

CURRICULUM VITAE

Dr. Akant Sagar Sharma

Education:

- ❖ **Dec 2014-27th August 2021:** Ph.D. in Tech., Subject: - Nanoscience and Nanotechnology, University of Calcutta, Kolkata, West Bengal, India.
- ❖ **June 2012- June 2014:** **Master of Science** in Electronic Science, Calcutta University, Kolkata, West Bengal, India.
- ❖ **June 2009- June 2012:** **Bachelor of Science** in Electronics, Vidyasagar College, University of Calcutta, Kolkata, West Bengal, India.

Research Interest:

- ❖ **Special interest:** Epi-layer of dilute III-V-Bismide and Nitride semiconductor, study defects in novel materials.
- ❖ Novel III-V semiconductor epitaxial layer and nanostructure growth.
- ❖ Optoelectronic device fabrication using epitaxial growth technology.
- ❖ Ultrafast pump-probe spectroscopy and Terahertz Spectroscopy.
- ❖ Study ultrafast carrier dynamics of 2D materials using TRPL.

Research Experience:

Dec 2021-present: Institute postdoc in School of Physics at Indian Institute of Science Education and Research Thiruvananthapuram, India. Working in Ultrafast Spectroscopy Group.

Dec 2014- 27th August 2021: Ph.D. Student, Department of Electronic Science and Centre for Research in Nanoscience and Nanotechnology, University of Calcutta Kolkata, India

Thesis Title:

“Interfacial Strain and Related Effect in III-V Nitride and Bismide Semiconductor Heterojunctions and Nanostructures”.

Dec 2014-Sep 2017: Project Assistance in project of Department of Science and Technology (DST), govt. of India.

Project Title:

“Design and development of crystal growth system for preparation of high pure GaN for light emitting diode (LED) and other related opto- electronic applications.”

Technical Skills:

- III-V semiconductor epitaxial layer and nanostructure growth, using Liquid Phase Epitaxy (LPE), thermal evaporation, RTA annealing.
- Material Characterizations: - Raman Spectroscopy, Low temperature PL (working experience in ultralow vibration cryostate), Current-Voltage, Capacitance-Voltage, HRXRD, XPS.
- Experience in working with low temperature Hall system (2K-300K)
- Beside this experience in working with Ultrafast laser in pump-probe spectroscopy and magneto-optical kerr spectroscopy.
- Time-resolved photoluminescence spectroscopy (TCSPC technique).
- Software language: - Mathematica, c programming, python.

Awards & Grants:

- ❖ Dec 2014- Sept. 2017: Project Assistance in DST project
- ❖ Feb 2020-March 2021: Senior Research Fellow (SRF) in DST PURSE phase-II

List of Publications:

1. "Negative thermal quenching in optically pumped GaAsBi-GaAs heterojunction p-i-n diode" S. J. Sreerag, **Akant Sagar Sharma**, T. B. O Rockett, J. P. R. David, RD Richards, R.N. Kini (Under review)
2. "Temperature-dependent electron Hall mobility in LPE-grown InPBi/InP epilayers", **Akant Sagar Sharma***, N Malathi, Subhasis Das, R.N. Kini. **Journal of Materials Science: Materials in Electronics** volume 34, Article number: 450 (2023).
3. "Control of the composition and the structural properties of GaAsSb layers, grown by liquid phase epitaxy, by Bi addition to the growth melt." **Akant Sagar Sharma**, Subhasis Das, and S. Dhar. **Journal of Crystal Growth** (2020): 125739.
4. "Growth of dilute quaternary alloy InPNBi and its' characterization" S Das, **Akant Sagar Sharma**, S. A. Gazi, & S. Dhar. **Journal of Crystal Growth**, (2020) 535, 125532.
5. "Photoluminescence investigation of the properties of GaAsSb in the dilute Sb regime". S. Das, **Akant Sagar Sharma**, S. Bakshi, & S. Dhar. **Journal of Materials Science: Materials in Electronics** (2020), 1-8.
6. "Influence of Pb vs Ga solvents during liquid phase epitaxy on the optical and electrical properties of GaSbBi layers." **Akant Sagar Sharma**, Subhasis Das, Sanowar Alam Gazi, and S. Dhar. **Journal of Applied Physics** 126, no. 15 (2019): 155702.
7. "Bi-Related below band Gap optical absorption band produced in GaSbBi after rapid thermal anneal at high temperatures." M. K Bhowal,, Subhasis Das, **Akant Sagar Sharma**, and S. Dhar. **Journal of Electronic Materials** 48, no. 8 (2019): 5131-5134.
8. "Anomalous increase of sub-band gap photoluminescence from InPBi layers grown by liquid phase epitaxy" Mithun Kumar Bhowal¹, Subhasis Das², **Akant Sagar Sharma**³, Santosh Chandra Das⁴ and Sunanda Dhar⁵ Accepted Manuscript online 15 April 2019 • © 2019 IOP Publishing Ltd, Materials Research Express.

9. "Hydrostatic Pressure Dependent Optoelectronic Properties of InGaAsN/GaAs Spherical Quantum Dots for Laser Diode Applications" I.Mal, J.Jayarubi, S.Das, **Akant Sagar Sharma**, A.Jhon Peter, D.P.Samajder. **physica status solidi (b) March 2019 180039.**
10. "Influence of Bi on the temperature dependent fundamental band gap parameters of GaSb_{1-x}Bi_x" **Akant Sagar Sharma** and S Dhar **Published 30 January 2019 • © 2019 IOP Publishing Ltd Materials Research Express, Volume 6, Number 4.**
11. "Dependence of Strain Distribution in InGaN/GaN Quantum Wire and Spherical Quantum Dot on the In Content in the Material" **Akant Sagar Sharma**, S.Dhar. **Journal of Electronic Materials, February 2018, Volume 47, Issue 2, pp 1239–1243.**
12. "Influence of Bi and N related impurity states on the band structure and band offset of GaSbBiN alloys" D.P. Samajdar, U.Das, **Akant Sagar Sharma**, S.Das, S.Dhar. **Current Applied Physics 16 (12), 1687-1694, 2016.**
13. "Dependence of heavy hole exciton binding energy and the strain distribution in GaAsBi/GaAs finite spherical quantum dot on Bi content in the material" Subhasis Das, **Akant Sagar Sharma**, T.D.Das, S.Dhar, **Superlattices and Microstructures, 86(2015), 221-227.**

Conference Proceedings:

1. "Calculation of strain distribution in InGaN/GaN quantum dots" **Akant Sagar Sharma**, S. Dhar. Presented at "6th International Conference Computers and Devices for Communication (CODEC-2015)" Institute of Radio Physics and Electronics, University of Calcutta, Kolkata.
2. "Strain in InGaN/GaN Quantum Dot and Nanowires, a theoretical study" **Akant Sagar Sharma**, S.Dhar. Presented at **ICMS (2017)** Organised by Dept. of Physics Tripura university.
3. "Evidence of Bismuth related defect states in InPBi layers, grown by liquid phase epitaxy" M.K.Bhowal, **Akant Sagar Sharma**, S.Das, S. Dhar. **ICMS (2017)** Organised by Dept. of Physics Tripura university.
4. "InPBiN epitaxial layers grown by liquid phase epitaxy" **Akant Sagar Sharma**, Subhasis Das, S.Dhar. **XIX IWPSD 2017.**

Profiles:

- <https://scholar.google.com/citations?user=Y01VfgMAAAAJ&hl=en>
- https://www.researchgate.net/profile/Akant_Sharma
- <https://rajeevkini.iisertvm.ac.in/the-group>

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