

# MD. RAKIB HOSSAIN

Department of Physics,  
Bangabandhu Sheikh Mujibur Rahman  
Science and Technology University,  
Gopalganj-8100, Dhaka, Bangladesh.  
Mobile: +88 01714979162  
E-mail: [rakibju.r@gmail.com](mailto:rakibju.r@gmail.com)



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## Career Objective

To be a successful university educator in the field of condensed matter physics. In addition to perform research and analysis working as a research scientist in R&D centers.

## Education

**M.S., Dept. of Physics, Jahangirnagar University** April 2016 – December 2018

- Supervisor: Professor Md. Abul Hossain
- Thesis Topic: First Principle Study of Metal and Transition Metal Doped Borophene Nanocluster and Their Application as Gas Sensor
- GPA: 3.93 out of 4.00

**B.Sc.(Honors), Dept. of Physics, Jahangirnagar University** January 2011 - March 2016

- Learned most of the courses of fundamental physics
- CGPA: 3.69 out of 4.00

## Research Interests

- Nanomaterials, understanding and developing new nanomaterials, developing nano sized materials for efficient drug sensing
- Learning theories, models and simulation of different materials systems including electronic, atomistic, and mesoscopic models and continuum models in order to develop computational tools for realizing microscopic origin of different complex phenomena

## Research Experiences

### Experimental Projects

- Synthesis and Characterization of Graphene Nanostructures and Graphene Based Nanocomposite
  - Experimental works involves spin coating method, XRD technique, UV-Visible Spectra Analysis, SEM Analysis etc.

## Simulation Projects

- Investigation of structural, electronic and optical properties of different boron cluster by doping metal and transition metal atom
- First Principles Study of Structural, Elastic, Electronic and Optical properties of ZnSnO<sub>3</sub> and the Role of Intrinsic and Extrinsic Defects
- First Principle Study of Boron Nanoclusters for Hydrogen Storage Application
- DFT Study of Boron Nitride Nanoclusters for sensing toxic sulphur gases

## Research Publications

### Journal Papers

- **Md. Rakib Hossain**; Md Kamal Hossain; Syed Mahedi Hasan; Milon Paul; Farid Ahmed, PhD; Tahmina Ferdous; Md. Abul Hossain: Tuning electronic and optical properties of hexagonal vacancy containing boron nanoclusters by the adsorption of transition metal atoms: a DFT and TDDFT study, Submitted in the Journal of Molecular Modeling, 2018.
- Siraj Ud Daula Shamim; Tashrif Hussain; Md Kamal Hossain; **Md. Rakib Hossain**; Farid Ahmed; Tahmina Ferdous; Md. Abul Hossain: A DFT Study on the Geometrical Structures, Electronic and Spectroscopic Properties of B<sub>m</sub>(m=6-8) and Co<sub>n</sub>B<sub>m</sub>(m=6-8, n=1-2) Nanoclusters, Submitted in Theoretical Chemistry Accounts, 2019.
- **Md. Rakib Hossain**; Md Kamal Hossain; Farid Ahmed; Tahmina Ferdous; Md. Abul Hossain: Sensing behavior of pristine and Si doped BN nanosheet towards SO<sub>3</sub> and H<sub>2</sub>S gas molecule: A DFT Study, Journal of Molecular Modeling, To be submitted, 2019.

### Conference Papers

- **Md. Rakib Hossain**, Syed Mahedi Hasan, Milon, Md. Kamal Hossain, Farid Ahmed, Md. Abul Hossain: Structural, electronic and optical properties of pristine and metal (Ti) doped B<sub>6</sub> nanocluster: A DFT study, 5th IEEE Region 10 Humanitarian Technology Conference 2017 organized by IEEE R10 and IEEE Bangladesh Section, Presented (23rd December, 2017), Published at 12 February-2018 in IEEE Xplore Conference Proceeding, DOI: 10.1109/R10-HTC.2017.8288940.
- Syed Mahedi Hasan, Milon, **Md. Rakib Hossain**, Md. Kamal Hossain, Dr. Farid Ahmed, Dr. Md. Abul Hossain: Hexagonal boron cluster as an anode material for divalent-ion (Ca<sup>2+</sup>) storage: A theoretical study, 5th IEEE Region 10 Humanitarian Technology Conference 2017 organized by IEEE R10 and IEEE Bangladesh Section, Presented (23rd December, 2017), Published at 12 February-2018 in IEEE Xplore Conference Proceeding, DOI: 10.1109/R10-HTC.2017.8288948.
- **Md. Rakib Hossain**, Milon, Syed Mahedi Hasan, Md. Kamal Hossain, Jahirul Islam Khandaker, Dr. Farid Ahmed, Dr. Md. Abul Hossain: The planar B<sub>6</sub> cluster as a motif for doping metal cation (Al<sup>3+</sup>): A DFT study, 2nd International Conference on Electrical & Electronic Engineering (ICEEE 2017) organized by Department of EEE, RUET and IEEE Bangladesh Section, Presented (27th December, 2017) and will be Published in IEEE Xplore Conference Proceeding.

- Milon, Syed Mahedi Hasan, **Md. Rakib Hossain**, Md. Kamal Hossain, Jahirul Islam Khandaker, Dr. Farid Ahmed, Dr. Md. Abul Hossain: Investigation of semiconductor doped B6 nanocluster: A first principle study, 2nd International Conference on Electrical & Electronic Engineering (ICEEE 2017) organized by Department of EEE, RUET and IEEE Bangladesh Section, Presented (27th December, 2017) and will be Published in IEEE Xplore Conference Proceeding.

## Professional Experiences

### Teaching Experiences

- Lecturer, Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Bangladesh November 2018 – Present
  - Conducting classes (Offered Courses: Atomic and Molecular Physics-PHY307, Statistical Mechanics- PHY205, Electricity and Magnetism- PHY235); Lab sessions (Physics Lab III, Physics Minor Lab) Tutorial session, Grading exam papers, proctoring exams etc.
- Lecturer, Daffodil International University, Bangladesh May 2018 – November 2018
  - Conducting classes (Offered Courses: Mechanics, Heat and Thermodynamics, Optics, Electricity and Magnetism)

### Work Experiences

- Member of syllabus moderation committee 2019 (Department of Physics, BSMRSTU)

## Conference Attended

- 5th IEEE Region 10 Humanitarian Technology Conference 2017 organized by IEEE R10 and IEEE Bangladesh Section and held on 21-23 December, 2017 at EEE department, BUET.
- 2nd International Conference on Electrical & Electronic Engineering (ICEEE 2017) organized by Department of EEE, RUET and IEEE Bangladesh Section and held on 27-29 December, 2017 at EEE department, RUET.

## Skills

- Capable of using Latex, Mathematica, Origin
- Basic programming language: C, C++
- Software and Hardware troubleshooting
- Thesis Software: Gaussian, Material Studio
- Practical knowledge on various material synthesis technique (Solgel, doctor blade, spin coating) and characterization technique (UV-Vis Spectroscopy, XRD technique, SEM imaging)

## **Personal Achievements**

- Yearly university scholarship for merit.
- Complementary scholarship for extraordinary academic performance in all four years of undergraduate studies.
- National Science & Technology fellowship under Ministry of Science & Technology-Government of the People's Republic of Bangladesh in the year 2015-16.

## **Interest**

- Participating in International Conferences
- Traveling and interacting with scientists/artists of different countries/cultures
- Reading novels and journals
- Watching movies and sports

## **Co-Curricular Activities**

- Scouting: Served as a member of Cub Scout and Boy Scout in school level
- Sports: Good at cricket, badminton, volleyball, swimming etc.
- Member: Badhan (A Voluntary Blood Donors' Organization)

## **References**

Professor Md. Abul Hossain (Thesis Supervisor)

Affiliation: Dept. of Physics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh.

Email: mdabulh@juniv.edu

Professor Farid Ahmed

Affiliation: Dept. of Physics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh.

Email: fahmed@juniv.edu