

Curriculum Vitae



Md. Harun-Or-Rashid

Nationality: Bangladeshi, **Date of birth:** 31/12/2000, **Gender:** Male.



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About Me

I am Md. Harun-Or-Rashid, an MSc student and Research Assistant in Electrical and Electronic Engineering at Begum Rokeya University, Rangpur, Bangladesh, with a strong focus on computational materials science and perovskite photovoltaics. My research integrates first-principles (DFT) simulations and device-level modeling to develop and optimize advanced materials for sustainable solar energy applications. I have hands-on experience with SCAPS-1D, Quantum ESPRESSO, Materials Studio (CASTEP), VESTA, and OriginPro, and I apply machine learning techniques to analyze photovoltaic device performance. I am highly motivated and actively seeking funded PhD opportunities where I can combine my computational background with experimental materials research, thin-film photovoltaics, device fabrication, and renewable energy technologies.

Education

2025 – Ongoing

(Expected completion: July 2026)

M.Sc. in Electrical and Electronic Engineering (EEE)

- Begum Rokeya University, Rangpur, Bangladesh
- Session: 2022-2023
- Thin Film Engineering, Semiconductor Characterization Technology, Advanced Power System Control, Power System Transients, and Advanced VLSI Design.

2019 - 2025

B.Sc. in Electrical and Electronic Engineering (EEE)

- Begum Rokeya University, Rangpur, Bangladesh
- CGPA: 3.73 Out Of 4.00 (Secured 3rd position), Session: 2018-2019, Degree Awarded: March 2025
- Renewable Energy Technology, Optoelectronics, Power System, Electrical circuit, Electronic Circuit, Energy Conversion, Communication System, Signal and Systems using MATLAB, Engineering Physics.

Work Experience

Teaching Assistant

Department of Electrical and Electronic Engineering, Teesta University, Rangpur

28 April 2026 – Present

- Assist faculty members in conducting undergraduate theory and laboratory classes, evaluating assignments and lab reports, taking class exams, and assessing student performance.
- Mentor students in basic research activities, literature review, data analysis, and academic writing.

Research Assistant

Advanced Energy Materials and Solar Cell Research Laboratory, Full-time, January 2023 – Present (3 years 5 months), Department of Electrical and Electronic Engineering, Begum Rokeya University, Rangpur.

- Research perovskite materials using DFT simulations and SCAPS-1D modeling for solar cell applications.
- Mentor junior lab members in computational techniques and data analysis under the supervision of Dr. Md. Ferdous Rahman.
- Contribute to literature reviews, result interpretation, and manuscript preparation for high-impact journal publications.

Peer review (As a reviewer):

- Review four papers for **Computational Condensed Matter (Elsevier)**
- Review a paper for **Inorganic Chemistry Communications (Elsevier)**
- Review five papers for **Scientific African (Elsevier)**
- Review two papers for **Discover Chemistry (Springer)**
- Review a paper for **Materials Chemistry and Physics: Sustainability and Energy (Elsevier)**

Publications (in International Peer-Reviewed Journal):

Sl	Journal Title/Publisher	Details
1	RSC Advances (RSC)	Md. Harun-Or-Rashid (Corresponding and First Author) , Hanane Etabti, Md. Tauki Tazwar, Md. Amzad Abid, Md Farhan Shahriyar, Nosir Khurramov, Abdulla Hayitov, Sabirov Sardor, Lakhdar Benahmedi, Md. Monirul Islam and Md. Ferdous Rahman, “First-Principles Investigation and Device Simulation of TlPbI_3 - Based Perovskite Solar Cells with Machine Learning-Driven Efficiency Prediction” <i>RSC Adv.</i> , 2026, 16 , 18022-18060 DOI: https://doi.org/10.1039/D6RA01288D
2	Modern Physics Letters B (World Scientific)	Dina Islam, Md. Harun-Or-Rashid , Abdullah Marzouq Alharbi, Mongi Amami, Lamia Ben Farhat, Samah Al-Qaisi, and Md. Ferdous Rahman “Novel A_2MgZnX_6 halide double perovskites: Stable and non-toxic materials for solar energy harvesting” <i>Mod. Phys. Lett. B</i> , p. 2650038, Jan. 2026, DOI: https://doi.org/10.1142/S0217984926500387
3	Advanced Photonics Research (Wiley)	Afifa Lubaba, Mohammed M. Fadhali, Md. Faruk Hossain, Md. Harun-Or-Rashid , Nacer Badi, Aijaz Rasool Chaudhry, Ahmad Irfan, Md. Ferdous Rahman “Engineering of Double Absorber Organic-Perovskite Solar Cells for >34% Efficiency with V_2O_5 as Back Surface Field Layer” <i>Adv. Photonics Res.</i> 2025; 000, e202500196. DOI: https://doi.org/10.1002/adpr.202500196
4	Materials Today Communications (Elsevier)	Md. Harun-Or-Rashid (Corresponding and First Author) , Dina Islam, Hanane Etabti, Md Rafat Ul Rizvan, Mukhayya Ruzieva, Islom. Khudayberganov, Md Amzad Sadik Abid, Md Farhan Shahriyar, Jannati Islam Chy, Ahmet Sait ALALI, Md. Ferdous Rahman, “High-efficiency InPbI_3 perovskite solar cells: A multiscale approach from first-principles to machine learning,” <i>Materials Today Communications</i> , Volume 49, 2025, 114060, ISSN 2352-4928, DOI: https://doi.org/10.1016/j.mtcomm.2025.114060
5	Nano (World Scientific)	Md. Harun-Or-Rashid (Corresponding and First Author) , Md Aminur Rahman, MD Mahmud Hasan Munna, Muhammad Naeem Tabassam, Md Amzad Sadik Abid, Mudabbir Hussan, Shovon Mondal, Md. Monirul Islam, Lotfi Mouni, Ahmed Nabih Zaki Rashed, and Md. Ferdous Rahman “Revealing InPbBr_3 Perovskite’s Potential: A DFT, Scaps and Machine Learning-Based Study for Next-Generation Solar Cells” <i>Nano</i> , Sep. 2025, DOI: https://doi.org/10.1142/S1793292026500037

6	Inorganic Chemistry Communications (Elsevier)	Md. Ferdous Rahman, Akbar Hasan, Md. Shah Alam, Mahmudul Hassan, Md. Afsha Habib, Md. Harun-Or-Rashid , Md. Faruk Hossain, Safa Ezzine, Mongi Amami “The impact of group V cation substitution on the structural and functional properties of Sr_3MF_3 (M = Sb, As, P, N) fluoro-perovskites” Inorganic Chemistry Communications, Volume 182, Part 1, 2025, 115426, ISSN 1387-7003, DOI: https://doi.org/10.1016/j.inoche.2025.115426
7	ChemistrySelect (Wiley)	Muawya Elhadi, Md. Tauki Tazwar, Al Shahriar Zishan, Md. Arafat Faruque, Hasanur Zaman Anonto, Mahmoud M. A. Eid, Ahmed Nabih Zaki Rashed, Md. Ferdous Rahman, Md. Harun-Or-Rashid (Corresponding Author) “Optimization and Comparative Analysis of Electron Transport Layers for High-Performance InGeCl ₃ -Based Perovskite Solar Cells,” <i>ChemistrySelect</i> , vol. 10, no. 26, p. e01364, Jul. 2025, DOI: https://doi.org/10.1002/slct.202501364
8	Journal of Physics and Chemistry of Solids (Elsevier)	Md. Harun-Or-Rashid (First Author) , Md. Ferdous Rahman, Mongi Amami, Lamia Ben Farhat, Md. Monirul Islam, Abdellah Benami “Exploring new lead-free halide perovskites $RbSnM_3$ (M = I, Br, Cl) and achieving power conversion efficiency > 32 %,” <i>J. Phys. Chem. Solids</i> , vol. 197, p. 112437, 2025, DOI: https://doi.org/10.1016/j.jpcs.2024.112437
9	Materials Today Communications (Elsevier)	Md. Harun-Or-Rashid (Corresponding and First Author) , Kh. Maksudul Hasan, Khandoker Mainul Islam, Md Noman Chowdhury Onkon, Al ShahriarZishan, Muawya Elhadi, Md Rafsan Jany, Ahmed Nabih Zaki Rashed, Md. Monirul Islam “Unveiling the potential of GaPbI ₃ perovskite: Structural, mechanical, and optoelectronic insights for next-generation solar cells,” <i>Mater. Today Commun.</i> , vol. 42, p. 111490, 2025, DOI: https://doi.org/10.1016/j.mtcomm.2025.111490
10	Journal of Optics (Springer)	Thankamony Devakhi Subha, Muthappa Perumal Chitra, Arulraj Simon Prabu, Kannan Krishnan, Ramachandran Thandaiah Prabu, Deepak Kumar Panda, Md. Harun-Or-Rashid , Md Abu Huraiya & Ahmed Nabih Zaki Rashed “Broadband solar cell absorber configurations design with front/rear surface gain resonance through the employment of dimensions and tapering of single/tabbed solar cell grid elements,” <i>J. Opt.</i> , 2025, DOI: https://doi.org/10.1007/s12596-025-02712-9
11	Physical Chemistry Chemical Physics (RSC)	Md. Ferdous Rahman, Tanvir Al Galib, Md. Azizur Rahman, Md.Hafizur Rahman, Md. Harun-Or-Rashid , Md. Al Ijazul Islam, Md. Monirul Islam, N. Dhahri, Ahmad Irfan “Achieving efficiency above 30% with new inorganic cubic perovskites X_2SnBr_6 (X = Cs, Rb, K, Na) via DFT and

		SCAPS-1D,” Phys. Chem. Chem. Phys., vol. 27, no. 2, pp. 1155–1170, 2025, DOI: https://doi.org/10.1039/D4CP01883D
12	Journal of Materials Science (Springer)	Md. Monirul Islam, Md. Ferdous Rahman, Md. Hafizur Rahman, Mutasem Z. Bani-Fwaz, Rahul Pandey, Md. Harun-Or-Rashid “Unlocking the lead-free new all-inorganic cubic halide perovskites of Ba ₃ MI ₃ (M = P, As, Sb) with efficiency above 29%,” J. Mater. Sci., vol. 59, no. 48, pp. 22109–22131, 2024, DOI: https://doi.org/10.1007/s10853-024-10487-w
13	Advanced Theory and Simulations (Wiley)	Md. Faruk Hossain, Md. Mahabur Rahman, Md. Harun-Or-Rashid , Mongi Amami, Lamia Ben Farhat, Md. Ferdous Rahman “Probing the Impact of Four BSF Layers on MASnI ₃ -Based Lead-Free Perovskite Solar Cells for >33% Efficiency,” Adv. Theory Simulations, vol. 8, no. 1, p. 2400662, Jan. 2025, DOI: https://doi.org/10.1002/adts.202400662
14	Materials Science and Engineering: B (Elsevier)	Md. Ferdous Rahman, Afifa Lubaba, Lamia Ben Farhat, Safa Ezzine, Md. Hafizur Rahman, Md. Harun-Or-Rashid “Efficiency enhancement above 31 % of Sb ₂ Se ₃ solar cells with optimizing various BSF layer,” Mater. Sci. Eng. B, vol. 307, p. 117527, 2024, DOI: https://doi.org/10.1016/j.mseb.2024.117527
15	Journal of Nanoparticle Research (Springer)	Basra Sultana, Md. Mahabur Rahman, Md. Harun-Or-Rashid , Md. Dulal Haque, Ahmad Irfan, Aijaz Rasool Chaudhry, Md. Ferdous Rahman, “A new design and optimization of SnSe-based dual absorber solar cell with efficiency above 28%,” J. Nanoparticle Res., vol. 26, no. 8, p. 181, 2024, DOI: https://doi.org/10.1007/s11051-024-06085-1
16	Advanced Theory and Simulations (Wiley)	Md. Ferdous Rahman, Md. Harun-Or-Rashid , Md. Rasidul Islam, Ahmad Irfan, Aijaz Rasool Chaudhry, Md. Atikur Rahman, Samah Al-Qaisi “A Deep Analysis and Enhancing Photovoltaic Performance Above 31% with New Inorganic RbPbI ₃ -Based Perovskite Solar Cells via DFT and SCAPS-1D,” Adv. Theory Simulations, vol. 7, no. 10, p. 2400476, Oct. 2024, DOI: https://doi.org/10.1002/adts.202400476
17	Inorganic Chemistry Communications (Elsevier)	Md. Harun-Or-Rashid (First Author) , Md. Ferdous Rahman, Md. Monirul Islam, Mustafa K.A.Mohammed, Mutasem Z. Bani-Fwaz, “Insight into the structural, electronic, mechanical, and optical properties of Pb-free new inorganic perovskite Mg ₃ SbX ₃ (X = I, Br, Cl, F) via first-principles analysis,” Inorg. Chem. Commun., vol. 168, p. 112864, 2024, DOI: https://doi.org/10.1016/j.inoche.2024.112864
18	Polyhedron (Elsevier)	Md. Monirul Islam, Md. Harun-Or-Rashid , Ahmad Irfan, Aijaz Rasool Chaudhry, Md. Ferdous Rahman “Unlocking

		the structural, mechanical, optical, and electronic properties of novel inorganic cubic lead free halide perovskites Ca_3SbX_3 ($X = \text{F, Cl, Br, I}$),” <i>Polyhedron</i> , vol. 261, no. May, p. 117135, 2024, DOI: https://doi.org/10.1016/j.poly.2024.117135
19	Journal of Materials Science (Springer)	Md. Harun-Or-Rashid (First Author) , Lamia Ben Farhat, Ameni Brahmia, Mustafa K. A. Mohammed, Md. Azizur Rahman, Ahmed Azzouz-Rached, Md. Ferdous Rahman “Analysis of the role of A-cations in lead-free A_3SbI_3 ($A = \text{Ba, Sr, Ca}$) perovskite solar cells,” <i>J. Mater. Sci.</i> , Mar. 2024, DOI: https://doi.org/10.1007/s10853-024-09579-4
20	Energy & Fuels (ACS)	Md. Azizur Rahman, Md. Ferdous Rahman, Latha Marasamy, Md. Harun-Or-Rashid , Avijit Ghosh, Aijaz Rasool Chaudhry, Ahmad Irfan “Impact of A-Cations Modified on the Structural, Electronic, Optical, Mechanical, and Solar Cell Performance of Inorganic Novel A_3NCl_3 ($A = \text{Ba, Sr, and Ca}$) Perovskites,” <i>Energy & Fuels</i> , vol. 38, no. 9, pp. 8199–8217, May 2024, DOI: https://doi.org/10.1021/acs.energyfuels.4c00525
21	Physica Scripta (IOP)	Md. Ferdous Rahman, Md. Harun-Or-Rashid , Md. Rasidul Islam, Avijit Ghosh, M. Khalid Hossain, Sagar Bhattarai, Rahul Pandey, Jaya Madan, MA Ali, Abu Bakar Md Ismail “Exploring the impact of strain on the electronic and optical properties of inorganic novel cubic perovskite Sr_3PI_3 ,” <i>Phys. Scr.</i> , vol. 98, no. 11, p. 115105, 2023, DOI: https://doi.org/10.1088/1402-4896/acfce9
22	Nano Select (Wiley)	Md. Ferdous Rahman, Md. Al Ijazul Islam, Md. Rasidul Islam, Md. Hasan Ali, Pobitra Barman, Md. Azizur Rahman, Md. Harun-Or-Rashid , Mehedi Hasan, M. Khalid Hossain “Investigation of a novel inorganic cubic perovskite Ca_3PI_3 with unique strain-driven optical, electronic, and mechanical properties,” <i>Nano Sel.</i> , Sep. 2023, DOI: https://doi.org/10.1002/nano.202300066
23	Journal of Materials Science (Springer)	Md. Ferdous Rahman, Md. Hafizur Rahman, Md. Rasidul Islam, M. Khalid Hossain, Avijit Ghosh, Md. Shoriful Islam, Md. Monirul Islam, Md. Harun-Or-Rashid , Hind Albalawi, Q. Mahmood “The optical and electronic properties of inorganic halide perovskite Sr_3NCl_3 under applied biaxial strain,” <i>J. Mater. Sci.</i> , vol. 58, no. 32, pp. 13100–13117, 2023, DOI: https://doi.org/10.1007/s10853-023-08825-5

Skills

Software:

Quantum ESPRESSO, Materials Studio (CASTEP), VESTA Software Package, Scaps-1D, Origin Pro, Linux (Terminal Commands, Bash/Shell), XCrySDen, Gnuplot, Xmgrace, Python, C, C++, MATLAB, Microsoft Office (Word, PowerPoint, Excel, etc.), Mendeley Desktop.

Professional Skills:

- Research writing, scientific manuscript preparation, and publication
- First-principles (DFT) calculations and materials modelling
- Integration of first-principles calculations with device modelling
- Data analysis and visualization
- Problem-solving and independent research capability

Language

- Bangla: Native speaker
- English: Advanced (Full professional and Academic proficiency)

Research Interests

Perovskite thin-film photovoltaics, thin-film deposition, sample preparation, materials characterization, device fabrication, computational materials science, DFT and SCAPS-1D modeling, and machine learning for solar energy applications.

References

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