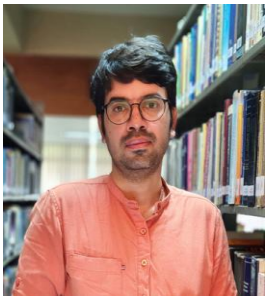
Curriculum Vitae



Personal Details:

Name: Dr. Joy Mukherjee

Father's Name: Lt. Kajal Kumar Mukherjee

Mother's Name: Smt. Bhabani Mukherjee

Date of Birth: 18th October 1991

Present Address: IIITDM Kurnool Andhra Pradesh, 518008

Permanent Address: Flat No B1, Gurukripa Apartment, RK Roy Road, Vivekanand Pally
Landmark Sur Engineering, opposite to Dr. PK. Banerjee House
Asansol PIN: 713304, Dist: Paschim Burdwan, State: West Bengal

Email: write2joymukherjee@gmail.com / joym@iitk.ac.in

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Linked In id: https://www.linkedin.com/in/joymukherjee-b084021a

Google Scholar: https://scholar.google.com/citations?hl=en&user=YP8iW4YAAAAJ

ORCID Id: https://orcid.org/0000-0002-5387-2617

Scopus Id: 57216369607

Academic Qualifications: *M.Sc. (physics), Ph.D.*

(Specialization: Nuclear and particle Physics)

Broad Area of research interest: Condensed Matter Physics (Ion -matter interaction, Ion beam induced surface modification)

- Ion beam development and acceleration, Ion-matter interaction; Ion-beam induced nano-structuring of surface and nanoscale functionalization; Material modification via controlled defect formation, thin film growth (thermal and sputtering technique) on nano-patterned surface, Surface and near surface engineering for photon emission and photo-electrocatalytic water splitting.

Total no. of citations: **63**

h-index: **5**

i10 index: 1

Current Affiliation:

24th December 2025 onwards-till date Assistant Professor IITDM Kurnool (*Assistant professor Level 11 (Grade 2))*

14th May 2025 -28th Nov 2025 – **Assistant Professor VIT Vellore** (*Assistant professor Grade 2 level A2*)**.**

Teaching Experience:

1. **Engineering Physics (BAPHY 105) (T+L+P); (Quantum Mechanics and Elements of Quantum Computation)- Fall Semester 2025-26 at VIT Vellore**

Sponsored Project

Research Experience:

13th August 2024 to 31st March 2025: Post-doctoral Fellow at *Indian Institute of Technology, Kanpur*

22nd December 2022 to 31st July 2024: Post-doctoral Fellow at the *Institute of Physics, Bhubaneswar*

Academic Qualifications:

November 2022: PhD awarded, *Variable Energy Cyclotron Centre, (Homi Bhabha National Institute), Kolkata*

2019-2022: Senior Research Fellow, *Variable Energy Cyclotron Centre, Kolkata*

2018-2019: Junior Research Fellow, *Variable Energy Cyclotron Centre, Kolkata*

2017 – 2018: Post M.Sc. with 72.6% marks from *Variable Energy Cyclotron Centre Kolkata*,

2012- 2014: M.Sc. in Physics (2 yrs.) 61.58% from University of Burdwan, Burdwan, India. Specialization: Nuclear and Particle Physics

2009-2012: B.Sc. in Physics (Honors) (3yrs) with 60% marks from B.B. college Asansol, West Bengal.

2009: Higher Secondary Examination (10+2), West Bengal Council of Higher Secondary

Education (W.B.C.H.S.E) with 75.2% marks, W.B., India.

2007: Madhyamik Examination (10), West Bengal Board of Secondary West Bengal Council of Higher Secondary Education (W.B.C.H.S.E) with 83.625% marks, West Bengal, India

Experience in experimental skills:

1. Ion beam Development and Acceleration (both low and ultra-low) with dipole magnet-based mass spectrographs (hand on); multi-cusp plasma-based ion source, di-electric barrier discharge ion source, single to multi cathode SNICS.
2. Experience in handling UHV chamber and UHV technology with several vacuum systems including pumps (hands-on);
3. Thin film deposition by RF/DC sputtering, pulse laser deposition, electron beam evaporation technique (hand-on);
4. Chemical Vapor Deposition, Hydrothermal, spin-coating etc.
5. 2D material growth via CVD
6. Scanning probe microscopy: Tapping mode and contact mode atomic force microscopy, Kelvin-probe force microscopy (hand-on);
7. Field emission spectroscopy (hand on)
8. I-V measurement using two probe and four probes set up by Keithley source meter
9. Structural characterizations through X-ray Diffraction and X-ray reflectivity (hands-on)
10. X-ray Photo-electron Spectroscopy using a laboratory x-ray source (hand on)
11. Scanning Electron Microscopy (SEM),
12. High-resolution cross-sectional Transmission Electron Microscopy (TEM) techniques with Electron Energy Loss Spectroscopy.
13. Optical characterization techniques: UV-visible spectrometer (hand-on), Photo-Luminescence (hand-on), Micro and Surface Enhanced Raman Spectroscopy.
14. Experience in working with synchrotron beamlines (RRCAT India).

Experience in software for data analysis:

Origin, CASA XPS, SRIM & TRIDYN (static and dynamic), WSxM and Gwydion (For AFM image analysis), and comprehensive Density Functional Theory and Molecular Dynamics Simulation knowledge.

List of Publications (in reverse chronological order):

Published Articles:

[1] "Performance optimization of versatile, microwave based, Ultra-low energy Electron Cyclotron Resonance ion source for Silicon nanopatterning"; Joy Mukherjee, Safiul Alam Mullick, Tanmoy Basu, Tapobrata Som; **Beilstein J. Nanotechnol. 2025, 16, 484–494**; https://doi.org/10.3762/bjnano.16.37 **Quartile: Q2**

[2] "Low energy ion-beam mediated tailoring of structural, optical, and electrical properties of ITO films"; Joy Mukherjee, Dipak Bhowmik, Sudeep Bhowmick, Prasanta Karmakar, Sudeep Bhattacharjee; **Surfaces and Interfaces 59 (2025) 105973**; https://doi.org/10.1016/j.surfin.2025.105973 **Quartile: Q1**

[3] "Green to deep-red emissive carbon dot formation by C^+ ion implantation on nitrogen beam created self-masked nano-template" Sudip Bhowmik, Joy Mukherjee, Manorama Ghosal, Achintya Singha, Prasanta Karmakar; **Nanotechnology 35 (125301) 2024.** http://doi.org/10.1088/1361-6528/ad14b1 **Quartile: Q1**

[4] "Oxidation dynamics of ion beam induced chemical phase formation on the metallic thin film"; Dipak Bhowmik, Joy Mukherjee, Sudeep Bhattacharyya, Prasanta Karmakar; **Thin Solid Film 787 (140144) 2023**. https://doi.org/10.1016/j.tsf.2023.140144 **Quartile: Q2**

[5] "Silver ion beam development and implantation on the nano-pyramidal template for isolated nano-dot formation"; Sudip Bhowmik, Joy Mukherjee, Vaishali Nayak, Prasanta Karmakar; **Vacuum 215 (112348) 2023.** https://doi.org/10.1016/j.vacuum.2023.112348 **Quartile: Q2**

[6] “Alteration and interrogation of ultra-thin layer of silicon by reactive molecular ion implantation”; Joy Mukherjee, Sudip Bhowmik, Sabyasachi Karmakar, Dipak Bhowmik, Satyajit Hazra, Biswarup Satpati, Prasanta Karmakar; **Applied Surface Science 637 (157837) 2023. https://doi.org/10.1016/j.apsusc.2023.157837 Quartile: Q1**

[7] “Carbon ion beam induced chemical modification and nano-pyramid growth on Si surface”; Sudip Bhowmik, Joy Mukherjee, Manorama Ghosal, Prasanta Karmakar; **Physica Scripta 98 (015028) 2023;. http://doi.org/10.1088/1402-4896/acab93 Quartile: Q2**

[8] "Study of low energy ion beam induced sputtering parameters of muscovite mica [KAl2(Si3Al)O10(OH)2] using Monte Carlo simulation"; Dipak Bhowmik, Joy Mukherjee; **Materials Today Proceedings; 47(8), 1515(2021); https://doi.org/10.1016/j.matpr.2021.03.161 Quartile: Q2**

[9] "Band gap engineering of the top layer of mica by organized defect formation"; Joy Mukherjee, Madhvi H Dalsaniya, Dipak Bhowmik, Sudip Bhowmik, Prafulla K Jha, Prasanta Karmakar; **Surfaces and Interfaces; 33 (102283) 2022; https://doi.org/10.1016/j.surfin.2022.102283 Quartile: Q1**

[10] "Spatially varying chemical phase formation on silicon nano ripple by low energy mixed ions bombardment"; Joy Mukherjee, Dipak Bhowmik, Gourab Bhattacharyya, Biswarup Satpati, Prasanta Karmakar; **Journal of Physics Condensed Matter; 34 135001 (2022). http://doi.org/10.1088/1361-648X/ac4937 Quartile: Q2**

[11] "Optically sensitive isolated silver nano-dots development by broad ion implantation on nitrogen ion-induced pre-patterned silicon nano-templates"; Sudip Bhowmik, Joy Mukherjee, Biswarup Satpati, Prasanta Karmakar; **Applied Surface Science 578(7):152079, (2021) https://doi.org/10.1016/j.apsusc.2021.152079 Quartile: Q1**

[12] "Projectile Mass induced nano-patterning and optical bandgap tailoring of Muscovite-Mica by low energy ion beam irradiation”; Dipak Bhowmik, *Joy Mukherjee, Prasanta Karmakar;

"Radiation Physics and Chemistry; 187, 109568(2021) (*Equal Contribution) **https://doi.org/10.1016/j.radphyschem.2021.109568** **Quartile: Q2**

[13] "Alternating Silicon oxynitride-silicon oxide stripe formation on Si by nitric oxide ion-implantation", Joy Mukherjee, Dipak Bhowmik, Manabendra Mukherjee, Biswarup Satpati, Prasanta Karmakar; **J. App.Phys 127(145302), 2020.** **https://doi.org/10.1063/1.5144960** **Quartile: Q2**

Enduring Publications:

[14] "Photon emission with enhanced field emission from single crystal aluminum nitride nano-dots formed by ion-implantation"; Joy Mukherjee, Prasanta Karmakar; Shilpa Tripathi, Sudeep Bhattacharjee"; **(Communicated in small).**

[15] Assessing performance of ion-modified FTO thin film electrodes for hydrogen production under sunlight; **Joy Mukherjee**, Sudeep Bhattacharjee (**(Under manuscript preparation)**

Conference proceedings:

[1] **"**Investigation on chemical instability and optical absorption of ion bombarded Si Surfaces"; **Joy Mukherjee,** Dipak Bhowmik, Prasanta Karmakar; **AIP Conference Proceedings 2369, 020038 (2021);** **https://doi.org/10.1063/5.0060833** **.**

Book Chapters:

[1] Band gap engineering and nano-patterning of muscovite mica by low energy ion beams applicable for futuristic microelectronics; "***Book-Smart Materials for Engineering and Sciences: Current Trends and Future Prospective"; Wiley*** **Scrivener Publishing;** ***ISBN No.978-1-394-185818***

[2] "Investigation of Vacancy Formation in Muscovite Mica by Different Projectile Ions"; "**Recent Trends in Applied Physics and Material Science"; Taylor and Francis; Joy Mukherjee,** Dipak Bhowmik, Sudip Bhowmick, Paramita Patra; **ISBN No 978-1-041-16452**

Teaching Assistantship:

1. Taught to **post-MSc.** (doctoral coursework) students during Ph.D. which is equivalent to an academic workload of **225 hours at *Variable Energy Cyclotron Centre*** as Teaching Assistance ship.

Awards and honors received:

1. Best Poster Presentation Award in **ICNIB 2019;** held at IGCAR Kalpakkam Title: **"***Chemically periodic nano ripple formation on silicon surface by NO^+ ion irradiation."*

2. Best Poster Presentation Award **IBMEC 2020;** held at IUAC, New Delhi Title**: "***Structurally and chemically oscillating dissimilar phases formation by mixed ion beam irradiation."*

3. Best Oral Presentation Award, **NCPCM 2020;** held at Holkar Science College Indore**,** Title: **"***Investigation on Chemical Instability & Optical Absorption of Ion Bombarded Si Surfaces."*

4. Best oral presentation award **ICONN 2023***, held on SRM Institute of Science and Technology, Chennai; Title: "Impurity-free highly ordered perpendicular mode ripple structures on GaSb (100) substrate under 500 eV Kr^+-ion bombardment".*

Invited Talk:

1. 4th International Conference on Materials Science and Nanotechnology September 20-21, 2024 | Orlando, FL-USA Venue: Double Tree Suites by Hilton Orlando Disney Spring Area | Florida, USA. Title of the presentation: **"Surface and near surface engineering by KeV ion beam"**

National-level exam qualified:

1. Qualified Joint Entrance Screening Test with rank 158

2. Qualified Graduate Aptitude Test for Engineering, with rank 721.

Membership:

Lifetime member of **Ion Beam Society of India** (Membership No- LM274),

Conference Attended:

1. "Development of nanopatterned silicon oxynitride layer by NO^+ ion implantation on Si," Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar; "National Seminar on Condense Matter Physics including Laser Application", January 16-18, 2019 in University of Burdwan, Burdwan.

2. “Development of nanopatterned silicon oxynitride layer by NO^+ ion implantation on Si,” Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar; “Science and Engineering of Materials using Ion Beams and Gamma Radiation”; VECC Kolkata, 28th May 2019.

3. “Chemically periodic nano ripple formation on silicon surface by NO^+ ion irradiation”, Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar, “International Conference on Nano-structuring by Ion Beams (ICNIB 2019)” at IGCAR, Kalpakkam, during November 06 - 08, 2019.

4. “Projectile mass dependent Nano-patterning and optical bandgap tailoring of muscovite mica”, Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar, “MRSI AGM 2020”, CGCRI, Jadavpur Kolkata during February 11-14,2020.

5. “Structurally and chemically oscillating dissimilar phases formation by mixed ion beam irradiation”, Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar, “Ion Beams in Materials Engineering and Characterizations” IUAC, New Delhi (online mode) during December 8-11, 2020.

6. “Investigation on Chemical Instability & Optical Absorption of Ion Bombarded Si Surfaces, Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar, “National Conference on Physics and Chemistry of Materials” Govt. Holkar Science College, Indore (AIP Conference Proceedings), during December 15-17, 2020.

7. “Modification of optical properties of Muscovite Mica by low energy ion bombardment”; Joy Mukherjee, Dipak Bhowmik, Prasanta Karmakar; National Conference on Frontiers on Modern Physics; Adamas University, Kolkata; November 26-27, 2021.

8. “Surface and near-surface modification by keV ion beam” HBNI interaction meeting on condensed matter physics; Saha Institute of Nuclear Physics, Kolkata; June 23-24, 2022

9. “Impurity-free highly ordered perpendicular mode ripple structures on GaSb (100) substrate under 500 eV Kr^+-ion bombardment” ICONN 2023, “SRM Institute of Science and Technology”; March 27-29th, 2023.
10. “Performance optimization of versatile, microwave based, ultra-low energy electron cyclotron resonance ion source for silicon nanopatterning and its application” PSC-2023; IIT Kanpur, 20-21st July 2023.

11. “Ultra-low energy Kr^+ ion-induced highly ordered and impurity-free perpendicular ripples formation on GaSb by nanoscale self-organization” ICNIB-2023; UPES Dehradun, November 2nd to 4th 2023.

12. “Role of projectile ion mass on vacancy formation on muscovite mica” RAFM-2024, Atmaram Sanatan Dhrama College Delhi, March 14th to 16th 2024 (Online Mode).

13. Title of the presentation: “Surface and near surface engineering by KeV ion beam” (Online mode); 4th International Conference on Materials Science and Nanotechnology September 20-21, 2024 | Orlando, FL-USA Venue: Double Tree Suites by Hilton Orlando Disney Spring Area | Florida, USA.

14. Title: “Controlled bandgap modification on insulating muscovite mica by layer-wise defect formation using low energy ion beam irradiation”; National Conference on Frontiers of Ion Beam Science November 4th to 7th 2024, held at Institute of Physics Bhubaneswar.

15. "Yellow to deep red emissive band formation on optically porous nano-structured hydrophobic silica"; International Conference on Sustainable Energy, December 12-15, 2024; held at National Institute of Technology, Durgapur.

Key feature of the research achievement (in brief):

The key highlights of the research carried out so far are:

1. Nanoscale pattern formation with spatially varying chemical phases on Si (100) surfaces has been demonstrated through ion beam irradiation using both nitric oxide (NO^+) and mixed CO^+/N_2^+ ion beams. In both approaches, self-organized periodic nano-ripple structures evolve, driven by the chemical reactivity of incident ions with the silicon substrate. For NO^+ irradiation, a 14 keV beam generated in an Electron Cyclotron Resonance (ECR) system produced laterally alternating stripes of silicon oxide (SiO_x) and silicon oxy-nitride (SiO_xN_γ), exhibiting distinct dielectric properties. Similarly, simultaneous CO^+ and N_2^+ ion bombardment induced ripple formation with periodically modulated carbon-, oxygen-, and nitrogen-rich phases. X-ray photoelectron spectroscopy (XPS) confirmed chemical modifications, while electron energy loss spectroscopy (EELS) revealed spatially resolved stripe-like chemical patterns in both cases. Cross-sectional transmission electron microscopy (XTEM) measurements aligned well with Monte Carlo simulation predictions of the ion-modified layer thickness. These results suggest that chemically driven instabilities, ion flux variation, and differential sputtering yields play key roles in pattern formation. The tunable chemical and optical properties of these patterned nanostructures offer promising applications in nanoelectronics, photonic devices, and multifunctional coatings.
2. The creation of carbon dot arrays with green to red emissions on silicon-nitride nano templates through successive nitrogen and carbon ion implantation. The carbon dots (CDs) are primarily amorphous and composed of SiC and graphitic nitrogen (CN). Raman spectroscopy reveals G-band and D-band carbons, while XPS measurements detect SiC and CN. UV–vis spectroscopy shows a band-gap change in the C-implanted templates. The dots exhibit excitation wavelength-dependent photoemission, producing maximum photoluminescence (PL) intensity in the green-orange region at 425 nm excitation, with a redshift and decreasing intensity at longer wavelengths. This photoluminescence is attributed to quantum confinement, graphitic nitrogen, and defect-induced states in the CDs. The study also discusses potential applications of these carbon dots. The major research contribution lies in developing and accelerating nitric oxide and carbon monoxide ion beam for periodically varying chemical phase formation, applicable for photonic crystal development. Further, I have introduced a unique technique that leads to creation of defect on single layer of 2D material by tuning ion beam parameter.
3. The formation of isolated silver nano-dots on pre-patterned silicon nitride nano templates using broad ion

beams. The nano templates are developed and optimized on Si (100) surfaces through N_2^+ ion bombardment at varying angles and fluences. Atomic Force Microscopy reveals that well-defined pyramidal structures are formed by 14 keV N_2^+ ion bombardment at a 70° incidence angle with an ion fluence of 2×10^{18} ions/cm². Optical-sensitive Ag nano-dots are implanted at selective sites on these patterns, utilizing the geometric structure and local ion implantation angle. Surface chemical analysis via X-ray photoelectron spectroscopy and cross-sectional investigation by transmission electron microscopy (TEM) confirm the presence of isolated Ag dot arrays at specific sites on the nano-pyramidal templates. These isolated Ag dots on the silicon/silicon nitride surface significantly enhance the Raman signal, which increases further with higher Ag ion fluence. The presence of Ag dots also alters the light reflectance from the substrate surface. The study describes the growth mechanism of the pyramidal structures by grazing incidence ion bombardment, the self-masking process for isolated Ag dot formation, and the resultant optical responses.

4. The narrowing of the bandgap in the topmost layer of muscovite mica through defect formation induced by low-energy Ar^+ ion beams. By varying the sputtering rates of constituent elements of mica, organized defects are created. First-principle (DFT) calculations show that a single layer of muscovite mica has a bandgap of 4.63 eV, which reduces to 1.3 eV when specific atoms are absent. To study the bandgap, change in a single mica layer, controlled atomic vacancies are created in the topmost layer of muscovite mica using low-energy Ar+ ion sputtering at a glancing angle. The ion energy and incidence angle are selected using Monte Carlo Simulation (SRIM) to induce the desired defects. X-ray photoelectron spectroscopy is used to probe the removal of constituent atoms, while UV-VIS reflectance spectroscopy and conducting Atomic Force Microscopy (c-AFM) experimentally estimate the bandgap change. The experimental results align with the first-principal calculations.
5. Compared to silicon, III-V compound semiconductors exhibit superior material properties, including a direct bandgap, higher carrier mobility, and a smaller electron effective mass, enabling efficient charge transport and enhanced optoelectronic performance. These captivating characteristics brand them highly attractive for next-generation technologies, spanning solid-state lighting, high-frequency wireless communication, artificial intelligence, renewable energy generation, and beyond. This literature provides an alternative pathway for fabrication of single crystal III-V semiconductor via ion bombardment and its applications. Using ion-bombardment technique, this manuscript investigates the formation, morphological evolution, field emission, and photon emission characteristics of single-crystal Aluminium nitride (AlN) synthesized via nitrogen ion implantation on Aluminium sheet. The controlled irradiation of a polycrystalline Aluminium substrate with 14 keV molecular nitrogen ions at normal incidence

induces the formation of surface nano-dots, accompanied by the development of non-stoichiometric amorphous Aluminium nitride (AlNx) confirmed by structural and compositional investigations through scanning electron microscopy (SEM), X-ray diffraction (XRD), and X-ray photoelectron spectroscopy (XPS) respectively. Upon post-implantation annealing, the amorphous AlNx undergoes a transformation into a stoichiometric, single-crystal phase, with a concurrent reduction in the size of surface nano-dots, evident from similar investigations. The transition from amorphous to single crystal Aluminium nitride is further corroborated using Raman spectroscopy, revealing the presence of A1 (TO) vibrational mode along with E_1(TO), E_1, and E_1(LO) vibrational modes, as a characteristic of the crystalline AlN lattice. Modification of optical properties s accompanying this transformation are probed through UV-VIS reflectivity measurements, demonstrating a significant increase in bandgap from 1.44 eV to 6.2 eV, indicative of the formation of a wide-bandgap semiconductor, i.e., AlN. The electrical characteristics of the ion-implanted AlN surfaces reveal a substantial enhancement in field emission properties, with the stoichiometric single-crystal phase exhibiting a notably lower turn-on field compared to pristine Aluminium. Concurrently, the redshift in emission spectra from 575 nm to 600 nm under 400 nm excitation, investigated via photoluminescence spectroscopy, is attributed to structural and electronic modifications induced by ion implantation and subsequent annealing. The observed enhancement in electron emission is explained through Fowler-Nordheim tunnelling mechanisms, supported by ultraviolet photoemission spectroscopy (UPS), which indicates a reduction in the effective work function in post bombardment scenario due to shift in Fermi level. These investigations provide fundamental insights into the formation mechanisms of wide-bandgap group III-V semiconductors via ion implantation and subsequent thermal annealing. The ability to engineer single-crystal AlN with tailored electronic and optical properties through ion-beam techniques highlights its potential for next-generation photonic and electronic applications, including high-performance field emitters.

Outreach Activity:

1. **Student outreach programme**: National Science Day Celebration at IoP, Bhubaneswar (AY 2023 & AY 2024) includes live experimental demonstration, motivational talks, video presentation, science quiz organization etc.

Referee for recommendation:

1. **Prof. Prasanta Karmakar (PhD Supervisor)**
   Scientist G, VECC Kolkata, and Associate. Prof. (HBNI)
   Head, Ion Beam Development & Applications Section
   Variable Energy Cyclotron Centre, Kolkata-700064, India

Email: prasantak@vecc.gov.in, prasantak@gmail.com
Mob: +91- 9874878407

2. **Prof. Sudeep Bhattacharjee (post doc mentor)**
Professor, Indian Institute of Technology, Kanpur
Kalyanpur, Kanpur Uttar Pradesh- 208 016
Email: sudeepb@iitk.ac.in
Mob: +91- 9793844312

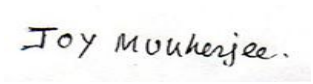
3. **Prof. Tapobrata Som (post doc mentor)**
Professor, SUNAG Laboratory, Institute of Physics
Bhubaneswar, Odisha, India 751005
Email: tsomiop@gmail.com
Mob: +91- 9437010830

4. **Prof. Prafulla Kumar Jha (Collaborator)**
Professor, M.S. University Baroda, Gujrat
The M. S. University of Baroda, Patparganj,
Vadodara, Gujarat-390002
Email: prafullaj@yahoo.com
Mob: +91- 9825032877

Declaration

I, Joy Mukherjee, certify that all the information given above is correct to the best of my knowledge.

Date: 29/12/2025



Place: Kurnool, India

(Dr. Joy Mukherjee)