

## MD ARIFUZZAMAN (M.Sc.)

### **HOME:**

62/3, Ionic Tower, Flat-4C  
Kalachadpur, Litchubagan Road  
North Baridhara, Gulshan  
Dhaka 1212, Bangladesh  
Cell: +88 01911614729

### **OFFICE:**

Senior Lecturer  
Department of Mathematics  
and Physics  
North South University,  
Dhaka 1229, Bangladesh.



E-mail: [md.arifuzzaman01@northsouth.edu](mailto:md.arifuzzaman01@northsouth.edu)

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### Educational Qualifications

#### **1. M.Sc. (Thesis) in Physics (2018)**

**Institution:** University of Lethbridge

**Department:** Physics and Astronomy

**Academic year:** Starting from January' 2015 [*Took special leave and going back to Bangladesh for my family purpose from May 2015 to Dec 2016*]

**Major Courses:** Physics of Remote Sensing, Molecular Spectroscopy

**Research Project:** Spectroscopic study of methane in a spectral band used by several remote- sensing instruments for the upcoming Earth Science Decadal Survey satellite missions, such as GEO-CAPE and ASCENDS.

**Result:** CGPA 3.65/4.00

**Research Supervisor:** Dr. Michael Gerken, Professor, Department of Chemistry and Bio-Chemistry, University of Lethbridge, AB, Canada.

#### **2. M.Sc. (Thesis) in Physics (2009)**

**Institution:** Shah Jalal University of Science and Technology, Bangladesh.

**Academic year: 2005-2006 (Held in 2009)**

**Major Courses:** 1. Microelectronics I  
Physics

2. Advanced Nuclear Reactor

3. Photorefractive Nonlinear Optics

4. Microelectronics II

**Result:** CGPA 3.78/4.00 (A) (75.6%)

#### **3. B.Sc. Honor's in Physics (2007)**

**Institution:** Shah Jalal University of Science and Technology, Bangladesh.

**Academic Year: 2001-2002 (Held in May 2007)**

**Major Courses:** 1. Mechanics & Properties of Matter 2. Heat, Waves & Vibration  
3. Electromagnetism 4. Thermodynamics

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|---------------------------------------|-------------------------------------|
| 5. Optics                             | 6. Classical Mechanics              |
| 7. Basic Electronics                  | 8. Electrodynamics I & II           |
| 9. Quantum Mechanics I & II           | 10. Nuclear Physics I & II          |
| 11. Solid State Physics I & II        | 12. Atomic & Molecular Physics      |
| 13. Calculus & Differential Equations | 14. Trigonometry, Geometry & Vector |

**Result:** CGPA 3.72/4.00 (A-) (74.4%)

## **Publications**

### **Journal Articles (Published)**

#### **2021**

1. Harun-Or-Rashid, M., Rahman, M. M., **Arifuzzaman, M.**, & Hossain, A. A. (2021). Structural, magnetic, and electrical properties of  $Ni_{0.38-x}Cu_{0.15+y}Zn_{0.47+x-y}Fe_2O_4$  synthesized by sol-gel auto-combustion technique. *Journal of Materials Science: Materials in Electronics*, 1-16. **Springer**. <https://doi.org/10.1007/s10854-021-05953-z>  
**Scopus Indexed, Q2 Journal, H-index: 75, IF: 2.2, SJR: 0.49**
2. Harun-Or-Rashid, M, Islam, M. N., **M. Arifuzzaman.**, & Akther Hossain, A. K. M., *Effect of sintering temperature on the structural, morphological, electrical, and magnetic properties of Ni-Cu-Zn and Ni-Cu-Zn-Sc ferrites.*, **J Mater Sci: Mater Electron** (2021), **Springer Nature** <https://doi.org/10.1007/s10854-020-05018-7>  
**Scopus Indexed, Q2 Journal, H-index: 75, IF: 2.2, SJR: 0.49**

#### **2020**

1. Siam, Z. S., **Arifuzzaman, M.**, Ahmed, S., Khan, F. A., Rashid, H., & Islam, S., *Dynamics of COVID-19 transmission in Dhaka and Chittagong: Two business hubs of Bangladesh.* **Clinical Epidemiology and Global Health** (2020), Elsevier. <https://doi.org/10.1016/j.cegh.2020.100684> **Cited (05)**  
**Scopus Indexed, Q3 Journal, H-index: 13, Cite score: 2.2, SJR: 0.36, SNIP: 1.04**
2. **M. Arifuzzaman**, Zakaria Shams Siam, Md. Harunur Rashid and Md. Shariful Islam, 'No lockdown' policy for COVID-19 epidemic in Bangladesh: Good, bad or ugly? **International Journal of Modern Physics C** (Nov, 2020), World Scientific. [10.1142/S0129183121500625](https://doi.org/10.1142/S0129183121500625) **Cited (02)**  
**Scopus Indexed, Q3 Journal, H-index: 67, IF: 1.23, SJR: 0.23, SNIP: 0.41**
3. **M. Arifuzzaman**, M. B. Hossen, Md. Harun-Or-Rashid and M. L. Rahman, *Structural and Magnetic Properties of Nanocrystalline  $Ni_{0.7-x}Cu_xCd_{0.3}Fe_2O_4$  Prepared through Sol-gel Method,* **Materials Characterization** **171** (2020), Elsevier <https://doi.org/10.1016/j.matchar.2020.110810> **Cited (02)**  
**Scopus Indexed, Q1 Journal, H-index: 97, IF: 3.56, Cite score: 6.4, SJR: 1.19, SNIP: 1.58**

4. **M. Arifuzzaman**, M. B. Hossen, H. Rashid, S. Ahmed, M. S. Islam, *Effect of annealing temperature on the structural, dielectric and electric properties of Ni<sub>0.7</sub>Cd<sub>0.3</sub>Fe<sub>2</sub>O<sub>4</sub> ferrites*, **Bulletin of Materials Science** **43(1)** (2020), Springer. <https://doi.org/10.1007/s12034-020-02116-4> **Cited (01)**  
**Scopus Indexed, Q3 Journal, H-index: 72, IF: 1.39, 4 Years IF: 1.64, SJR: 0.38**

5. **M. Arifuzzaman**, M. B. Hossen, J. D. Afroze and M. J. Abden, *Structural and electrical properties of Cu substituted Ni–Cd nanoferrites for microwave applications*, **Physica B: Condensed Matter**, **588** (2020), 412170, Elsevier. <https://doi.org/10.1016/j.physb.2020.412170> **Cited (06)**  
**Scopus Indexed, Q2 Journal, H-index: 113, IF: 1.90, Cite score: 4.0, SJR: 0.49, SNIP: 0.83**

## 2019

1. **M. Arifuzzaman**, M. B. Hossen. *Effect of Cu substitution on structural and electric transport properties of Ni-Cd nanoferrites*, **Results in Physics** **16** (2020) 102824, Elsevier. <https://doi.org/10.1016/j.rinp.2019.102824>; **Cited (08)**  
**Scopus Indexed, Q2 Journal, H-index: 56, IF: 4.02, Cite score: 7.1, SJR: 0.74, SNIP: 1.41**

## 2014

1. **Arifuzzaman. M.**, Faruque, S.B, *Study of Gravitomagnetic Clock Effect due to Gravitational Spin-orbit Coupling*, **International Journal of Engineering Research** **03** (6) (2014) 374- 377. [http://www.ijer.in/ijer/publication/v3s6/IJER\\_2014\\_602.pdf](http://www.ijer.in/ijer/publication/v3s6/IJER_2014_602.pdf).

## 2013

1. **Arifuzzaman. M.**, Moniruzzaman, M., Faruque, S.B, *An Exact Solution of the Dirac Oscillator Problem in the context of Generalized Uncertainty Principle*, **International Journal of Research in Engineering and Technology** **02** (2013) 432-435. [http://www.ijret.org/Volumes/V02/I09/IJRET\\_110209065.pdf](http://www.ijret.org/Volumes/V02/I09/IJRET_110209065.pdf) **Cited (02)**

## Conference Proceedings (Presented and Published)

## 2016

1. **Arifuzzaman, M.**, Abden, M.J., Ahmed, S.K. and Hossen, M.B., **2016, October**. *Structural, dielectric and conductivity studies of Ni-Cu-Cd ferrite nanoparticles*. In **2016 International Conference on Innovations in Science, Engineering and Technology (ICISSET)** (pp. 1-4). IEEE., <https://doi.org/10.1109/ICISSET.2016.7856511> **Cited (01)**
2. Noman, M.A.A., Islam, M.S., Abden, M.J., **Arifuzzaman, M.** and Islam, M.A., **2016, October**. *Effect of acceptor concentration on performance of CdTe solar cell from numerical analysis*. In **2016 International Conference on Innovations in Science, Engineering and Technology (ICISSET)** (pp. 1-4). IEEE. <https://doi.org/10.1109/ICISSET.2016.7856488> **Cited (03)**

**Conference Presentations (Just presented as Poster and Oral)**

**2017**

1. **Md. Arifuzzaman**, V. Malathy Devi, D. Chris Benner, K. Sung, L. Brown, M.A.H. Smith, Adriana Predoi-Cross, A. Mantz, R.M. Lees, “*Self- and Air-Broadened Line Parameters of Methane in the 4100-4300 Wavenumber Range*”, **Congress of Canadian Association of Physicists, Queens University, Kingston, ON, Canada**, (May 2017) **oral**.

**2016**

2. **M. Arifuzzaman**, M.B. Hossen, “*Synthesis of Cu substituted Ni-Cd ferrite nanoparticles and study of their magnetic and electrical properties*”, **International Conference on Physics-2016, Atomic Energy Centre, Dhaka** (2016), **oral**.

**2015**

1. **M. Arifuzzaman**, M.B. Hossen, “*Dielectric, modulus and impedance analysis of Cu substituted Ni-Cd nanoferrites*”, **2nd International Bose Conference, Dhaka University** (2015), **oral**.
2. R. Hashemi, **A. Arifuzzaman**, V. Malathy Devi, D. Chris Benner, K. Sung, L. Brown, M.A.H. Smith, Adriana Predoi-Cross, “*High-Resolution Spectroscopy of Methane for Climate Research Applications, The SPEC-ATMOS summer school*”, **Frejus, France** (June-2015), **poster**.
3. A. Predoi-Cross, **A. Arifuzzaman**, V. Malathy Devi, Keyon Sung, D. Chris Benner, Mary Ann H. Smith, Arlan Mantz, “*Multispectrum analysis of methane in the  $\nu_1+\nu_4$  and  $\nu_3+\nu_4$  bands: temperature dependences of self- and air-broadened line parameters*”, **The 24th Colloquium on High-Resolution Molecular Spectroscopy**, **Dijon** (2015), B32 **poster**.
4. R. Hashemi, **A. Arifuzzaman**, V. Malathy Devi, D. Chris Benner, K. Sung, L. Brown, M.A.H. Smith, Adriana Predoi-Cross, A. Mantz, R.M. Lees, “*Self- and Air-Broadened Line Shape Parameters of Methane in the 2.3 Microns Region*”, **Congress of Canadian Association of Physicists, University of Alberta, Edmonton, Canada** (June-2015), **oral**.

## **Professional Experiences**

### **1. Senior Lecturer-Department of Mathematics and Physics** (September' 2018 – date)

**Institution:** North South University, Dhaka 1229, Bangladesh.

### **2. Lecturer-Physics** (February' 2009 - December' 2015)

**Assistant Professor** (December' 2015 - December' 2016)

**Department:** Electrical & Electronic Engineering

**Institution:** International Islamic University Chittagong (IIUC), Bangladesh.

#### **Courses Taught:**

- Physics I (Mechanics, Heat, and Waves & Vibration).
- Physics II (Electromagnetism, Optics & Modern Physics).
- Physics Sessional Courses.

#### **Major Tasks:**

- ✓ To design the course curriculum and set up different experimental Physics Laboratory setups for undergraduate students in engineering departments.
- ✓ To conduct Physics courses including Mechanics, Properties of Matters, Electromagnetism, Modern Physics, Optics, Relativity, and so on.
- ✓ To design and update the Physics syllabus every year, to moderate questions for Midterm and Final exams, investigations in Exam hall, examining scripts and set up questions.
- ✓ To work as a member of the Planning and Development Committee of the Department and Lab Advisor in Physics Lab.

### **3. Research Assistantship- Physics, University of Lethbridge** (Jan' 2015 - April' 2018)

- Temperature-dependent line-shape studies of methane broadened by itself, air and hydrogen in the spectral range from 4100 to 4300  $\text{cm}^{-1}$ .
- A set of laboratory spectra of pure methane mixed with air and hydrogen were recorded over a range of temperatures and total sample pressures using a high-resolution Fourier Transform Spectrometer (FTS) at the Jet Propulsion Laboratory (JPL), California.
- A non-linear least-squares multi-spectrum fitting program called 'Labfit' was used to determine the Lorentz half-width, pressure-induced shift coefficients along with their temperature dependencies, speed-dependence parameters and line-mixing coefficients.
- Data processing and analysis by applying nonlinear least-squares fitting routines on statistical models (Gaussian, Lorentzian, Voigt and Speed Dependent Voigt models).
- Working knowledge and experience of big databases like HITRAN and GEISA for spectroscopic data search and analysis.

#### **4. Teaching Assistantship- Physics, University of Lethbridge (Jan' 2015 - April' 2018)**

- Accomplished 6 TA assignments for undergraduate students.
- Assigned for conducting Physics Sessional classes and marking assignments of different Physics courses for a group of 20 students and more.
- Set up 10 Physics sessional labs and instructed 8 different groups.

**Research Grants: CTRG grant 2020-2021, Amount: 5,00,000 Bdt (£ 4,360)** Funded by North South University, Dhaka. **Project:** Effect of Al<sup>3+</sup> doping on the structural, dielectric, and magnetic properties of Ni-Cu ferrite nanoparticles through the Sol-gel process (**As Principal investigator**).

#### **Peer Reviews**

- Reviewed the manuscript APYA-D-21-00668, **Applied Physics A, Springer** (2021).
- Reviewed the manuscript *TMAG-20-09-0706*, **IEEE Trans. on Magnetics** (2020).
- Reviewed the manuscript *APYA-D-20-02518*, **Applied Physics A, Springer** (2020).

#### **Technical Qualifications**

##### **Computer Skills**

MS Office, Labfit Software, OriginLab Software, FullProf Software.

##### **Experimental Techniques**

Fourier Transform Spectroscopy (FTS), Transmission Electron Microscopy (TEM), Field Emission Electron Microscopy (FESEM), X-ray Diffraction (XRD), Vibrating Sample Magnetometer (VSM).

##### **Theoretical Analysis**

Rietveld Analysis, DFT investigation by CASTEP

**Language Skills:** Fluency in speaking, Writing, Reading & Listening both in English and Bengali.

#### **Awards**

1. Awarded Departmental scholarship each year during undergraduate and graduate studies in Physics- Shah Jalal University of Science and Technology, Bangladesh (2002-2009).
2. Awarded District of Jhenaidah (DC office) merit scholarship-2005, Bangladesh.
3. Awarded Exim Bank Merit Scholarship-2008, Bangladesh.
4. Awarded Amethyst Research Scholarship-University of Lethbridge (2015-2018), Canada.
5. Awarded Teaching and Research Assistantship-University of Lethbridge (2015-2018).
6. Awarded International Tuition Awards-University of Lethbridge (2015-2018)

## **Extra-Curricular Activities**

### **1. EEE CLUB Volunteer- International Islamic University Chittagong (2015-2016)**

- To work as an executive member of EEE club, which was a voluntary club dedicated to generating new ideas and knowledge's in Engineering Prospects.
- To organize a lot of workshops, seminars, exhibitions and different competitions like Robo-Fight competition, debate competitions and sports competitions including Soccer, Cricket, Badminton.
- To involve in community works such as blood donating, fundraising for flood-affected people, Career fair and helping students for higher studies and so on.

### **2. Free Blood Donating Program Volunteer – Student AID SUST (2008)**

- To set up the booth for free blood grouping and blood donation project. About 100 bags of blood were donated to the Red Crescent Society, Sylhet, Bangladesh.
- To collect foods and cloths for the flood-affected people in the southern parts of Bangladesh.

### **3. SUST CRICKET CLUB Volunteer- Shah Jalal University (2007-2009)**

- To establish a cricket club 'SUST Cricket Club' and volunteered as the president.
- To organize two inter-departmental Cricket tournaments consisting of 16 groups to promote sports and cultural activities at Shah Jalal University.

## **Important Links:**

- **Homepage:** <http://www.northsouth.edu/faculty-members/seps/mathematics-physics/md-arifuzzaman-azml.html>
- **Research Gate:** [https://www.researchgate.net/profile/Md\\_Arifuzzaman5](https://www.researchgate.net/profile/Md_Arifuzzaman5)
- **Google Scholar:** <https://scholar.google.com/citations?user=OwK8dWcAAAAJ&hl=en>

## **References:**

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| 1. Michael Gerken<br>Professor<br>Chemistry and Biochemistry<br>University of Lethbridge, AB, Canada<br>Email: <a href="mailto:michael.gerken@uleth.ca">michael.gerken@uleth.ca</a>   | 3. Dr. M. Yusuf Ali<br>Assistant Professor<br>Physiology and Biophysics<br>University of Vermont, Burlington, USA<br>Email: <a href="mailto:Yusuf.Ali@uvm.edu">Yusuf.Ali@uvm.edu</a> |
| 2. Dr. Md. Shariful Islam<br>Assistant Professor<br>Department of Mathematics and Physics<br>North South University, Dhaka, Bangladesh<br>Email: <a href="mailto:shariful.islam10@northsouth.edu">shariful.islam10@northsouth.edu</a> |  |