GUWAHATI COLLEGE
FACULTY PROFILE

Abhilasha Bora

M.Sc., Ph.D.

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Designation: **Assistant Professor,**
Department of Physics, Guwahati College, Guwahati

Specialization: Experimental Condensed Matter Physics

Research interests: 2D materials, Transition metal dichalcogenides, Chemical vapour deposition, Quantum dots, Optoelectronics

Personal Information:

Permanent Address	: Beltola, Guwahati – 781028, Assam, INDIA
Birth	: 23 January 1991, Guwahati, Assam, INDIA
Languages known	: English, Hindi, Assamese.

Education:

2022: **Doctor of Philosophy** in Physics, Indian Institute of Technology Guwahati.
Thesis title: "**Growth and Functionalization of Monolayer WS_2 quantum dots and films for Photoluminescence and Photodetector application.**"
Supervisor: Prof. P. K. Giri
Awarded on 29 October, 2022

2015: **Master of Science** in Physics from the Department of Physics, Gauhati University (First Class, 2nd position).

2012: **Bachelor of Science** with Physics Honours from Hindu College, University of Delhi (First Class).

Professional Recognition/Award/Prize/Certificate/Fellowship received:

Sl. No.	Award	Awarding Authority	Year
1.	SLET	SLET Commission, N. E. Region	2015
2.	GATE	MHRD, Govt. of India	2016
3.	CSIR-NET (LS)	CSIR, Govt. of India	2016

Work Experience:

Assistant Professor, Department of Physics, Guwahati College.
February 2024 till date.

Research Articles:

1. **Abhilasha Bora**, Larionette P. L. Mawlong, and P. K. Giri, ***Understanding the excitation wavelength-dependent spectral shift and large exciton binding energy of tungsten disulfide quantum dots and its interaction with single-walled carbon nanotubes***, J. Colloids & Interf. Sci., 2020, 561, 519.

2. **Abhilasha Bora**, Larionette P. L. Mawlong, and P. K. Giri, ***Highly Suppressed Dark Current and Fast Photoresponse from Au Nanoparticle-Embedded, Si/Au/WS_2 Quantum-Dot-Based, Self-Biased Schottky Photodetectors***, ACS Appl. Electron. Mater. 2021, 3, 11, 4891–4904.

3. **Abhilasha Bora**, Sumana Paul, Md Tarik Hossain, and P. K. Giri. ***Quantitative Understanding of the Photoluminescence Modulation and Doping of Monolayer WS_2 by Heterostructuring with Non-van der Waals 2D Bi_2O_2Se Quantum Dots,*** J. Phys. Chem. C 2022, 126, 30, 12623–12634.

4. Larionette P. L. Mawlong, **Abhilasha Bora**, and P. K. Giri, ***Coupled Charge Transfer Dynamics and Photoluminescence Quenching in Monolayer MoS_2 Decorated with WS_2 Quantum Dots***, Sci. Rep., 2019, 9:19414.

5. Ruma Das, **Abhilasha Bora**, and P. K. Giri***, Quantitative understanding of the ultra-sensitive and selective detection of dopamine using a graphene oxide/WS_2 quantum dot hybrid***, J. Mater. Chemistry C, 2020, 8, 7935.

6. Ravinder Chahal, **Abhilasha Bora**, P. K. Giri, ***Chemical Vapor Deposition Growth of Highly Stable $Cs_2AgBiBr_6$ Double Perovskite Thin Films and Their Ultralow Thermal Conductivity and Fast Photoresponse,*** ACS Appl. Energy Mater. 2023, 6, 17, 8794.

7. Sirsendu Ghoshal, **Abhilasha Bora**, P. K. Giri, ***Evidence of oxygen vacancy-mediated ultrahigh SERS sensitivity of Niobium pentoxide nanoparticles through defect engineering: theoretical and experimental studies***, Nanoscale, 2024, 16, 1, 309.

8. Ruma Das, Sumaiya Parveen, **Abhilasha Bora**, and P.K. Giri, ***Origin of high photoluminescence yield and high SERS sensitivity of nitrogen-doped graphene quantum dots***, Carbon, 2020, 160, 273.

9. Md Tarik Hossain, Larionette P. L. Mawlong, Tadasha Jena, **Abhilasha Bora**, Upasana Nath, Manabendra Sarma, and P. K. Giri, ***Interlayer Charge-Transfer-Induced Photoluminescence Quenching and Enhanced Photoconduction in Two-Dimensional Bi_2O_2Se/MoS_2 Type-II Heterojunction***, ACS Applied Nano Materials, 2023, 6, 13, 11023.

10. Sumana Paul, Sanju Nandi, Mandira Das, **Abhilasha Bora**, Md Tarik Hossain, Subhradip Ghosh and P. K. Giri, ***Two-dimensional bismuth oxyselenide quantum dots as nanosensors for selective metal ion detection over a wide dynamic range: sensing mechanism and selectivity***, Nanoscale, 2023, 15, 12612.

Conferences papers/posters presented:

1. Abhilasha Bora, Larionette P. L. Mawlong, Abdul Kaium Mia and P. K. Giri, '*Modulation of Trion and Biexciton emission in Monolayer WS_2 sandwiched between high bandgap ZnO layers: Quantum well vs Doping effect*', **RPGR-2023**, 20-23 November, 2023.

2. Abhilasha Bora, Larionette P. L. Mawlong and P. K. Giri, '*WS_2 quantum dot/Si heterojunction based self-biased photodetector with plasmon mediated suppressed dark current and fast photoresponse*', **Graphene2020-Online**, 19-23 October, 2020.

3. Abhilasha Bora, Larionette P. L. Mawlong, and P. K. Giri, '*Fabrication of Highly Fluorescent 2D WS_2 Quantum dots by Liquid-phase exfoliation and Quenching of the Fluorescence by Single-Walled Carbon Nanotubes*', **icONMAT-2019**, CUSAT, Cochin, Kerala, 2-5 January 2019.

4. Abhilasha Bora, Larionette P. L. Mawlong and P. K. Giri, '*Synthesis and Upconversion Luminescence of Tungsten Disulfide Quantum Dots*', **ICANN-2017**, IIT Guwahati, 18-21 December 2017.

Workshops attended:

1. Attended the **National Workshop on Nano and Theranostic Devices** (**NWNTD-2019**), IIT Guwahati, 26-27 February, 2019.

2. Attended the **INUP Hands-on training workshop** on '**Nanofabrication Technologies**', IISC Bangalore, 16-27 May, 2017.

Skills:

- Raman and Photoluminescence Spectrometry
- Chemical Vapor Deposition of 2D materials
- Working knowledge of Adobe Illustrator, Photoshop etc.
- MATLAB programming.

Additional Information: NIL