

CURRICULUM VITAE OF
DR. MD. HAFIJUR RAHMAN
Associate Professor
Department of Physics
Pabna University of Science and Technology
PABNA, BANGLADESH.

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CAREER OBJECTIVE

Looking for Post-Doctoral Research fellowship or any grant for post-Doctoral research. To work with a reputed educational institute, which encourages growth and offers working environment with excellent prospect for advancement and opportunities to work on interesting assignments and ample scope to further sharpen skill, knowledge and expertise to serve the university better and thus work for the advancement of my country as well.

RESEARCH INTEREST

Thin Films, Nanotechnology, Semiconductor Devices, Solid State Physics, Condensed Matter Physics, Nanomaterials for Solar cell, Electronic and Optoelectronic Device Fabrication, Porous Silicon, Materials Science.

TEACHING POSITIONS AND OTHER ACTIVITIES

Position	Institution	From	To
Assistant Provost	Bangabandhu Sheikh Mujibur Rahman Hall, Pabna University of Science and Technology	1 st October, 2023	Till Now
Associate Professor	Department of Physics, Pabna University of Science and Technology	6 th August, 2022	Till Now
Assistant Proctor	Pabna University of Science and Technology	1 st September, 2021	31 th August, 2022
Assistant Professor	Department of Physics, Pabna University of Science and Technology	28 th September, 2013	5 th August, 2022
Chairman	Department of Physics, Pabna University of Science and Technology	15 th January, 2015	14 th January, 2018
Lecturer	Department of Physics, Pabna University of Science and Technology	1 st January, 2011	27 th September, 2013

EDUCATIONAL QUALIFICATION

Examination	Name of Degree	Board/ University	Year	Class/ Division	Subjects Studied
Doctor of Philosophy (Ph.D)	Doctor of Philosophy (Ph.D)	PUST	2022	Successfully Awarded	Physics
Masters of Science, M.Sc. (Thesis Group)	M.Sc. in Applied Physics & Electronic Engineering	Rajshahi University	2008 (held in 2010)*	First Class (2 nd position) Marks (%): 72.50	Condensed Matter Physics, VLSI design, Digital Communication, Power Electronics & Control System, Biophysics and medical instrumentation, Wireless Communication.
Bachelor of Science (B.Sc.)	B.Sc. in Applied Physics & Electronic Engineering	Rajshahi University	2007 (held in 2008)*	First Class (1 st position) Marks(%): 71.625	Major**: Applied Physics & Electronic Engineering. Minor: Inorganic & Organic Chemistry, Physical Chemistry, Mathematics, Statistics.
Upper Secondary	Higher Secondary Certificate	Rajshahi	2002	First Division	Bengali, English, Biology, Physics, Chemistry,

Education	(H.S.C.)	Board		Marks(%): 72.30	Mathematics.
Lower Secondary Education	Secondary School Certificate (S.S.C.)	Rajshahi Board	2000	First Division Marks(%): 78.90	Bengali, English, General Science, Mathematics, Religion, Biology, Physics, Chemistry and Higher Mathematics.

***Due to academic session jam**

**** MAJOR COURSES STUDIED**

Basic Electronics; Applied Electricity, Magnetism & Networks; Applied Mechanics & Optics; Thermodynamics, Refrigeration, Air-Conditioning & Applied Acoustics; Electronic Circuits & Devices; Electrical Machine & Filter; Digital Electronics; Quantum Mechanics, Atomic & Nuclear Physics; Operating System, Programming in C,C++ & Java; IC Design & Communication Electronics; Pulse & Switching Circuit; Basic Solid State Physics & Material Science; Instrumentation & Control Systems; Non-conventional Energy; Electromagnetic Theory & Antenna; Microprocessor & Microcomputer; Communication Engineering; Radio & TV Engineering; Computer Networks & Data Communication; Computer Architecture & Organization; Telecommunication.

COURSE CONDUCTED

Mechanics and Properties of Matter; Electricity and Magnetism; Mathematical Physics; Optics; Electronic Devices and Circuits; Pulse and Digital Electronics; Electronic Communications; Waves and Sound; Heat, Radiation and Thermodynamics; Atomic, Nuclear and Modern Physics; Physics Lab.

SUPERVISED RESEARCH WORK

• M. S. Thesis on:

1. Study of the Structural and Optical Properties of CdS Thin Films Prepared by Home Made Spin Coating Technique.

• M. S. Project on:

1. Investigation on the Influence of Spinning Speed on the Transmission and Absorption Properties of Spin Coated LaF₃ Film
2. Investigation on the Influence of Spinning Speed on the Structural and Compositional Properties of Spin Coated LaF₃ Film
3. To Design a Home-Made Spin Coater with Maximum Speed of 10000 RPM for Thin Film Deposition
4. To Design a Home-Made Spin Coater for Thin Film Preparation
5. Passivation of Silicon Surface with LaF₃ Film Using Home Made Spin Coater

• B. Sc.(Hons.) Project on:

6. Passivation of Porous Silicon with CdS Film Using a Home-Made Spin Coating Technique and Hence to Study its I-V Characteristics
7. Preparation of Porous Silicon (PS) Using a Home-Made Single Tank Chemical Bath Technique and Hence to Investigate the Effect of Current Density on its Pore Thickness
8. Preparation of Porous Silicon (PS) Using a Home-Made Double Tank Chemical Bath Technique and Hence to Investigate the Effect of Light and Aging on its I-V Characteristics
9. Preparation of Porous Silicon (PS) Using a Home-Made Single Tank Chemical Bath Technique and Hence to Investigate the Effect of Current Density on its Pore Diameter
10. Investigation on the Influence of Spin Time on the Transmission and Absorption Properties of Spin Coated LaF₃ Film
11. Structural Properties of CdS Thin Film Prepared by Home Made Spin Coating Technique
12. Investigation on the Influence of Deposition Cycle on the Transmission and Absorption Properties of Spin Coated CdS Film
13. Fabrication of Porous Silicon (PS) Using a Single Source Home Made Chemical Bath Technique and Hence to Study its I-V Characteristics
14. Android Controlled Light and Fan Design
15. Construction of a Micro-controller Based Smart Irrigation System
16. Construction of a Password Based Digital Door Lock
17. Construction of a Micro-controller Based Electronic Circuit for Automatic Temperature Controlled DC Fan
18. Construction of an Automatic Street Light Control Circuit
19. Construction of an Electronic Eye Controlled Security Circuit
20. Construction of a Light Off/On Circuit Without Touching the Switch
21. To Design and to Construct a Dark Sensor Circuit Using Operational Amplifier
22. To Design an Automatic Washroom Light Switch

RESEARCH GRANTS RECEIVED

SI	Organization Offering the Grant	Project Title	Period
1.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Investigation on the Influence of Spin Speed on the Optical Properties of LaF ₃ Film Prepared by Home Made Spin Coating Technique	2024-2025
2.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Extraction of LaF ₃ from LaCl ₃ and HF using a Simple Low-Cost Novel Chemical Route to Use it as a Passivating Layer of Porous Silicon	2023-2024
3.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Investigation on the Influence of Current Density and Etching Time on the Pore Size of Porous Silicon Fabricated by Electrochemical Etching Process	2022-2023
4.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Study of the Variation of Current-Voltage (I-V) Characteristics with Spinning Speed of CdS Passivated Porous Silicon Structure Prepared by Home Made Spin Coating Technique	2021-2022
5.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Study of the Variation of Transmission and Absorption Properties with Spinning Speed of CdS film Prepared by Home Made Spin Coating Technique	2020-2021
6.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Investigation on the Influence of LaCl ₃ Concentration on the Compositional Properties of Spin Coated LaF ₃ Film	2018-2019
7.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Study of the I-V Characteristics of the Spin Coated LaF ₃ /Porous Silicon Structure	2017-2018
8.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Passivation of Porous Silicon with Lanthanum Fluoride (LaF ₃) Using Home Made Novel Spin Coating Technique	2016-2017
9.	Pabna University of Science and Technology, Pabna-6600, Bangladesh.	Passivation of Porous Silicon by CdS Thin Film Using a Simple Single Source Chemical Bath Technique for Solar Cell Application	2014-2015

PUBLICATIONS

- Akhtar, Tajrin; Algethami, Norah; Khatun, Musammat; Khan, Mithun; Rahman, Md. Ferdous ; **Rahman, Md. Hafijur**; Chaba Mouna, Sarah; Rahman, Md. Atikur, "DFT simulation to explore the mechanical, electronic, optical as well as thermal features of narrow band-gap Half Heusler semiconductors CoTSb (T = Ti, Zr, Hf) for optoelectronic devices applications", Accepted in ACS Omega.
- Md. Zuel Rana*, Sharmin Akter, Abdul Barik, Jahid Hasan, Md. Saiful Islam, Md. Hazrat Ali and **Md. Hafijur Rahman***, "First-principles study of pressure-induced multifunctional response in RbYO₂: Structural-mechanical stability, optoelectronic tunability, and photocatalytic performance enhancement", Results in Engineering 27 (2025) 105934, doi: <https://doi.org/10.1016/j.rineng.2025.105934>.
- Benjer Islam, Adnan Hosen, Tanvir Mahtab Khan, Md. Ferdous Rahman, **Md. Hafijur Rahman**, Md. Saiful Islam and Sheikh Rashel Al Ahmed, "Simulating the Effect of Inserting Sb₂S₃ as Hole Transport Layer on SnS-Based Thin-Film Solar Cells", Journal of Electronic Materials(2024), doi: <https://doi.org/10.1007/s11664-024-11173-y>.
- Naimur Rahman, Abu Bakkar, Md. Dulal Haque, Sheikh Rashel Al Ahmed, **Md. Hafijur Rahman**, Ahmad Irfan, Aijaz Rasool Chaudhry and Md. Ferdous Rahman, "Impact of CdTe BSF layer on enhancing the efficiency of MoSe₂ solar cell", Journal of Optics (2024), doi: <https://doi.org/10.1007/s12596-024-01855-5>.
- Md. Hafijur Rahman***, Mohammad Taufiq Alam, Abu Bakar Md. Ismail, "Fabrication of LaF₃ passivated porous silicon pH sensor by deep eutectic solvent based novel chemical route", Sensing and Bio-Sensing Research, 43 (2024), 100625, doi: <https://doi.org/10.1016/j.sbsr.2024.100625>.
- Md. Ferdous Rahman*, Md. Kamrul Hasan, Mithun Chowdhury, Md. Rasidul Islam, **Md. Hafijur Rahman**, Md. Atikur Rahman, Sheikh Rashel Al Ahmed, Abu Bakar Md. Ismail, Mongi Amami, M. Khalid Hossain,

Gamil A.A.M. Al-Hazmi, "A qualitative Design and optimization of CIGS-based Solar Cells with Sn_2S_3 Back Surface Field: A plan for achieving 21.83% efficiency", *Heliyon*, 9(2023), e22866, doi: <https://doi.org/10.1016/j.heliyon.2023.e22866>.

7. **Md. Hafijur Rahman***, Shamim Ahmmed, Sinthia Shabnam Mou and Abu Bakar Md. Ismail*, "Efficient passivation of porous silicon with LaF_3 by deep eutectic solvent based novel chemical route", *Materials Science and Engineering B*, Vol. 296, July 2023, 116707(1-8), DOI: <https://doi.org/10.1016/j.mseb.2023.116707>.
8. **Md. Hafijur Rahman***, Shamim Ahmmed, Md. Ferdous Rahman, Abu Bakar Md. Ismail*, "Variation of various properties of LaF_3 deposited on porous silicon by chemical bath and spin coating techniques", *Applied Physics A*, (2023) 129:180.
9. Md. Atikur Rahmana*, Wakil Hasan, Rukaia Khatun, Md. Zahid Hasan, **Md. Hafijur Rahman**, Sushmita Sarker, Mahbub Hasan, Jannatul Ferdous Lubna, "An ab-initio study to investigate the structural, mechanical, electrical, optical and thermal properties of the AZrO_3 (A= Mg, Ca, Sr, Ba, Sn, Cu) compounds", *Materials Today Communications*, 34 (2023) 105339.
10. **Md. Hafijur Rahman***, Shamim Ahmmed and Abu Bakar Md. Ismail*, "Structural and Electrical Properties of Spin-Coated LaF_3 Thin Film on Porous Silicon", *Journal of Materials Engineering and Performance*, September 2021, DOI: 10.1007/s11665-021-06165-6.
11. Shamim Ahmmed*, Md. Abdul Karim, **Md. Hafijur Rahman**, Asma Akter, Md. Rasidul Islam, Ashrafur Islam* and Abu Bakar Md. Ismail, "Performance Analysis of Lead-free $\text{CsBi}_3\text{I}_{10}$ -based Perovskite Solar Cell Through the Numerical Calculation", *Solar Energy*, Vol. 226, August 2021, pp: 54-63, DOI: 10.1016/j.solener.2021.07.076.
12. **Md. Hafijur Rahman***, Shamim Ahmmed, Samia Tabassum and Abu Bakar Md. Ismail*, "Epitaxial Deposition of LaF_3 Thin Films on Si Using Deep Eutectic Solvent Based Facile and Green Chemical Route", *Journal of AIP Advances*, Vol. 11, Issue 3, March 2021, DOI: 10.1063/5.0039733.
13. Shamim Ahmmed, Asma Akter, Samia Tabassum, **Md. Hafijur Rahman**, Md. Ferdous Rahman and Abu Bakar Md. Ismail*, " CuO Based Solar Cell with V_2O_5 BSF Layer: Theoretical Validation of Experimental Data", *Superlattices and Microstructures*, Vol. 151, February 2021, DOI: 10.1016/j.spmi.2021.106830.
14. Shamim Ahmmed*, Asma Akter, **Md. Hafijur Rahman**, Jaker Hossain and Abu Bakar Md. Ismail*, "Design and Simulation of a High-performance $\text{CH}_3\text{NH}_3\text{Pb}(\text{I}_{1-x}\text{Cl}_x)_3$ -Based Perovskite Solar Cell Using a CeO_x Electron Transport Layer", *Semiconductor Science and Technology*, Vol. 36, January 2021, DOI: 10.1088/1361-6641/abd266.
15. Md. Sarwar Zahan and **Md. Hafijur Rahman***, "Passivation of Porous Silicon with CdS Using a Homemade Spin Coating Technique and its I-V Characteristics", *Journal of PUST Studies*, Vol. 4, Issue 1, 2020, ISSN: 2308-6246.
16. **Md. Hafijur Rahman*** and Abu Bakar Md. Ismail, "Investigation on the Influence of LaCl_3 Concentration on the Electrical Conduction Mechanism of Chemical bath Deposited LaF_3 /Porous Silicon Structure", *Journal of Cogent Physics*, Vol. 4, No. 1, March 2017, pp. 1-7, DOI: 10.1080/23311940.1299559.
17. **Md. Hafijur Rahman*** and Abu Bakar Md. Ismail, "Influence of Annealing Temperature on the Chemical-Bath Deposited LaF_3 on Porous Silicon, and on the Electrical Properties of LaF_3 /Porous-Silicon Structure", *Journal of PUST studies*, Vol. 2, Issue 1, 2017, ISSN: 2308-6246.
18. M.T.H. Bhuiyan*, M.N. Chowdhury, Rehana Akter, **Md. Hafijur Rahman**, Md. Afjalur Rahman and Mala Khan, "Determination of Thermophysical Properties of Edible Oil at High Temperature Using Differential Scanning Calorimetry (DSC)", *Middle-East Journal of Scientific Research*, Vol. 24, No. 10, 2016, pp: 3302-3306, DOI: 10.5829/idosi.mejsr.2016.3302.3306.
19. Zahidur Rahman, **Hafijur Rahman** and Md. Atikur Rahman, "Classification and Generation of Atmospheric Pressure Plasma and its Principle Applications", *International Journal of Mathematics and Physical Sciences Research*, Vol. 2, Issue 2, March 2015, pp:127-146.
20. **Md. Hafijur Rahman*** and Abu Bakar Md. Ismail, "Influence of Light Intensity on the I-V Characteristics of LaF_3 /Porous-Silicon Structure Prepared by Chemical Bath Deposition Technique", *International Journal of*

21. **Md. Hafijur Rahman*** and Abu Bakar Md. Ismail, "Dependency of Built-in Potential of LaF₃/Porous-Silicon Heterostructure Prepared by Chemical Bath Deposition Technique on the Concentration of LaCl₃ and Annealing Temperature", Applied Nanoscience, Vol. 5, No. 08, December 2014, pp:921-925, DOI: 10.1007/s13204-014-0391-5.
22. **Md. Hafijur Rahman*** and Abu Bakar Md. Ismail, "Influence of LaCl₃ Concentration and Annealing Temperature on the Diode Ideality Factor of LaF₃/Porous-Silicon Structure Prepared by Chemical Bath Deposition Technique", Applied Nanoscience, Vol.5, No. 06, October 2014, pp: 645-649, DOI:10.1007/s13204-014-0358-6.
23. Md. Earul Islam*, Md. Julkarnain, Jaker Hossain, Abu Bakar Md. Ismail, **Md. Hafijur Rahman**, "Investigation on LaF₃-Impregnated Porous Silicon Heterostructure as Potentiometric Sensor for Fluoride Ion in Aqueous Medium", American Journal of Sensor Technology, Vol. 1, Issue 1, October 2013, pp:1-4, DOI: 10.12691/ajst-1-1-1.
24. Abdul Al Mortuza, **Md. Hafijur Rahman**, Sinthia Shabnam Mou, Md. Julker Nain, Abu Bakar Md. Ismail*, "Passivation of Porous Silicon by LaF₃ Using a Simple Single-Source Chemical Bath Technique", International Journal of Materials and Chemistry, Vol 2, No.4, 2012, pp:111 - 115, DOI: 10.5923/j.ijmc.20120203.05.
25. **Md. Hafijur Rahman**, Sinthia Shabnam Mou*, Abu Bakar Md. Ismail, "Fabrication and Characterization of Lanthanum Fluoride (LaF₃)-Passivated Porous Silicon (PS) Structure Prepared by Chemical Bath Deposition Technique", Journal of Scientific & Technical Research, Vol.1, No.1, December 2011, pp: 97-101.
26. Abdul Al Mortuza, **Md. Hafijur Rahman**, Sinthia Shabnam Mou, Md. Johurul Islam, Abu Bakar Md. Ismail*, "Electrical and optical characteristics of porous silicon impregnated with LaF₃ by a novel chemical bath technique", Current Applied Physics, vol. 12, no. 2, September 2011, pp:565- 569, DOI: 10.1016/j.cap.2011.09.002.

RESEARCH EXPERIENCE

- Submitted a thesis paper on "**Passivation of Porous Silicon with Lanthanum Fluoride: Influence of Deposition Techniques of Lanthanum Fluoride**" for the partial fulfillment of the degree of Ph.D. in Physics at Pabna University of Science and Technology.
- Submitted a thesis paper on "**Investigation on the Influence of LaCl₃ Concentration and Annealing Temperature on the Structural, Compositional and Electrical Properties of Chemical-Bath Deposited Lanthanum Fluoride (LaF₃) on Porous Silicon (PS).**" for the partial fulfillment of the degree of M.Sc. in Applied Physics & Electronic Engineering.
- Submitted a project to "**Investigation on the Influences of Annealing on the Thickness and Electrical Resistivity of LaF₃ Film in LaF₃/Si Heterostructure.**" for the partial fulfillment of the degree of B.Sc. (Hon's) in Applied Physics & Electronic Engineering.

CONFERENCE & WORKSHOP PARTICIPATED

- Participated in International Conference on Science and Technology for celebrating the birth centenary of Bangabandhu (ICSTB-2021) (11-13 March 2021), BCSIR, Dhanmondi, Dhaka, Bangladesh.
- Participated in National Conference on Physics for Energy and Environment (06-08 March 2014), Bangladesh Physical Society, Atomic Energy Centre, Dhaka, Bangladesh.
- Participated in National Conference on Physics for Development (10-11 Feb 2011), Bangladesh Physical Society, BUET, Dhaka, Bangladesh.

LANGUAGE PROFICIENCY

- Native: Bengali.
- Foreign Language: English (Have a good commend in speaking, listening, reading and writing).
- English was the instruction medium in B.Sc. (Hons.) & M.Sc. Program.
- Arabic.

COMPUTER LITERACY

- **Operating System:** Windows-98, windows XP.

- **Programming Language:** C, C++, Java, Assembly (8085), MATLAB and VHDL.
- **Application Software:** MS Word, MS Excel, Power Point, Internet Browsing, Photoshop etc.

SOCIAL SKILLS AND COMPETENCES

- Very keen to be introduced with new environment, tools and platforms.
- Good representation ability.
- Leadership ability in team work.
- Versatility in challenging working field.
- Strong interpersonal communication skills.

SCHOLARSHIP AND AWARDS

- Primary school scholarship.
- Upazilla scholarship.
- Suhrawardy Hall Gold Medal for excellent result in honors.
- Zilla parishad scholarship for excellent result in honors.
- University Grand Commission (UGC) scholarship for excellent result in honors.
- Bangabandhu science and technology fellowship for Ph.D Research work.

PERSONAL DETAILS

Name: Dr. Md. Hafijur Rahman

Nick Name: Hafiz

Father's Name: Md. Imaj Uddin

Mother's Name: Mst. Tahomina Begum

Present Address: Dr. Md. Hafijur Rahman, Associate Professor, Department of Physics,
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Permanent Address: C/O: Md. Imaj Uddin; Vill.: Fokir Para; P.O.: Nandangachi;
P. S.: Charghat; District: Rajshahi.

Nationality: Bangladeshi (By Birth)

Religion: Islam

Date of Birth: 1 June, 1984

Sex: Male

Marital Status: Married

REFERENCES

(1) Professor Dr. Md. Mozaffor Hossain
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CERTIFICATION

I certify that all information stated in the curriculum vitae is true and complete to the best of my knowledge. I authorize you to verify the information provided in the curriculum vitae.

Signature:

.....
(Dr. Md. Hafijur Rahman)

Associate Professor

Department of Physics

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