PCM analysis, **Physica E: Low-**

dimensional systems and nanostructures (*October 25, 2021*), Elsevier, https://doi.org/10.1016/j.physe.2021.115027

Submitted Manuscript

- *Yahaya Saadu Itas, Mayeen Uddin Khandaker, Faiza Benabdallah, Sultan Albarkati, Mazen R. Alrahili,* ***Md. Helal Miah*** *:Density Functional Theory Investigation of Titanium Carbide MXene for Adsorption of Toxic Heavy Metals (Cr, As) in Mining Wastewater* ***(Is being reviewed by The Next Materials, Elsevier)***

- ***Md. Helal Miah****, Md. Bulu Rahman, Mohammad Nur-E-Alam, Mohammad Aminul Islam, H.J. Woo, Mohamed Y. Hanfi, Mayeen Uddin Khandaker: Perovskite Based Semiconducting Materials as Sensors of Ionizing Radiations: Challenges and Opportunities* ***(Is being reviewed by The Journal of Nuclear Science and Technology, Taylor & Francis)***

- *Mohammad Nur-E Alam; Mohammad Khairul Basher; Boon Kar Yap; Tiong Sieh Kiong; Mohammad Aminul Islam; Tan Chou Yong; Mikhail Vasiliev; Mohammad Tariqul Islam;* ***Md. Helal Miah;*** *Mayeen Uddin Khandaker: Semi-transparent Ag: SiC Thin Films for Next-Gen Optoelectronics* ***(Is being reviewed by The Inorganic Chemistry Communications, Elsevier)***

- ***Md. Helal Miah****, Mayeen Uddin Khandaker, Phannee Saengkaew, Arshid Numan, Mohammad Aminul Islam: Crystal Growth and Optoelectronic Performance of Zero-Dimensional Perovskite Materials for Scintillation Applications* ***((Is being reviewed by The Materials Chemistry and Physics, Elsevier)***

Thesis Work

- A study on TiO_2 Nano-particle based dye sensitized solar cell

Studied Courses

- **In Masters:** Advanced LASER Physics, Solid State Physics, Nuclear Physics-I, Non-Equilibrium Statistical Mechanics.

- **In Honors:** Quantum Mechanics, Electronics & Computer, Solid State Physics-II, Statistical Mechanics, Nuclear Physics-II, Classical Mechanics & Special Theory of Relativity, Electrodynamics, Quantum Mechanics-I, Nuclear Physics-I, Solid State Physics-I, Waves and Optics, Electronics-I, Mathematical Physics, Atomic and Nuclear Physics, Mechanics, Oscillations and Properties of Matter, Thermal Physics, Electricity and Magnetism.

Academic Credentials

Level	Educational Institution	Exam Passed	Results	Passing Year	Session	Field/Branch
Master's	University of Dhaka	M.Sc.	1st Class	2012	2008-09	Physics
Honors	University of Dhaka	B.Sc.	1st Class	2010	2004-05	Physics

Higher Secondary	Comilla Government College	HSC	4.90	2004	2002-03	Science
School Secondary	Chandla K.B. High School	SSC	3.88	2002	2000-01	Science

Personal Details

Father	:	Md. Majnu Miah
Mother	:	Raushanara Begum
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Blood Group	:	A (+Ve)
Permanent Address	:	Vill: Charer Pathor P.O.: Chandla Bazar P.S.: Brahmman Para, District: Comilla
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Marital Status	:	Married

References

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