

DR. VEDATRAYEE CHAKRABORTY



Dr. Vedatrayee Chakaraborty Institution Address: Department of Electronics and Communication B. P. Poddar Institute of Management and Technology 137,V.I.P. Road, Poddar Vihar, Kolkata-700052 Contacts: 91-033-40619174/75/76	Corresponding address: 22, M.M Dutta Road R.C Apartment (3 rd Floor) New Barrackpore Kolkata-700131 Contact: 9477085998 E-mail ID: vedatrayee_chakraborty@yahoo.co.in
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Academic Qualification:

Examination passed	Board/University	Year of passing	Marks obtained	% of Marks
Secondary	W.B.B.S.E	2000	711	88.87%
Higher Secondary	W.B.C.H.S.E	2002.	829	82.9%
B.Sc(Physics)	University of Calcutta	2005	454	56.75%
M.Sc (Electronic Science)	University of Calcutta	2007	923	76.92%
M.Tech (Radiophysics & Electronics)	University of Calcutta	2009	9.03	9.03(CGPA)
Ph. D. (Radio Physics and Electronics)	University of Calcutta	2016		

Present Status :

Assistant Professor , Dept of ECE , BPPIMT, Kolkata.

Research area :Group IV Photonic Devices.

Ph. D. topic : Investigation on some Photonic Devices based on group IV Semiconductors

Job experience:

1. Assistant Professor in ECE Dept., B.P.Poddar Institute of Management and Technology (16/06/17- till date)
2. Part time lecturer in ECE Dept. at Techno India (18.08.2014 to December, 2015)
3. Worked as a Assistant Professor in ECE dept. at Dream Institute of Technology in Electronics and Communication Dept (for three years)
4. Worked as guest lecturer at Lady Brabourne College in Physics Dept.

Publications :

Journals:

Year 2013

1.Vedatrayee Chakraborty, B.Mukhopadhyay and P.K.Basu,” Performance Prediction of an Electroabsorption Modulator at 1550 nm Using GeSn/SiGeSn Quantum Well Structure,” Physica E@ Elsevier, vol.50,pp.67-72,2013. Impact factor: 2.39

Year 2014

2.Rikmantra Basu, Vedatrayee Chakraborty, B.Mukhopadhyay and P.K.Basu , “Predicted Performance of Ge/GeSn Hetero- Phototransistors on Si Substrate at 1.55 μm ” , Opt Quant Electron@Springer, DOI 10.1007/s11082-014-9921, 2nd April,2014. Impact factor: 1.168

3.Vedatrayee Chakraborty, B.Mukhopadhyay and P.K.Basu, “Study of GeSn/SiGeSn RCE Photodetectors based on Franz-Keldysh Effect and Quantum Confined Stark Effect” Opt Quant Electron@springer, DOI 10.1007/s11082-014-9998-8, 30 July 2014. Impact factor: 1.168

Year 2015

4.Vedatrayee Chakraborty, B.Mukhopadhyay and P.K.Basu, “Effect of Different Loss Mechanisms in SiGeSn Based Mid-infrared Laser” ISSN 1063 7826, Semiconductors, 2015, Vol. 49, No. 6, pp. 836–842. Impact factor:0.672

Year 2017

5.Vedatrayee Chakraborty, Swagata Dey, Rikmantra Basu, Bratati Mukhopadhyay, P.K.Basu, “Current Gain and External Quantum Efficiency Modeling of GeSn based Direct Bandgap Multiple Quantum Well Heterojunction Phototransistor" Opt Quant Electron (2017) 49:125 DOI 10.1007/s11082-017-0947-1, 13th Feb, 2017. Impact factor: 1.168

Year 2018

6. Swagata Dey , Vedatrayee Chakraborty, Bratati Mukhopadhyay, Gopa Sen “ Modeling of tunneling current density of GeC based double barrier multiple quantum well resonant tunneling diode”, Journal of Semiconductor, Vol. 39, No. 8, DOI: 10.1088/1674-4926/39/8/000000, August 2018. Journal of Semiconductor:2.28
7. Bratati Mukhopadhyay,* Gopa Sen, Souradeep De, Rikmantra Basu, Vedatrayee Chakraborty, and Prasanta K. Basu “Calculated Characteristics of a Transistor Laser Using Alloys of Gr-IV Elements” Transistor Lasers, Phys. Status Solidi B, 1800117, DOI: 10.1002/pssb.201800117,page no. 1-6, July, 2018. Impact factor: 1.674

Year 2019

8. S. Dey, G. Sen, V. Chakraborty, and B. Mukhopadhyay “Performance Prediction of a Quantum Well Infrared Photodetector Using GeSn/SiGeSn Structure” ISSN 1064-2269, Journal of Communications Technology and Electronics, 2019, Vol. 64, No. 11, pp. 1298–1306. © Pleiades Publishing, Inc., November, 2019.impact factor:0.67

Year 2021

9. Abhishek Saha, Vedatrayee Chakraborty, “Simple Gain Model of Group III-V Semiconductor-based Laser Diode” Recent Trends in Electronics & Communication Systems, ISSN: 2393-8757 Volume 7, Issue 3,pp 9-27. March 2021
10. Abhishek Saha, Vedatrayee Chakraborty, “Comparative study of Drain Current of Symmetric and Asymmetric DGMOSFET with Simulation in Silvaco_TCAD Software” ISSN: 2455-3379, Volume 8, Issue 1, pp 1-14, June, 2021

Year 2022

11. Priyanka Mehta¹, Niprojit Ghosh², Deepjyoti Chakraborty³, Oindrila Ganguly⁴, Vedatrayee Chakraborty, “Generalized Smart Agriculture System with the Prediction of Crop Yield Per Year” International Journal of Science and Research (IJSR), ISSN: 2319-7064, SJIF (2022): 7.942, Volume 11 Issue 3, March 2022, Paper ID: SR22316105926 ; DOI: 10.21275/SR22316105926

Year 2024

1. Swagata Dey, Sourav Ghosh, Vedatrayee Chakraborty, “ Modelling of a Transistor Laser based on GeSn/SiGeSn quantum Well for High Frequency Communication using SILVACO_TCAD”, INTERDISCIPLINARY INSIGHTS: ADVANCES IN BASIC AND BIO SCIENCES IN DIGITAL & ICT AGE, ISBN 9788197653506, pp. 391, NEW DELHI PUBLISHERS
2. Pia Sarkar, Arijit Saha, Amit Banerjee, Vedatrayee Chakraborty,” Design and analysis of MIMO Antenna Array for TeraHertz Communication”, Journal of Optics, Springer <https://doi.org/10.1007/s12596-024-01739-8>, 4th April 2024
3. Pia Sarkar; Arijit Saha; Amit Banerjee; Vedatrayee Chakraborty, “Satellite and Terrestrial Mobile Integration-Potential and Open Issues for 5G and Terahertz Communication.” Next generation Wireless Communication: Advances in Optical, mm-Wave, and THz Technologies, Springer, pp 377–394 24 July 2024, https://doi.org/10.1007/978-3-031-56144-3_23, Print ISBN978-3-031-56143-6
4. Sarkar P., Saha A., Banerjee A., Chakraborty V., Design and analysis of MIMO antenna array for TeraHertz communication, *Journal of Optics*, pp.1-17 (2024).

<https://doi.org/10.1007/s12596-024-01739-8>

Year 2025

1. Sarkar, P., Saha, A., Banerjee, A. and Chakraborty, V., Novel Method of Capacity Enhancement: Integrating MIMO with beam steering, OFDM and NOMA with different modulation. *Journal of Optics*, pp.1-15 (2025).

<https://doi.org/10.1007/s12596-025-02685-9>.

Conference

Year 2009

1. VedatrayeeC hakraborty, Bratati Mukhopadhyay and P.K.Basu “A Compact Drift-Diffusion Current Model of Strained Si-Si_{1-x}Ge_x MOSFETS”CODEC 2009, ISBN: 978-81-8465-152-2@2009, Hyatt Regency, Kolkata, India

Year 2012

2. Vedatrayee Chakraborty, Bratati Mukhopadhyay and P.K.Basu “GeSn/SiGeSn RCE Photodetectors : A comparative study based on Franz-Keldysh Effect and Quantum Confined Stark Effect” CODEC 2012, ISBN:978-1-4673-2618-6@2012, Hyatt Regency, Kolkata, India

3. Vedatrayee Chakraborty, Bratati Mukhopadhyay and P.K.Basu “Free Carrier Absorption in Sn based Group-IV Alloys,” CODEC 2012, ISBN:978-1-4673-2618-6@2012, Hyatt Regency, Kolkata, India

Year 2013

4. Rikmantra Basu, Vedatrayee Chakraborty, Bratati Mukhopadhyay and P.K.Basu “Predicted Performance of Ge/GeSn Hetero- Phototransistors on Si Substrate at 1.55 μm ” 978-1-4799-2174-4/13/\$31.00 ©2013 IEEE, ICMAP, Dhyandbad, India.

5. Rikmantra Basu, Vedatrayee Chakraborty, B. Mukhopadhyay and P. K. Basu, “Analytical Model for Ge/GeSn Hetero- Phototransistors on Si Substrate at 1.55 μm ” IEEE Photonics Conference 2013 (Formerly IEEE LEOS Annual Meeting), Seattle, Washington, USA, August 8 -12, 2013.(accepted for oral; not presented due to VISA problem)

Year 2014

6. Rikmantra Basu, Vedatrayee Chakraborty, B. Mukhopadhyay and P. K. Basu, “Performance Studies of a Proposed Ge-GeSn-Ge Heterojunction Phototransistor and Comparison with InGaAs-based Phototransistor” UK Semiconductors Conference 2014, University of Sheffield, Sheffield, UK, July 9-10, 2014.

Year 2015

7. Vedatrayee Chakraborty, B.Mukhopadhyay and P.K.Basu, “Group IV Heterojunction Laser Structure Based on Si-Ge-Sn-C around 1550 nm: Determination of Gain Coefficient” 2015 6th International Conference on Computers and Devices for Communication (CODEC) Institute of Radio Physics & Electronics, University of Calcutta, December 16-18, 2015, 978-1-4673-9513-7/15/\$31.00 ©2015 IEEE

8. Rikmantra Basu, Vedatrayee Chakraborty, B. Mukhopadhyay and P. K. Basu, “Signal-to-Noise Ratio for a Ge-GeSn-GeSn Hetero Phototransistors at 1.55 μm ” 2015 6th International Conference on Computers and Devices for Communication (CODEC) Institute of Radio Physics & Electronics, University of Calcutta, December 16-18, 2015, 978-1-4673-9513-7/15/\$31.00 ©2015 IEEE

Year 2017

9. Vedatrayee Chakraborty, S. Dey, B.Mukhopadhyay, “A Comparative Study on Front Illuminated Ge-GeSn-GeSn Hetero Phototransistors on Si Substrate at 1.55 μm by Silvaco TCAD Simulator” Information, Photonics, & Communication (IPC’ 17), BPPIMT, Kolkata, May 15-17, 2017, ISBN 978-81-922797-9-4

Year 2023

1. Swagata Dey ; Vedatrayee Chakraborty, “Predictable Optical Performance of GeSn based p-i-n DBH cavity resonator”, 2023 8th International Conference on Computers and Devices for Communication (CODEC), 14-16 Dec. 2023
2. Pia Sarkar; Arijit Saha; Amit Banerjee; Vedatrayee Chakraborty, “Modelling of TeraHertz Dipole Antenna using Different Materials”, 2023 International Conference on Sustainable Communication Networks and Application (ICSCNA), 15-17 November 2023, DOI: 10.1109/ICSCNA58489.2023.10370301, Theni, India

Year 2025

1. Sarkar P., Saha A., Banerjee A., Chakraborty V., Capacity Enhancement for 6G communication with Densification of Terrestrial Network and Integration with Non-Terrestrial Network, *6G Communications Networking and Signal Processing, Proceedings of the International Conference*, SGCNSP, pp. 345-354. Singapore: Springer Nature Singapore, (2025).

https://doi.org/10.1007/978-981-97-7876-8_31

List of Publications

B. Book chapter

1. P. Sarkar, A. Saha, A. Banerjee, V. Chakraborty, "Satellite and Terrestrial Mobile Integration-Potential and Open Issues for 5G and Terahertz Communication", Next Generation Wireless Communication, pp. 377-394. Singapore: Springer Nature Singapore, (2024). https://doi.org/10.1007/978-3-031-56144-3_23.
2. Pia Sarkar, Arijit Saha, Amit Banerjee, "Prediction Model for Signal Attenuation in 5G and Beyond Communication," in Trends in Sustainable Design, Technology and Innovation, Goutam Mukherjee et al. (Eds.), Red'shine Publications Pvt. Ltd., 2023, pp. 189-199, ISBN: 978-93-5879-479-3, <https://doi.org/10.25215/9358794798>.
3. Pia Sarkar, Arijit Saha, Amit Banerjee, "A comparative analysis of propagation models suitable for non-line-of-sight 5G communication at 26 GHz," in Data Science and Network Engineering. ICDSNE 2023. Lecture Notes in Networks and Systems, Vol. 791., Suyel Namasudra et al. (Eds.), Singapore: Springer, 2024, pp. 347-356, ISBN: 978-981-99-6754-4, <https://doi.org/10.1007/978-981-99-6755-1>.

C. Conference:

Pia Sarkar, Arijit Saha, Amit Banerjee, Vedatrayee Chakraborty, "Modelling of TeraHertz dipole antenna using different materials." in 2023. International Conference on Sustainable Communication Networks and Application (ICSCNA), pp. 648-652. IEEE, (2023). DOI: 10.1109/ICSCNA58489.2023.10370301.

Invited Lecture: Invited lecture in "Young Professional" organized by the Department of Radio Physics and Electronics on 6/12/2019

Invite talk: Invited lecture in one week FDP "Recent Trends in Communication Systems & Devices" organized by the Department of Electronics and Communication Engineering of B. P. Poddar Institute of Management & Technology on 22.07.2020

Invited Lecture: - Invite lecture in Dream Popular Lecture series organized by the IQSE cell, Dream Institute of Technology on 8th July, 2021.

Reviewer: reviewed manuscript AJSE-D-21-04283 for Arabian Journal for Science and Engineering.

Subjects of interest: Semiconductor Device, Communication, Microwave Devices

Software proficiency: VHDL, MATLAB, PSPICE, Atlas of Silvaco

Project Work:

- Project Work for M.Sc:-‘Simulation of Metal Oxide Semiconductor Device using Silvaco’ under Dr.Supratic Chakraborty of Microelectronic Division, Saha Institute of Nuclear Physics.
- Project Work for M.Tech:- ‘Si/SiGe heterostructure MOSFET’ Under Dr.Bratati Mukhopadhyay, Dept. of Radio Physics & Electronics (Calcutta University)

Supervised Final year Projects entitled as:

- i) FM transmitter using Local frequenc
- ii) Auto balancing Digital Photo frame
- iii) Simple gain model of group III-V based Laser: Analytical Modeling by Device Simulator SILVACO
- iv) Light Intensity Control with app
- v) Wireless electronic notice board using GSM.
- vi) Advanced footstep power generation & storage system.
- vii) Biometric attendance monitoring system with SMS alert
- viii) Smart agricultural system
- ix) Modelling of the Women's Safety Device with GPS Tracking & Alerts Using Arduino

Special achievement:

- Achieved First place in M.Sc .
- Achieved Fifth Place in M.Tech
- Participated in an international conference, 'CODEC'09, & awarded first for the paper presentation.
- Participated in an international conference, 'CODEC'12, & awarded first for the paper presentation.
- RFSMS (Research Fellowship in Science for Meritorious Student) Research Fellow (1.07.1013-23.12.15)
- Project Fellow Under Centre for Advanced Studies (CAS) program (1.2.2012-27.06.13)

Attended/Participated in Seminars/Conferences/Work Shops/Summer Schools/FDP

AY 2009-10

- International Conference CODEC'09, December 14-16, 2009, Hyatt regency, Kolkata

AY 2010-11

- Summer School (Photo SMART), June 1-18, 2010, INRAPHEL, University of Calcutta.

AY 2012-13

- International Conference CODEC'12, December 17-19, 2012, Hyatt regency, Kolkata

AY 2013-14

- International Conference on Microwave and Photonics (ICMAP 2013), December 13-15, 2013, ISM, Dhanbad

AY 2014-15

- Workshop UKIERI 15, March 27, CRNN, University of Calcutta.

AY 2016-17

- Participated a three-day Faculty Development Program on “Use of ICT in Education for Online and Blended Learning, July 7-9, 2016, BPPIMT. Kolkata
- Attended One-day seminar on “Algorithm and its Application”, 3rd Sept, 2016, BPPIMT. Kolkata
- Attended one-day workshop on 13th September, 2016, Dept of EE, BPPIMT, Kolkata
- Attended and Presented a paper titled “A comparative Study on the Front-illuminated Ge-GeSn-GeSn Hetero Photo transistor on Si Substrate at 1.55 μ m by Silvaco TCAD simulator” at a national conference IPC'17 on 15th – 17th May, 2017, BPPIMT. Kolkata

AY: 17-18

- Attended One-day seminar on Big-Data Analytics: Research Scopes, Issues & Challenges” on 9th August, 2017, BPPIMT, Kolkata
- Attended Conference “ALAP'18 On 10-12th Dec, 2018, BPPIMT. Kolkata
- Attended a one-day workshop on Implementation of MOOCS in university Curriculum and Credit Transfer on 9/01/18.
- Attended and organized a three days' workshop on “Data science and Computational intelligence” on 6th-8th April, 2018 at BPPIMT, Kolkata
- Attended at a short time training program on ‘Microprocessor and Embedded system’ at the duration of 04/06/18-08/06/18.

AY: 18-19

- Organized a Seminar on “VLSI and Microelectronics Design”. [Publication part] on 8th Sept, 2018
- Attended Conference “CSPEs'18 On 16-18th NOV, 2018, BPPIMT. Kolkata
- Attended a two-days workshop on IOT on 21-22/12/18
- Organized Conference “IPC'19’ on 1-3/01/19, BPPIMT. Kolkata
- FDP
- FDP

AY: 19-20

1. Organised a work shop on “Advanced optical communication” on 6th September, 2019

2. Organised Industry visit to CGCRI on 9th September, 2020
3. Organised Industry visit to hotel west in collaborated with Bhaskar Solar on 20th February, 2020
4. Organized ” Abhigyan 2020” on 10th May, 2020.
5. Organised a Webiner on “Data Science with Python” on 7 and 8th May, 2020. With Webel and SPIE student Chapter, bppimt
6. Organised a seminar on” Data Science with Python” on 29th February, 2020 with Ardent Pvt. Ltd. In association of SPIE student Chapter, bppimt
7. Workshop on “Becoming a Certified virtual class room teacher” on 16th and 18th June, 2020 organised by Bethune College and Classle Skillnet
8. Attended a webinar “ Adventure of Physics” on 20th June, organized by District Science Centre-Gilberg(Govt. of India) in association with STAC-IIT Mandi and Society of AERO.
9. Attended a webinar “Intelligence of IOT” on 27th June, 2020 organised by the Dept of Computer Science and Engineering, B.P.Podder institute of Management and Technology.
10. Attended one day seminar on “Recent trends on Antenna Design using CAD tools” organized by Institute of Engineers, Coiambatore local centre on 12th June, 2020
11. Attended one day webinar on “Machine Learning and its application” organized by the Dept of Computer Application, B.P.Podder institute of Management and Technology.
12. Attended an invited talk on “Current trends in millimeter wave applications and challenges in system development “, 13th June, 2020
13. Attended webinar on Advances in Electronics and Technology Research, on 19/06/2020 organized by Burdwan Raj College.
14. Attended 5 day workshop “RTIC 2020” from 23th June to 27th June, 2020, Organized by Dept of Information Technology, B.P.Podder institute of Management and Technology.

FDP :

Attended One week Faculty Development Program on Image Authentication, WSN & IoT from 22.06.2020 to 26.06.2020 organized by Department of Computer Science & Engineering, JIS College of Engineering, West Bengal in Association with Computer Society of India, Kolkata Chapter . I

2020-2021

1. Organized a 3-day workshop “**Embedded System Design & IoT (Phase-II)**” from 18th to 20th September, 2020 with Edgate technology in association of SPIE student Chapter, BPPIMT
2. FDP Sustainable energy, 17-19 June, 2021
3. Abhigyan 2021, 21.06.2021
4. Workshop, Decoding Python, in association of SPIE student Chapter, BPPIMT, 26-29 June, 2021

2021-2022

FDP :

participated & completed successfully AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "ASTRONOMY, ASTROPHYSICS AND RELATED CHALLENGES" from 04/01/2022 to 08/01/2022 at B.P.Poddar Institute of Management and Technology.

FDP :

Successfully Organized AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "ASTRONOMY, ASTROPHYSICS AND RELATED CHALLENGES" from 04/01/2022 to 08/01/2022 at B.P.Poddar Institute of Management and Technology.

Contribution to Corporate life and management of the department and Institution through participation in academic and administrative committees and responsibilities:

AY 2016-17

1. Worked as a member of Manual committee.
2. Worked as a member of technical committee of IPC'17

AY 2017-18

1. Worked as a member of Manual committee.
2. Worked as Co-Editor of Departmental News Letters of Technical write up committee.
3. Attended Pre-counseling on 13/06/17
4. Working as the member of professional Society.
5. Working as the member of Publication committee.

AY 2017-18

1. Worked as a member of manual committee.
2. Worked as the member of professional society
3. Worked as the member of Research, Development, Publication committee
4. Public Relation & Press & media & Publication Committee

AY 2018-19

1. Worked as a member of manual committee.
2. Worked as the member of professional society
3. Worked as the member of Research, Development, Publication committee
4. Public Relation & Press & media & Publication Committee
5. Worked in Technical write up committee

AY 2019-20

1. Working as a Project Lab Coordinator
2. Worked as a member of manual committee.

3. Worked as the member of professional society
4. Worked as the member of Research, Development, Publication committee (Coordinator of “Optoelectronics” research group)
5. Public Relation & Press & media & Publication Committee
6. Worked in Technical write up committee

AY 2020-21

7. Working as a Project Lab Coordinator
8. Worked as a member of manual committee.
9. Worked as the member of professional society
10. Worked as the member of Research, Development, Publication committee (Coordinator of “Optoelectronics” research group)
11. Public Relation & Press & media & Publication Committee
12. Worked in Technical write up committee

AY 2021-22

1. Working as a Project Lab Coordinator
2. Worked as a member of manual committee.
3. Worked as the member of professional society
4. Worked as the member of Research, Development, Publication committee (Coordinator of “Optoelectronics” research group)
5. Public Relation & Press & media & Publication Committee
6. Worked in Technical write up committee

Personal profile

Father’s name : Mr. Alok Chakraborty

Husband’s name : Mr. Abhishek Saha

Contact no. : 9477085998

E-Mail : vedatrayee_chakraborty@yahoo.co.in

Date of Birth : 25th January,1984

Nationality : Indian
