

BIO-DATA



1. Name and Address:

Dr. Narayan Sahoo
Assistant Professor
Department of Electronic Science
Berhampur University,
Bhanja Bihar, Berhampur – 760 007, Odisha

2. Research Area:

- Semiconductor Materials and development of nano-electronic devices
- Electron transport in low dimensional semiconductors and Graphene
- It include exploring and simulating new low dimensional quantum well structures and to analyze the transport and optical properties which will helpful for future nano-electronic devices.

3. Education Qualification:

Examinations	Board / University	Year	Division	% of marks
HSC	BSE, ODISHA	2001	1 ST	75.33%
I. Sc.	CHSE, ODISHA	2003	1 ST	66.66%
B.Sc.(Hons)	UTKAL UNIVERSITY, ODISHA	2006	1 ST	67.00%
M.Sc. (Electronic Sc.)	BERHAMPUR UNIVERSITY, ODISHA	2008	1 ST	79.54%
M. Tech (ECE)	S'O'A' UNIVERSITY, BBSR	2011	1 ST	79.90%
Ph.D.	BERHAMPUR UNIVERSITY, ODISHA	2016		

4. Work Experience:

- Assistant Professor, Department of Electronic Science, Berhampur University, Odisha (21.6.2018 to till date).
- National Post Doctoral Fellow, Dept. of ECE, National Institute of Science and Technology, Odisha (1.8.2016 to 7.6.2018).

- JRF/SRF (INSPIRE Fellow), Dept. of Electronic Science, Berhampur University, Odisha (1.10.2011 to 11.6.2016).
- Lecturer (Diploma), Department of E&TC, C. V. Raman Polytechnic, Bhubaneswar, Odisha (26.7.2008 to 30.9.2011).

5. Dissertation/ Thesis Supervision:

Degree	Name of the student	Title of the Thesis	Year of Completion / Under Progress	Co-supervisor if any
PhD	Ajit Kumar Sahu	Study on transport properties of III-V compound semiconductor based quantum well structures	Under Progress	--
PhD	Ashutosh Patnaik	Model parameter extraction of semiconductor devices using machine learning techniques	Under Progress	--
PhD	Ram Chandra Swain	Some studies on effect of strain on electronic transport properties of low dimensional semiconductor structures	Under Progress	--

6. Research Publications:

International Journals of repute (SCI) : **18**

International Conf. Proceedings (peer reviewed) : **17**

Participation in short term courses / workshops / Conferences : **15**

Presentation in Seminars / Conferences / Workshops : **25**

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Scopus Author ID: 55480004900

Google scholar ID: SickwSsAAAAJ

<https://vidwan.inflibnet.ac.in/profile/115694>

International Journals of repute:

- M. A. Billaha, B. Roy, and **N. Sahoo**, “Effect of external electric field on photo-responsivity of CdS/ZnSe multiple quantum well photodetector”, **Superlattices Microstructures**, Vol. 157, pp. 107003, 4th August, 2021. (**Elsevier Publication**) (IF- 2.658)
- **N. Sahoo**, A. K. Sahu, and S. Palo, “Electron mobility in asymmetric coupled $\text{Al}_x\text{Ga}_{1-x}\text{As}$ parabolic quantum well structure – impact of external electric field”, **Physica B**, Vol. 608, 412798, 1st May, 2021. (**Elsevier Publication**) (IF- 2.436)
- A. K. Panda, S. K. Palo, **N. Sahoo**, and T. Sahu, “Electric field induced non-linear multisubband electron mobility in V-shaped asymmetric double quantum well structure”, **Philosophical Magazine**, Vol. 100, issue 4, pp. 512-527 (2020) (doi: 10.1080/14786435.2019.1695069) (**Taylor and Francis Publication**) (IF- 1.864).
- A. K. Panda, S. Palo, **N. Sahoo**, T. Sahu and T. C. Tripathi, “Effect of external electric field on multisubband electron mobility in n-V-shaped double quantum well HEMT structure”, **Physica Scripta**, Vol. 95, issue 3, pp. 034002 (2020) (online, doi: 10.1088/1402-4896/ab5030) (**IOP Publication**) (IF- 2.487).
- S. K. Palo, **N. Sahoo**, A K Panda and T. Sahu, “Electron transport in $\text{Al}_x\text{Ga}_{1-x}\text{As}$ based double quantum well modulation doped field effect transistor structure: Effect of non-square potential profile”, **J. Micromechanics Microengineering**, Vol. 29, issue 8, pp. 084003 (2019) (**IOP Publication**) (IF- 1.881).
- S. K. Palo, **N. Sahoo**, A K Panda and T. Sahu, “Oscillation of electron mobility in V-shaped double quantum well structure under applied electric field, **Physica Status Solidi b**, vol. 256, issue 5, pp. 1800337 (2019) (**Wiley Publication**) (IF- 1.710).
- **N. Sahoo**, A K Panda and T. Sahu, “Enhancement of electron mobility in GaAs/ $\text{Al}_x\text{Ga}_{1-x}\text{As}$ square - parabolic double quantum well HEMT structure, **Microsystem Technologies**, vol. 25, issue 5, pp. 1901-1907 (2019) (**Springer Publication**) (IF- 1.826).
- **N. Sahoo**, A K Panda and T. Sahu, “Electron mobility in $\text{Al}_x\text{Ga}_{1-x}\text{As}$ based square-parabolic double quantum well HEMT structure – Effect of asymmetric doping profile, **Physica Status Solidi b**, 254, 1700221 (2017) (**Wiley Publication**) (IF- 1.710).
- **N. Sahoo**, A K Panda and T. Sahu, “Enhancement of multisubband electron mobility in

- square-parabolic asymmetric double quantum well structure”, **Superlattices and Microstructures**, **105**, 11-21 (2017) (**Elsevier Publication**) (IF- 2.658).
- **N. Sahoo** and T. Sahu, “Mobility Modulation in Inverted Delta Doped Coupled Double Quantum Well Structure”, **Physica B**, **498**, 49 (2016) (**Elsevier Publication**) (IF- 2.436).
 - T. Sahu and **N. Sahoo**, “Oscillating electron mobility in GaAs/Al_xGa_{1-x}As double quantum well structure under applied electric field.” **Superlattices and Microstructures**, **77**, 162-170 (2015) (**Elsevier Publication**) (IF- 2.658).
 - **N. Sahoo** and T. Sahu, “Electric field induced oscillating electron mobility in asymmetric wide GaAs/Al_xGa_{1-x}As quantum well structure”, **J. Appl. Phys**, **116**, 043703 (2014) (**AIP Publication**) (IF- 2.546).
 - **N. Sahoo** and T. Sahu, “Oscillation of electron mobility in parabolic double quantum well structure due to applied electric field.” **AIP Advances**, **4**, 127106 (2014) (**AIP Publication**) (IF- 1.548).
 - S. Palo, **N. Sahoo** and T.Sahu, “Effect of doping profile on multisubband electron mobility in AlGaAs parabolic quantum well structures”, **Physica-E**, **64**, 33 (2014) (**Elsevier Publication**) (IF- 3.382).
 - T. Sahu, S. Palo, P. K. Nayak, **N. Sahoo**, “Enhancement of low temperature electron mobility due to an electric field in an InGaAs / InAlAs double quantum well structure”, **Semiconductors**, **48**, 1354 (2014) (**Springer Publication**) (IF- 0.674).
 - **N. Sahoo** and T. Sahu, “Multisubband electron mobility in a parabolic quantum well structure under the influence of an external applied electric field”, **Journal of Semiconductors**, **35**, 0120011- 0120016 (2014). (**IOP Publication**).
 - T. Sahu, **N. Sahoo** and A. K. Panda, “Effect of parabolic well potential profile on multisubband electron mobility in a coupled quantum well in presence of an external electric field”, **Superlattices and Microstructures**, **61**, 50-58 (2013). (**Elsevier Publication**) (IF- 2.658).
 - T. Sahu, S. Palo and **N. Sahoo**, “Electric field induced enhancement of multisubband electron mobility in strained GaAs/InGaAs coupled quantum well structures”, **Physica-E**, **46**, 155-159, (2012). (**Elsevier Publication**) (IF – 3.382).

International Conferences Full Paper Published (Scopus Indexed):

- **N. Sahoo**, R. Swain, A K Sahu, and S. Palo, “Multisubband electron mobility in pseudomorphic Al_{0.3}Ga_{0.7}As/In_{0.15}Ga_{0.85}As double quantum well based FET structure”, Proc. of DeVIC-2021 organized by Kalyani University, WB, pp. 99-102, 19 – 20 May 2019. (**IEEE Xplore**)
- M. Mishra, N. R. Das, **N. Sahoo**, and T. Sahu, “Effect of well width and barrier width on I-V characteristics of Armchair graphene Ribbon based resonant tunneling diode structure ”, Proc. of DeVIC-2021 organized by Kalyani University, WB, pp. 75-78, 19 – 20 May 2019. (**IEEE Xplore**)
- S. K. Palo, **N. Sahoo**, A K Panda, T. Sahu, and T. C. Tripathy, “Mobility modulation in V-shaped double quantum well based HEMT structure”, Proc. of DeVIC-2019 organized by Kalyani University, WB, 23 – 24 March 2019. (**IEEE Xplore**).
- S. Palo, **N. Sahoo**, A. K. Panda and T. Sahu, “Mobility oscillation in V-shaped double quantum well field effect transistor structure”, Proceedings of 4th IEEE ICEE, organized by **IISc. Bangalore**, from 16-19 December, 2018 (978-1-5386-9118-2/18/\$31.00 ©2018 IEEE).
- **N. Sahoo**, S. Palo, A. K. Panda and T. Sahu, “Effect of intersubband interaction on non-linear electron mobility in asymmetric AlGaAs parabolic double quantum well structure,” Proc. Of IEEE EDKCON, Organised by IEEE EDS Kolkata Chapter, The Pride Hotel, Kolkata, 24th – 25th November, 2018, pp. 148-151. (**IEEE Xplore**).
- S. Palo, **N. Sahoo**, T. Sahu and A. K. Panda, “Electron transport in Al_xGa_{1-x}As based non-square double quantum well field effect transistor structure,” Proc. Of IEEE EDKCON, Organised by IEEE EDS Kolkata Chapter, The Pride Hotel, Kolkata, 24th – 25th November, 2018, pp. 157-160. (**IEEE Xplore**).
- S. Palo, **N. Sahoo**, A. K. Panda and T. Sahu, “Electric field induced enhancement of multisubband electron mobility in asymmetric V-shaped double quantum well structure”, Proc. of ICRIEECE, organized by KIIT University, Odisha, 27 – 28 July, 2018 (To be Published by **IEEE Xplore**)
- **N. Sahoo**, A K Panda and T. Sahu, “Nonlinear electron transport mobility in GaAs/Al_xGa_{1-x}As square – parabolic double quantum well MODFET structure”, Proc. of 4th International Conferences on Devices, Circuits and Systems (ICDCS) organized by Karunya University, Coimbatore, Tamil Nadu, from 16–17 March 2018, pp-21-24. (**IEEE Xplore**).
- **N. Sahoo**, S. Das, S. Palo, S. R. Panda, A. Sahu, A K Panda and T. Sahu, “Nonlinear electron

transport in asymmetric double quantum well structures”, AIP Conf. Proc. **2005**, 020013 (2018). (**AIP Proceedings**).

- **N. Sahoo**, S. Palo, A K Panda and T. Sahu, “Effect of Parabolic Potential on Improvement of Electron Mobility in Hybrid Double Quantum Well Structure”, AIP Conf. Proc. **2005**, 070003 (2018). (**AIP Proceedings**).
- **N. Sahoo**, A K Panda and T. Sahu, “Enhancement of Electron Transport Mobility in Square – Parabolic Double Quantum Well”, Proc. of DeVIC-2017 organized by Kalyani University, WB, 23 – 24 March 2017. (Published by **IEEE Xplore**).
- **N. Sahoo**, A K Panda and T. Sahu, “Enhancement of Multisubband Electron Mobility in Hybrid Double Quantum Well Structure”, Proc. of ICEE – 2016 organized by IITB, Mumbai, 27 – 30 December 2016. (Published by **IEEE Xplore**).
- **N. Sahoo** and T. Sahu, “Electric Field Induced Multisubband Electron Mobility in Barrier Delta Doped Coupled Quantum Well Structures”, Proceedings of 6th International Conference on Computers and Devices for Communication (CODEC-2015), IRPE, Calcutta University, 16-18 Dec. 2015. (**IEEE Xplore**).
- S. Palo, **N. Sahoo**, T. Sahu and A. K. Panda, “Enhancement of Multisubband Mobility in AlGaAs parabolic quantum wells”, Proceedings of ICAEE-2014, VIT, Vellore, January 9-11, 2014 (**IEEE Xplore**).
- **N. Sahoo**, A. K. Panda and T. Sahu, “Effect of Intersubband interaction on multisubband electron mobility in a parabolic quantum well under applied electric field”, International workshop on physics of semiconductor (IWPSD) Proc, 2013, Amity University, Noida, Dec. 10-13, 2013 (**Springer**).
- T. Sahu, S. Palo and **N. Sahoo**, “Electric Field Induced Enhancement in Multisubband Electron Mobility Strained GaAs/InGaAs Double Quantum Well Structures”, IEEE-ICSE-2012 Proc., Kuala Lumpur, Malaysia, pp - 47-51 (**IEEE Xplore**).
- **N. Sahoo**, G. Padhi, N. Bhoi and P. Rautary; “Automatic Localization of Pupil using Thresholding and Region Based Mask Filter”, Soft Computing Techniques in Vision Sci, **395**, 55 – 62, (2012) (**Springer**).

National Conferences Full Paper Published:

- **N. Sahoo**, S. Palo, T. Sahu and A. K. Panda, “The effect of structure potential on the electronic properties of GaAs/Al_xGa_{1-x}As double quantum well structures”, Proceedings of 4th National Conference on Devices and Circuits, NIST, Odisha, pp. 11-15. Feb. 24, 2018. (ISBN: 978-93-83060-16-0).
- S. Palo, **N. Sahoo**, T. Sahu and A. K. Panda, “Electron transport mobility in Al_xGa_{1-x}As based V-shaped single quantum well structures”, Proceedings of 4th National Conference on Devices and Circuits, NIST, Odisha, pp. 62-65. Feb. 24, 2018. (ISBN: 978-93-83060-16-0).
- **N. Sahoo**, S. Palo and T. Sahu, “Mobility modulation in delta doped double quantum well field effect transistor”, Proceedings of 2nd National Conference on Devices and Circuits, NIST, Odisha, pp. 1-5. Feb. 19, 2016. (ISBN: 978-93-82208-78-5).
- **N. Sahoo** and T. Sahu, “Oscillating electron mobility in an asymmetric wide quantum well in presence of an external electric field”, Proceedings of 1st National Conference on Devices and Circuits, NIST, Odisha, pp. 78-81. Feb. 20-21, 2015. (ISBN: 978-93-82208-75-4).
- S. Palo, T. C. Tripathi and **N. Sahoo**, “Multisubband electron mobility in delta doped parabolic quantum well”, Proceedings of 1st National Conference on Devices and Circuits, NIST, Odisha, pp. 82-86, Feb. 20-21, 2015. (ISBN: 978-93-82208-75-4).
- **N. Sahoo**, N. Bhoi; “Detection of Open and Close State of Eye Using Intensity Variation ” ; Proceedings of National Conference on Recent Trends in Communication Technology-2011; pp. 75-79, Konark Institute of Technology, BBSR, January 22-23, 2011.

7. Research Funded Project: Awaiting for Response from the funding agencies

8. Academic/Administrative responsibilities:

- Assistant superintendent of Rushikulya boys Hostel, BU (From 4.7.2018 to till date).
- Secretary, Alumni Association of Berhampur University.
- Coordinator, Mo College Abhijan Parichalana Sangathan (MCAPS), Berhampur University
- One of the Editor, BhanjaBasi (e-news letter) published by Alumni Association of Berhampur University.

9. Member of Committees :

- Board of residence committee, Berhampur University
- Member for preparation of Annual Quality Assurance Report (AQAR), Berhampur University
- Member, Board of Studies, Dept. of Electronics, Science College, Hinjilicut, nominated by the Vice-Chancellor, BU

10. Awards and Recognition:

- National Post Doctoral Fellow, Selected by SERB, Govt. of India (1.8.2016 to 6.6.2018).
- INSPIRE Fellow (JRF and SRF), Selected by DST, Govt. of India (1.10.2011 to 11.6.2016)
- National Eligibility Test (Lectureship) conducted by UGC (2013).
- Received Gold Medal from Berhampur University for securing 1st class 1st Position in M.Sc. (2008).
- Best Poster Award (Simulation and Modeling) of IUMRS – ICYRAM 2016 organized by Indian Institute of Science, Bangalore from 11.12.2016 to 15.12.2016.
- Best paper presentation award of NCDC – 2016 organized by NIST, Berhampur on 19.2.2016.
- Research Scholar award for “outstanding research publication” (Science Stream) for the year 2014 by Berhampur University on 2.1.2015.
- Post Graduate Merit Scholarship by Govt. of Odisha for pursuing M.Sc. (2006-2008).
- Godavarish Merit Scholarship by Godavarish Mahavidyalaya, Banpur, during B.Sc.

11. Invited Talks/Presentations:

- Delivered a talk as a resource person in the webinar entitled “Use of Technology in Education” organized by R.C.M. Science College, Khallikote, Ganajm on 10.8.2021.
- Delivered lectures (three sessions) as a resource person in the “Short Term Training Programme” sponsored by AICTE, New Delhi on “Recent Trends in Emerging Devices and Nanotechnology” Phase-II held from 15.6.2021 to 20.6.2021 conducted by NIST, Odisha.
- Delivered an invited talk entitled “Quantum Cascade Laser: Principle and Applications”, organized by IEEE Photonic Society, Kolkata Chapter on 16.5.2020.
- Delivered a talk as key note speaker in ICFTEMST-19 organized by GIET University, Gunupur, Odisha on 5th January, 2019.

12. Membership (Professional Organisation):

- IEEE General Member (IEEE EDS Society) (Membership No. 94217897).
- Orissa Physical Society (OPS) LIFE Member

13. Scientific Skills:

- Software Tools: MatLab, Fortran and ATLAS Silvaco, Xilinx Vivado, COMSOL.

14. Reviewer:

- Reviewed a paper for the journal “Semiconductor Science and Technology”, published by IOP, UK, July, 2020.
- Reviewed a paper for the “European journal of Physics” published by IOP, UK, August, 2021.

15. Participation/Presentation in short term courses / workshops / Conferences:

- Participated in the “5-Day Workshop on VLSI Device and Circuit Design Tools (Online)”, organized by the School of Electronics Engineering (SENSE), VIT-AP University, Amaravati (AP), India in association with Academic Staff College (ASC) VIT-AP during 22nd to 26th June, 2021.
- Participated the “Short Term Training Programme (STTP)” sponsored by AICTE, New Delhi on “Recent Trends in Emerging Devices and Nanotechnology” Phase-I held from 1.6.2021 to 6.6.2021 conducted by NIST, Odisha.
- Presented a paper entitled “Multisubband electron mobility in pseudomorphic Al_{0.3}Ga_{0.7}As/In_{0.15}Ga_{0.85}As double quantum well based FET structure” in the 4th international conference on “2021 Devices for Integrated Circuits (DevIC 2021)” organized by Kalyani Govt. Engineering College during 19-20 May 2021.
- Participated National Workshop on “Quantum Computation and Quantum Technology”, organized by Dept. of Physics, Berhampur University, Odisha, March 8-9, 2020.
- Presented a paper entitled “Review on electron mobility in AlGa_N/Ga_N HEMT Structures” in national conference on RISEM-2K20 organized by TITE, Bhubaneswar from 28-29 February, 2019.
- Participated 3-day workshop on “Signal Processing Techniques for 5G Communication”, organized by NIST, Berhampur from 25-27 September, 2019.
- Presented a paper entitled “Nonlinear electron transport properties in GaAs/Al_xGa_{1-x}As hybrid double quantum well field effect transistor structure” in NSRAP-19 organized by

Dept. of Physics, Berhampur University, Odisha from 23-24 March, 2019.

- Participate and presented the research paper entitled “Effect of intersubband interaction on non-linear electron mobility in asymmetric AlGaAs parabolic double quantum well structure,” in the international conference IEEE EDKCON, Organised by IEEE EDS Kolkata Chapter, The Pride Hotel, Kolkata, 24th – 25th November, 2018.
- Invited lecture at DIT University, Dehradun University, Uttarakhanda on 23rd December, 2018
- GAIN course on “Introduction to Spintronics”, organized by IIT Roorkee, Uttarakhanda, from 18 – 22 December, 2017.
- Participated in the “International Workshop on Physics of Semiconductor (IWPSD - 2017)”, and tutorial course on the topic “III –N based RF devices” held at IIT Delhi, during 11 – 15, 2017.
- Participated the International Conference on Emerging Electronics (ICEE) organized by IIT Bombay, during 27 – 30 December, 2016.
- Poster presentation in IUMRS-ICYRAM, organized by IISc. Bangalore, during 11-15 December, 2016.
- Poster presentation in ICANN-2016, organized by Jamia Millia Islamia University, New Delhi, during 4-6 November, 2016.
- Paper presentation in 3rd International conference ICDCS, held at Karunya University, Coimbatore, India, during 3-5 March, 2016.
- Paper presentation in 2nd national conference NCDC-2016, organized by NIST, Berhampur, on 19th February, 2016.
- Paper presentation in the 6th international conference on computers and devices for communications, organized by IRPE, University of Calcutta during 16-18 December, 2015.
- Poster presentation in International Workshop on Physics of Semiconductor (IWPSD - 2015), held at J N Tata Auditorium, IISc, Bangalore, during 7-10 December, 2015.
- Short course program on “Modeling, Simulation and Characterization of Nano Transistors”, Organized by Dept. of Electrical Engineering, IIT Kanpur, U.P., 26-30 October, 2015.
- Paper presentation in the 1st National Conference NCDC, organized by NIST,

Berhampur, Odisha, during 20-21 February, 2015.

- Poster presentation in IEEE EDS Bhubaneswar-Kolkata chapter Mini-Colloquium on “Advanced electron devices and circuits” at KIIT University, Odisha, 3-4 December, 2014.
- Poster presentation in CMDAYS-2014, organized by Dept. of Physics and center for Research in Nanosciences and Nanotechnology, University of Calcutta, WB, India, during 27-29 August, 2014.
- National Seminar on “Recent Advances in Physics (NSRAP)”, organized by P.G. Dept. of Physics, Berhampur University and IOP, BBSR, 5-6 May, 2014.
- Paper presentation in the 1st International Conference on “Advances in Electrical Engineering”, organized by VIT University, Vellore, TN, India during 9-11 January, 2014.
- Poster presentation in the 17th IWPSD-2013, held at Amity University, Noida, India, during 10-13 December, 2013.
- Poster presentation in “National work shop on Condensed Matter Days of Physics” and one day Workshop on “Smart materials and thin films (SMTF)”, NIT Rourkela, from 28 – 30 August, 2013.
- Workshop on “Application of Simulators in Photonics, Electronics and Communication Technology (ASPECT-2013)”, IRPE, Calcutta University, 11-15 March, 2013.
- Poster presentation in INDO-US international workshop on Nanosensor, Science and Technology, organized by National Institute of Science and Technology, Berhampur, Odisha, during 27.2.2013 to 1.3.2013.
- Poster presentation in “National conference on Condensed Matter Days of Physics”, organized by Birla Institute of Technology, Mesra, Ranchi, during 29-31 August, 2012.
- Paper presentation in the National Conference RTCT organized by KIST, Bhubaneswar, 22-23 January, 2011.
- International Symposium on “Biologically Inspired Computing and Application”, Institute of Technical Education and Research, Bhubaneswar, February, 2009.
- Participated Short term / In-house training programme on “Teaching Technique”, NITTER, Kolkata, 24-27 Feb. 2009.