Bablu Mukherjee | Resume

Email: bablu.iitm@gmail.com | *Mobile:* +81-7044616169 | *Linkedin:* https://linkedin.com/in/phybm

Experienced researcher with a demonstrated history of working in top research institute. **Electrical and material science engineer with a skill set in fabrication, nano-architectonics, process and application improvement, data analysis, and nanomaterial science engineering.** Interested in solid-state devices R&D for detectors, optical sensors, memory, and multifunctional device development.

PERSONAL: Name: Bablu Mukherjee
Date of Birth: 3rd January 1987, **Nationality:** Indian, **Gender & Marital Status**: Male & Married, **Languages Known**: English, Hindi & Bengali, **E-Mail:** bablu.iitm@gmail.com

PROFILE SUMMARY:

- A semiconductor physicist and device engineer with almost 6+ years of hands-on experience of clean-room nanodevice fabrication and characterization. Experience in laboratory instrumentation and measurement techniques (**Opto-electronics**, **energy conversion**, **optical sensors**) and new device **application developments**.
- Excellent communication and writing skills, leadership & management skills, **raising independent project funding including project design, planning and execution**, managed cutting-edge R&D projects.

CORE COMPETENCIES: Nanotechnology | Material Science| Optoelectronics | Energy Conversion | Sensor

RESEARCH & PROJECT MANAGEMENT EXPERIENCE:

National Institute for Materials Science (NIMS) **JSPS Fellow** **Nov. 2017 – Present**
- Interlayer Transition and Infrared Photodetection in $MoTe_2/ReS_2$ *p-n* van der Heterostructures
- CMOS Technology Compatible Vertical p-Si/n-ReS_2 Efficient Near-Infrared Photodiode
- Laser Assist Non-Volatile Memory Devices Based on 2D Heterostructures

Indian Institute of Technology (IIT), Bombay **Institute Post-Doctoral Fellow** **Sep. 2015 – April 2017**
- Few Layer ReS_2 Plasmonic Phototransistor with High-Performance Optoelectronics
- Control of Two-dimensional Excitonic Light Emission *via* Periodic Structures and Applied Field

The George Washington University (GWU) **Post-Doctoral Scientist** **Mar. 2014 – Aug. 2015**
- Optical Properties and Extraction of Complex Electrical Permittivity of Monolayer MoS_2
- Enhancing Optical Absorption and Scattering of Monolayer MoS_2 with Plasmonic Gold Nanoparticles

TECHNICAL HIGHLIGHTS & SKILLS:

Experimental Skill: Fabrication and Analytical Techniques:
- Thin film deposition: Sputtering, CVD, PECVD, Atomic layer deposition (ALD), e-beam deposition.
- Lithography techniques: Electron beam lithography (EBL), Laser lithography, Photo-lithography.
- Spectroscopic analysis: Micro-Raman, XRD, XPS, micro-PL, differential reflectance spectroscopy.
- Electrical characterization: C-V, C-f, I-V, I-t, Hall measurement, small signal using lock-in amplifier.

Simulation and Software Experiences:
- Optical/Device tool: Wavenology-3D EM Wave Solver, Lumerical FDTD/Device, CST Studio, Comsol.
- Analysis tool: Matlab, Python data analysis, Microsoft Excel and Plotting tool: Origin, XPS peak fit 4.1.
- Designs: AutoCAD, Design CAD, Google Sketch Up.

EDUCATION:

National University of Singapore (NUS), Singapore: **31st Dec. 2013**
Doctor of Philosophy (Ph. D) in Experimental Nanoscience/Applied Physics
Title Layered Chalcogenides Nanostructures: Synthesis, Characterisation and Optoelectrical Applications

Indian Institute of Technology (IIT) Madras, India: **31st July 2009**
Master of Science (M.Sc.) in Physics (***Specialization: Nanoscience and Nanotechnology***)

University of Calcutta, Kolkata, West Bengal, India: **23rd July 2007**
Bachelor of Science (B. Sc.) in Physics Honours, (Ramakrishna Mission Residential College, Narendrapur)

LEADERSHIP ACTIVITIES:

VIT University, Vellore, TN, India **May 2017 – Nov. 2017**
- **Assistant Professor** in Physics, School of Advanced Sciences. AGP 7,200. PB: 18,600 - 39,100
- **Engineering Physics** (PHY 1701) Course (Theory + Laboratory)- for 3 batches undergraduates

PROFESSIONAL SCIENTIFIC ACTIVITIES:

- **Editorial Board Member:** Advances in Materials of Science Publishing Group, USA.
- **Fellow Member:** OSI (F1311), Optical Society of India, Japan Society of Applied Physics, JSAP (M040941)
- **Review / Editing:** Nanoscale, Applied Nanoscience, Plasmonics, IEEE Photonics, Applied Physics Letter
- **Volunteer:** The 3rd International Conference on Emerging Electronics (ICEE 2016), Dec. 2016
- **Advisor:** Mendeley, Elsevier for managing references and sharing research papers.

AWARDS & ACHIEVEMENTS & CERTIFICATIONS:

- **Excellent Poster** Presentation Award in the MANA International Symposium 2019, Tsukuba, Japan
- Nominated for **Best Poster** Award in the 79th JSAP Autumn Meeting 2018, Nagoya Japan.
- **JSPS** Postdoctoral Fellowship at National Institute for Materials Science, NIMS, Tsukuba, JAPAN
- **DAAD** Scholarship 2009 - Institute of Electronic Material and Devices (LUH)- Germany
- Ranked 57 in all India Joint Entrance Screening Test (**JEST 2009**) Examination
- Qualified Graduate Aptitude Test in Engineering (**GATE-2009**) in Physics (Percentile: 93.17)
- Certificate of merit for National top 1% in National Graduate Physics Examination **NGPE** 2006-07
- Certificate of completion in Microsoft Excel Advanced usage from UDEMY.

PUBLICATIONS (#5 out of #13 FIRST AUTHOR) - PEER REVIEWED ARTICLES (Total #22):

1. **B. Mukherjee** *et al.* Nature Electronics, 2020 (Sub.), Laser Assist Multi-Level Nonvolatile Memory.
2. **B. Mukherjee** *et al.* ACS Photonics, 6, 2277, 2019, Enhanced Quantum Efficiency in Vertical ReS_2/Si Photodiode
3. **B. Mukherjee** *et al.* Scientific Reports, 7, 41175, 2017, Exciton Emission Intensity Modulation of Monolayer MoS_2
4. **B. Mukherjee** *et al.* ACS Appl. Mater. Interfaces, 5, 2013, 9594, NIR Photodetectors of Individual GeSe Nanosheet
5. **B. Mukherjee** *et al.* J. Material Chemistry, 22, 2012, 24882, Stepped-surfaced $GeSe_2$ with high-gain photoconductivity