

## **CURRICULUM VITAE**



**Dr. Purnima Hazra**

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School of Electronics and  
Communication Engineering,  
Shri Mata Vaishno Devi University,  
Katra, Jammu and Kashmir: 182320

### **ACADEMIC QUALIFICATION**

1. Awarded **Ph. D. Degree** in Electronics Engineering from Indian Institute of Technology (Banaras Hindu University), Varanasi, Uttar Pradesh in **2014**.
2. Awarded **M. Tech. Degree** in Electronics and communication Engineering (Microwaves) from The University of Burdwan, West Bengal in **2009**.
3. Achieved **B. Tech. Degree** in Electronics and Telecommunication Engineering from Institute of Electronics and Telecommunication Engineers, New Delhi in **2006**.
4. Passed **12<sup>th</sup>** from West Bengal Council of Higher Secondary Education in **2001**.
5. Passed **10<sup>th</sup>** from West Bengal Board of Secondary Education in **1999**.

### **SCHOLARSHIP/AWARD**

1. Qualified GATE 2007 in Electronics and Communication Engineering and awarded GATE fellowship for pursuing M. Tech.
2. Awarded SRF Fellowship from March, 2011 to June, 2014 for pursuing Ph. D.
3. Awarded by Optical society of India for excellent poster presentation in International Conference on Optics & Optoelectronics, held at IRDE, Dehradun during 5-8 March, 2014.
4. Awarded Teachers Associateship for Research Excellence (TARE) fellowship from DST-SERB in 2019-20.

### **WORK EXPERIENCE**

1. Presently working as an Assistant Professor in **Shri Mata Vaishno Devi University**, Katra, Jammu and Kashmir from January, 2015.
2. Worked as a Visiting faculty in **Motilal Nehru National Institute of Technology**, Allahabad, Uttar Pradesh from August, 2014 to December, 2014.
3. Worked as a Lecturer in **Mallabhum Institute of Technology**, Bishnupur, Bankura, West Bengal from January, 2010 to August, 2010.

### **SUBJECTS OF INTEREST**

- Fundamentals of Electrical Engineering
- Network Theory and Design
- Basic Electronics
- Linear integrated Circuits and Applications
- Optoelectronic Devices
- Digital Electronics
- Electronic & Electrical Measurement and Instrumentation
- Signals and Systems
- Satellite Communication
- Control Systems
- Microprocessor & Interfacing
- Analog Communication Engineering
- Universal Human Values (UHV-II)

### **ACADEMIC RESPONSIBILITIES**

1. Warden of New Quarter Girls hostel for academic session 2015-16.
2. Warden of Shivalik-A Girls Hostel for academic session 2022-25.
3. School NAAC Coordinator for academic session 2023-25.
4. Coordinator of Undergraduate Studies (B. Tech. ECE) for academic session 2018-20.
5. Faculty-in-charge for third year B. Tech. ECE for academic session 2023-25.
6. Coordinator of Postgraduate Studies (M. Tech. ECE) for academic session 2020-22
7. Ph. D. coordinator of SoECE for academic session 2022-23.
8. Member of School Research committee for academic session 2020-23, 24-25.
9. Lab In-charge of PCB fabrication and project lab for academic session 2022-23, 2024-25
10. Lab-in-charge of Analog Electronics Lab for academic session 2023-24.

### **SPONSORED PROJECT**

**Title of the Project:** Tailoring of Thermoelectric Properties of PbS Quantum Dot Based Thin Films for High Temperature Applications

**Funding Agency:** DST-SERB

**Sanctioned Amount (Rs.):** 10.6 lakh

**Duration:** Nov, 2018- May, 2022

**Name of Project PI/Co-PI:** PI: Dr. Purnima Hazra,  
Mentor: Prof. B. R. Mehta, Department of Physics, IIT Delhi

### **RESEARCH GUIDANCE**

Name of the student	Thesis Title	M. Tech./ Ph. D.	Year of Award

Yogesh Singh	Fabrication, Characterization and Mathematical Analysis of Lead Sulphide Based Thin Film Devices for Nanoelectronic and Optoelectronic Applications	Ph. D.	2023
Bhoomika Raina	Experimental Study of Some Bio-safe Semiconductor Nanomaterial Based Thin Film for Bio-Optoelectronics Application	M. Tech.	2023
Saba Mohi ud Din	Simulation and Analysis of Compound Semiconductor based solar cells	M. Tech.	2022
Aamir Suhail Taray	Design and Implementation of Reversible Code Converters and Universal Reversible Logic Gate using QCA Technology	M. Tech.	2021
Mir Yavar Hayat	Modelling and Analysis of Photovoltaic Thermoelectric Generator Systems	M. Tech.	2019
Gagandeep Singh	Parametric Analysis of Nanoscale SOI MOSFET Device Structures using SILVACO TCAD	M. Tech.	2017

## **RESEARCH PUBLICATIONS**

### **International Journal Paper (Scopus/SCI)**

1. Aamir Suhail Taray, Satyendra Kumar Singh, Yogesh Singh, Farah Naaz, Purnima Hazra, “Design and power optimization of a QCA-based universal reversible logic gate architecture using cell interaction approach”, *Microelectronics Reliability*, Vol. 159, pp. 115446, 2024.
2. Sahil Singh Guleria, Ritak Choudhary, Rajwardhan Singh, **Purnima Hazra**, “Design and Fabrication of PCB-Based Proximity Sensors for Application in Automatic Railway Crossing System”, *Proceedings of Fifth International Conference on Computing, Communications, and Cyber-Security Lecture Notes in Networks and Systems*, Springer Nature, pp. 65-71, 2024.
3. Bhoomika Raina, **Purnima Hazra**, “ZnO/Cellulose nanocomposite: Recent Developments and Future Prospects”, *IOP conference series: Journal of Physics*, Vol. 2603, pp. 012052, 2023 (SCOPUS)
4. Yogesh Singh, Satyendra Kumar Singh, **Purnima Hazra**, “Effect of synthesis routes for preparation of lead sulphide quantum dots based thin films by spin coating technique”, *Optical and Quantum Electronics*, Vol. 54, pp. 862, 2022. (SCI IF: 2.794)
5. Yogesh Singh, Sunny Kumar Sharma, **Purnima Hazra**, Mathematical analysis of One-Dimensional Lead Sulphide Crystal Structure using Molecular Graph Theory”, *Molecular Physics*, Vol. 120, pp. e2086933, 2022 (SCI IF: 1.937, Citation-1)
6. Yogesh Singh, Satyendra Kumar Singh, **Purnima Hazra**, “Future Prospect of Rare Earth Element Free Materials for Thermoelectric Generators” *ECS Transaction*, Vol. 107, pp. 453, 2022 (SCOPUS)
7. Yogesh Singh, **Purnima Hazra**, Satyendra Kumar Singh, “The Quest for High-Efficiency Thermoelectric Generators for Extracting Electricity from Waste Heat”, *JOM: The Journal of The Minerals, Metals & Materials Society*, Vol. 73, pp. 4070-4084, 2021 (SCI IF: 2.6, Citation-4)
8. Yogesh, **Purnima Hazra**, V. K. Sharma, “Sub Threshold Conduction and the Possible

Approach Towards Low Power Design using Bootstrapping Technique: A Prototype Design”, *IEEE conference proceedings*, 2020 12th International Conference on Computational Intelligence and Communication Networks (CICN), 25-26 September, 2020 (SCOPUS).

9. Satyendra Kumar Singh, **Purnima Hazra**, “Analysis of Current Transport mechanisms in Sol-gel Grown Si/ZnO Heterojunction Diodes in High Temperature Environment”, *Superlattices and Microstructures*, Vol. 128, pp. 48-55, 2019 (SCI IF: 3.22, Citation-13)
10. Satyendra Kumar Singh, **Purnima Hazra**, “Performance Analysis of Undoped and Mg-doped ZnO/p-Si Heterojunction Diodes Grown by Sol-gel Technique”, *Journal of Materials Science: Materials in Electronics*, Vol. 29, pp. 5213-5223, 2018 (SCI IF: 2.77, Citation-13)
11. Satyendra Kumar Singh, **Purnima Hazra**, “Investigations on Structural and Electrical parameters of p-Si/ Mg x Zn 1-x O Thin Film Heterojunction Diodes Grown by RF Magnetron Sputtering Technique”, *AIP Conference Proceedings*, Vol. 1953, pp. 100024, 2018 (SCOPUS, Citation-1)
12. Mamta Sharma, **Purnima Hazra**, Satyendra Kumar Singh, “Study of Thickness and Uniformity of Oxide Passivation with DI-O<sub>3</sub> on Silicon Substrate for Electronic and Photonic Application”, *AIP Conference Proceedings*, Vol. 1953, pp. 100047, 2018 (SCOPUS)
13. Satyendra Kumar Singh, **Purnima Hazra**, “Performance of RF Sputtered p-Si/n-ZnO Nanoparticle Thin Film Heterojunction Diodes in High Temperature Environment,” *Applied Surface Science*, Vol. 400, pp. 206-211, 2017. (SCI IF-7.15, Citation-14)
14. Satyendra Kumar Singh, **Purnima Hazra**, Shweta Tripathi and P. Chakrabarti, “Performance analysis of RF-sputtered ZnO/Si heterojunction UV photodetectors with high photo-responsivity”, *Superlattices and Microstructures*, Vol. 91, pp. 62-69, 2016. (SCI IF-3.22, Citation-82)
15. Satyendra Kumar Singh, **Purnima Hazra**, Shweta Tripathi and P.Chakrabarti, "Optical characterization of Mg-doped ZnO thin films deposited by RF magnetron sputtering technique”, *AIP Conference Proceedings*, Vol. 1728, pp. 020168, 2016 (SCOPUS, Citation-9)
16. Satyendra Kumar Singh, **Purnima Hazra**, Shweta Tripathi and P.Chakrabarti, "Fabrication and experimental characterization of a sol-gel derived nanostructured n-ZnO/p-Si heterojunction diode”, *Journal of Materials Science: Materials in Electronics*, Vol. 26, pp. 7829-7836, 2015 (SCI IF- 2.77, Citation-16)
17. **Purnima Hazra**, P. Chakrabarti and S. Jit, “Fabrication and Characterization of p-type Silicon Nanowire (SiNW)/n-type ZnO Based Core-Shell Heterostructures for Optoelectronic Applications”, *IOP Conference Series: Materials Science and Engineering*, Vol. 73, pp. 012092, 2015. (SCOPUS, Citation-1)
18. **Purnima Hazra**, Satyendra Kumar Singh and S. Jit, “Impact of surface morphology of Si substrate on performance of Si/ZnO heterojunction devices grown by ALD technique”, *Journal of Vacuum Science and Technology A*, Vol. 33, pp. 01A114, 2015. (SCI IF- 2.9, Citation-15)
19. **Purnima Hazra**, S. K. Singh and S. Jit “Ultraviolet photodetection properties of ZnO/Si heterojunction diode fabricated by ALD technique without using a buffer layer”, *Journal of Semiconductor Technology and Science*, Vol. 14, no. 1, pp. 117-123, 2014. (SCI IF- 0.166, Citation-63)
20. **Purnima Hazra** and S. Jit, “p-Si Nanowires/n-ZnO Thin Film Based Core-Shell Heterojunction Diodes with Improved Effective Richardson Constant”, *Journal of*

*Nanoscience and Nanotechnology*, Vol. 14, no. 7, pp. 5380-5385, 2014. (SCI IF -1.134, Citation-4)

21. **Purnima Hazra** and S. Jit, "A *p*-Silicon Nanowire/*n*-ZnO Thin Film Heterojunction Diode Prepared by Thermal Evaporation Technique", *Journal of Semiconductors*, Vol. 35, no. 1, 014001 (5 pages), 2014. (SCI IF-0.538, Citation-17)
22. **Purnima Hazra**, S. K. Singh and S. Jit, "Studies on ZnO/Si heterojunction diode grown by ALD technique", *Journal of Nanoelectronics and Optoelectronics*, Vol. 8, no. 4, pp. 378-382, 2013. (SCI IF- 0.697, Citation-3)
23. **Purnima Hazra** and S. Jit, "An In-house Approach for Fabrication of Silicon Nanowire Arrays using Electroless Metal Deposition and Etching Method", *International Journal of Surface Science and Engineering*, Vol. 7, no. 3, pp. 285-294, 2013. (SCI IF- 0.8, Citation-6)
24. **Purnima Hazra** and S. Jit, "Study of *n*-ZnO/ *p*-SiNW Heterostructures Grown by Thermal Evaporation Method", *AIP Conference Proceeding*, Vol. 1536, pp. 529-530, 2013 (SCOPUS)

#### **Papers in Peer reviewed journals**

25. Yogesh Singh, Sunny Kumar Sharma, Jhulan Kumar, **Purnima Hazra**, Parvinder Singh, Rekha Goyat "Nanometrology: A Subfield of Nanoscience" Intelligent Circuits and Systems for SDG 3–Good Health and well-being, CRC Press, pp. 218-229, 2024, eBook ISBN: 9781003521716.
26. Saba Mohi U Din, **Purnima Hazra**, "Effect Of TiO<sub>2</sub> As An Anti-Reflection Coating On SiC Based Photovoltaic Cell: A Simulation Study", *International Journal of Electrical, Electronics and Data Communication*, Vol. 10, pp. 31-34, 2022.
27. Aamir Suhail Taray, **Purnima Hazra**, Satyendra Kumar Singh, "Design and Optimization of Reversible Binary to Gray and Gray to Binary Code Converter with Power Dissipation Analysis using QCA", *International Journal of Engineering Research in Computer Science and Engineering*, Vol. 8, No. 6, pp. 6-15, 2021.
28. Yogesh, **Purnima Hazra**, V. K. Sharma, "Sub Threshold Conduction and the Possible Approach Towards Low Power Design using Bootstrapping Technique: A Prototype Design", *IEEE conference proceedings*, 2020 12th International Conference on Computational Intelligence and Communication Networks (CICN), 25-26 September, 2020.
29. **Purnima Hazra** and S. Jit, "Electrical Characteristics of Si/ZnO Core-Shell Nanowire Heterojunction Diode", *Physics of Semiconductor Devices*, ed. by V.K. Jain and A. Verma, *Springer*, pp. 673-675, 2014. (Citation-1)

#### **Papers Presented in Workshop/Conference**

1. Bhoomika Raina, Satyendra Kumar Singh, **Purnima Hazra**, Synthesis of ZnO and CuO Nanoparticles using Thermal Decomposition in Air Environment for Low Cost Bioelectronics Applications", International Conference on Molecular Materials and Functions, 9-11 December, 2024, IIT Madras.
2. Sahil Singh Guleria, Ritak Choudhary, Rajwardhan Singh, **Purnima Hazra**, "Design and Fabrication of PCB-Based Proximity Sensors for Application in Automatic Railway Crossing System", Fifth International Conference on Computing, Communications, and Cyber-Security, 29February-1 March, 2024, SMVDU, Katra.
3. Satyendra Kumar Singh, **Purnima Hazra**, "Comparative Study of ZnO Thin Films synthesized by sol–gel spin coating, RF Magnetron Sputtering and Thermal Evaporation

techniques for Electronic and Optoelectronic Applications”, **International Conference on Recent Advances on Interdisciplinary Sciences**, 11-12 January, 2019, Jammu University, J&K.

4. Satyendra Kumar Singh, **Purnima Hazra**, “Investigations on Structural and Electrical parameters of p-Si/  $\text{Mg}_x\text{Zn}_{1-x}\text{O}$  Thin Film Heterojunction Diodes Grown by RF Magnetron Sputtering Technique”, **2<sup>nd</sup> International Conference on Condensed Matter and Applied Physics (ICC-2017)**, 24-25 Nov. 2017, Govt. Engineering College, Bikaner, Rajasthan.
5. Satyendra Kumar Singh, **Purnima Hazra**, and P. Chakrabarti, “Fabrication and Characterization of p-Si/ $\text{Mg}_x\text{Zn}_{1-x}\text{O}$  Thin Film Heterojunction Diodes Grown by RF Magnetron Sputtering Technique”, **3<sup>rd</sup> International Conference on Nanoscience and Nanotechnology (ICNSNT-2016)**, 15-16 December 2016, Colombo, Sri Lanka.
6. Satyendra Kumar Singh, **Purnima Hazra**, Shweta Tripathi and P. Chakrabarti, “Optical Characterization of Mg-doped ZnO Thin Films Deposited by RF Magnetron Sputtering Technique”, **International Conference on Condensed Matter and Applied Physics (ICC-2015)**, 29-31, October, 2015, Govt. Engineering College, Bikaner, Rajasthan.
7. **Satyendra Kumar Singh**, Purnima Hazra, Shweta Tripathi and P. Chakrabarti, “Fabrication and Characterization of Mg Doped ZnO Nanostructure Thin Films by RF Magnetron Sputtering Technique”, **2<sup>nd</sup> International Conference on Emerging Technologies: Micro to Nano (ETMN-2015)**, 24-25 October, 2015, Manipal University, Jaipur, Rajasthan.
8. Satyendra Kumar Singh, **Purnima Hazra**, Shweta Tripathi and P. Chakrabarti, “Performance analysis of RF sputtered ZnO /Si heterojunction UV photodiode” **International conference on Current Development in Atomic, Molecular, Optical & Nano Physics with Application (CDAMOP-2015)**, 11-14 March, 2015, Dept. of Physics and Astrophysics, University of Delhi.
9. **Purnima Hazra** and S. Jit, “Ultraviolet Photodetection Properties of p-Si/n-ZnO Nanostructured Heterojunction Diodes”, **International Conference on Optics & Optoelectronics (ICOL-2014)**, 5-8 March, 2014, Instruments Research and Development Establishment, Dehradun, Uttarakhand.
10. **Purnima Hazra** and S. Jit, “Electrical Characteristics of Si/ZnO Core-Shell Nanowire Heterojunction Diode”, **17<sup>th</sup> International Workshop on the Physics of Semiconductor Devices (IWPSD-2013)**, 10-13 December, 2013, Amity University, Noida, Uttar Pradesh.
11. **Purnima Hazra** and S. Jit, “Comparative Study of Different Techniques for Synthesis of Zinc Oxide Nanostructures on Silicon Nanowire Substrate”, **International Conference on Nanoscience and Nanotechnology (ICNN-2013)**, 18-20 November, 2013, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh.
12. **Purnima Hazra** and S. Jit, “Study of n-ZnO/ p-SiNW Heterostructures Grown by Thermal Evaporation Method”, **Recent Trends in Applied Physics and Material Science (RAM-2013)**, 01-02 February, 2013, Govt. College of Engineering and Technology, Bikaner, Rajasthan.
13. **Purnima Hazra**, P. Chakrabarti and S. Jit, “Fabrication and Characterization of p-Type Silicon Nanowire (SiNW)/n-Type ZnO Based Core-Shell Heterostructures for Optoelectronic Applications”, **International Conference on Materials Science and Technology (ICMST 2012)**, 09-13 June, 2012, St. Thomas College, Kottayam, Kerala.
14. **Purnima Hazra** and P. Chakrabarti, “Growth and Characterization of Si Nanowires for Optoelectronic Applications”, **India-Australia International Workshop on Nanotechnology In Materials and Energy Applications (IAWNT 2011)**, 29-31

December, 2011, Jadavpur University, Kolkata, West Bengal.

**Short Term Courses Attended**

1. **4 Week course on C Programming and Assembly Language**, NPTEL, Dec, 2024.
2. **Two Week Refresher Course in Physics & Electronics**, UGC-MMTTC, Jammu University, 7-19 October, 2024.
3. **8-Days Online Training Program on NEP Orientation & Sensitization**, UGC-MMTTC, Shri Mata Vaishno Devi University 03-12 June, 2024.
4. **Two Week Industrial Training** in Lupin Limited, Jammu, 1-14 August, 2023.
5. **AICTE 8 Modules Training Course for Technical Teachers**, NITTT Chennai, 2022-23.
6. **FDP on Universal Human Values (UHV-I)**, AICTE, 21-25 June, 2021.
7. **Refresher Course on Universal Human Values (UHV-II)**, AICTE, 23-27 August, 2021.
8. **ATAL Academy Online FDP on Sensors Technology**, Shri Vithal Education and Research institute College of Engineering, Pandharpur, 7-11 September, 2020.
9. **TEQIP-3 sponsored one week FDP on Advanced Techniques for Next Generation Networks with focused on 5G, IoT and Aerially Controlled HETNETs**, School of Electronics and Communication Engineering, Shri Mata Vaishno Devi University, 16-20 December, 2018.
10. **One Week FDP on Emerging Issues in VLSI Design**, School of Electronics and Communication Engineering, Shri Mata Vaishno Devi University 07-11 May, 2018.
11. **TEQIP-III sponsored Workshop on NBA Accreditation**, The Institute of Engineers, Jammu centre, 08-10 December, 2017.
12. **Two-week ISTE STTP on CMOS, Mixed Signal and Radio Frequency VLSI Design**, IIT Kharagpur, 30 January-4 February, 2017.
13. **UGC sponsored 100<sup>th</sup> Orientation Program**, Academic Staff College, Burdwan University, 03-30 July, 2015.
14. **Workshop on Advanced Functional Materials**, Department of Physics, Banaras Hindu University, 19-24 March, 2012.
15. **8<sup>th</sup> INUP Hands-on Training**, IIT-Mumbai, 9-13 April, 2012.
16. **6<sup>th</sup> INUP Familiarization Workshop**, IIT Mumbai, 30 November-4 December, 2011.

**Declaration:** I hereby declared that the above mentioned information is true to the best of my knowledge and belief.

**(Purnima Hazra)**