

Dr. Roopa J, Assistant Professor

Educational Qualification

B.E.(Electronics & Communication),
M.Tech.(VLSI & Embedded systems),
Ph.D (Thin film Sensors.)

Post-Doc.,(2D material based Wearable Warmers and Active Embedded Microfluidic cooling for GaN HEMT devices 2022 – 2025 Center for Nanoscience and Engineering, Indian Institute of Science, Bengaluru,)

Teaching: 16 Years

Experience

Industry: 2 Years

Research: 10 Years

Area of Interest

2D materials, Thin film flexible sensors and GaN Devices

Email ID: roopaj@rvce.edu.in

- **Date of Joining at RVCE:** 17-08-2009
- **Subjects Handled:** Microcontroller and Programming, Advanced Embedded System, Embedded systems and Microcontrollers, Embedded System Design, Real Time Operating Systems, Control Systems, Basic Electronics
- No. of Projects guided to UG Students : 25
- No. of Projects guided to PG Students : 07

● **PROFESSIONAL SERVICE AND MEMBERSHIPS**

- IEEE and IEEE Journal on Flexible Electronics
- Collaborator (Microfluidics and Heterogenous group) at CeNSE, IISc.

● **PATENT**

- Roopa J, Shonkho Shruvo Prosenjit Sen Digibjoy Nath Muralidharan Rangarajan., & Bhat, N., (2025), Manufacturing methods for Fabricating Air Bridge Metal Interconnects, **Patent Submitted.**
- Roopa J, Shonkho Shruvo Prosenjit Sen Digibjoy Nath Muralidharan Rangarajan., & Bhat, N., (2023), Laser Etching Process of Wide Band Gap and Ultrawide Band Materials Using Low-Cost Etching Setup. 2023410239, IPO, **Patent Granted.**
- Roopa J, Satyanarayana B S, Geetha K S, Novel Flexible Polymer based Multi- Layered Sensor for Pressure, Displacement and Biomedical Sensing Applications, 201641012577, IPO, **Patent Granted** (2023)

- Roopa J, Govinda Raju M, Nithyanand Bhat Muniraj, Device for Determining Moisture Content of a Mulberry Leaf, 201641020468, IPO, **Patent published**

- **SCIENTIFIC PUBLICATION**

- Journal Publications (<https://tinyurl.com/rj-scholar>)
- Roopa Jayaramaiah, Shonkho Shuvro, Aniruddhan Gowrisankar, Anirudh Venugopalrao, Hareesh Chandrasekar, Prosenjit Sen, Rangarajan Muralidharan, Srinivasan Raghanvan, Digbijoy Neelim Nath. (2024), 8 W at 10 GHz in AlGaIn/GaN HEMT-on-silicon without any Carbon or Iron doping, Physica Status Solidi (RRL) - Rapid Research Letters (PSS Journal).
- Roopa J, Shonkho S, Digbijoy Nath, Prosenjit Sen, Muralidharan R. (2023). Laser Etch Enabled Active Embedded Microfluidic Cooling in β -Ga₂O₃, arXiv.
- Roopa J, Rahul, Pragna. (2022) "Acquisition and Processing of Dual Channel EEG Signals to Extract and Analyze Alpha Band" has been published in the "Journal of Instrumentation and Innovation Sciences", MAT Journals, Volume 7 Issue 2
- Roopa J, Geetha K S, B S Satyanarayana, "Fabrication of Polymer Based Flexible Sensors for EoG and EMG Application", Materials Today Proceedings- Elsevier Journal -2021.
- Roopa J, Geetha K S, B S Satyanarayana, "Modeling and Simulation of Tribo electric Nano Generator for Energy Harvesting Using COMSOL Multiphysics® and Optimization on Thickness of Flexible Polymer", Materials Today Proceedings- Elsevier Journal -2021.
- Roopa J, Govinda Raju M, Geetha K S, B S Satyanarayana, Rahul, Pragna, "Bio Potential Signal Conditioning using MATLAB on Electromyography Signals", July 2019- published in IJRTE Journal.
- Roopa J, Govinda Raju M, Amith M Ugargool, "Parallel Hardware Architecture for Implementation of High- Speed MAC". International Journal of Public Health Research and Development, Vol 9, Issue 11, November 2018, ISSN:0976-5506, pp 33-38
- Roopa J, Govinda Raju M, Santhosh A R, "Smartphone Application for Silkworm Egg Detection and Counting", International Conference on Innovations in Engineering Technology and Sciences (ICIETS- 2018), NIEIT, Mysuru- Oct-2018.
- Roopa J, Koushik B, Govinda Raju M, Biswajith Roy, Manohar H, Geetha K S , Satyanarayana B S, "Signal Condition and Acquisition System for a Low Cost EMG Based Prosthetic Hand", Springer LNNS, Nov - 2016(conference)- Journal- 2017.

- **Conference Presentations**

- Roopa Jayaramaiah, Shonkho Shuvro, Aniruddhan G, Anirudh V, Hareesh C, Prosenjit Sen, Rangarajan Muralidharan, Srinivasan Raghanvan, Digbijoy Neelim Nath. "GaN-on-silicon microwave transistors without any C or Fe doping", 2025, IEEE EDTM 2025, Hong Kong
- Roopa J, Shonkho S, Prosenjit Sen, "Low Power Flexible MXene-Graphene Oxide Based Heaters for Wearable Clothing", IEEE Sensors-2023 conference, Vienna, Austria, Oct-29th to Nov 1st 2023. DOI:10.1109/SENSORS56945.2023.10325073. (Poster Presentation)

- Roopa J, Shonkho S, Digbijoy Nath, Prosenjit Sen, Muralidharan R, “Thermal Management Strategies Using Heterogeneous Integration for GaN HEMTs Devices”, XXII International Workshop on Physics of Semiconductor Devices, IIT Madras, 13 - 17 December, 2023.
- Roopa J, Shonkho S, Digbijoy Nath, Prosenjit Sen, Muralidharan R, Active Embedded Microfluidic Cooling in β -Ga₂O₃ Utilizing Laser Etching Technology, XXII International Workshop on Physics of Semiconductor Devices, IIT Madras, 13 - 17 December, 2023.
- Roopa J, K S Geetha, B S Satyanarayana, Yashus, Yogesh, Design and Simulation of PDMS Based Dry Electrode with impurities using Comsol Multiphysics, COMSOL Conference on Oct 29th and 30th, 2015, Pune.
- Roopa J, K S Geetha, B S Satyanarayana, Vishnu Murthy, “Development of a Conducting Polymer [Polyaniline] Based Gas Sensor”, IEEE International Conference on Electrical, Electronics, Signals, Communication and Optimization (EESCO) - 2015, Vizag, Jan 24 and 25th 2015.
- “Design and Implementation of DSP based Controller Card for Automatic Coil Winding Machine”, International Conference on Controls and Instrumentation Technology (CISCON-2011), 3rd -6th Nov 2011, MIT, Manipal.
- International Conference on Control, Communication and Computer Technology (CCCT 2011) “Design & Implementation of Closed Loop PID Mechanism for wire Tension Control (Tensioner) in Winding Machine”, AUG 6th - 7th 2011, VITS Delhi - NCR Hotel, Anand Vihar, ISBT Delhi.
- **Research Projects**
- Development of GaN based Half bridge module (Ongoing Collaboration)
- Development of Vapor Cell, and system for Ultra-Small Atomic Clock (Ongoing Collaboration)
- MXene-Graphene Nanocomposite sensor embedded warm clothing/Apparel for soldiers: Design, development, fabrication, and proto fabrication (Post-Doc)
- Active Embedded Microfluidic Cooling in β -Ga₂O₃ Utilizing Laser Etching Technology (Ongoing Collaboration)
- Modelling and Fabrication of Triboelectric Nanogenerators (Ph.D. thesis and Consultancy project)
- Design and development of flexible sensors for wearable electronics (Ph.D. thesis project)
- Smart Pantry management (Consultancy project)
- Design and Development of Sensor and Embedded system for sensing LPG (TEQUIP Project)
- Design and Development of PID closed loop system for Coil Winding Machine (M-Tech Project)
- Polymer based Flexible Sensors for Biomedical Application- VGST (5-Lakhs under RGS/F scheme Govt. funding - Completed)
- Fabrication of Triboelectric Nanogenerator- TE- Connectivity (Completed)
- Design and Development of Sensor and Embedded system for sensing LPG- Centre of Excellence under Macroelectronics

- Sensors based Cocoon quality testing Machine (Prototype)- KSSRDI- Govt. of Karnataka
- System to diagnose osteoporosis by determination of tibial natural frequency (Prototype)- IEEE-EPICS
- Design and Development of Coil Winding Machine- CT-Taping, Servo-tensioners- Synthesis Winding Technologies.

- **Consultancy Projects:**

- Smart Pantry management for Penta vision System
- Triboelectric Nanogenerator for TE- Connectivity

- **Awards and Recognitions:**

- Best Imaging for ‘The originality of your submission showing gold air bridges’ in Application Image Competition on Advanced Nano & Micro Fabrication 2023-2024 conducted by Industry Heidelberg instruments.
- Best presentation award, XXII International Workshop on Physics of Semiconductor Devices, Indian Institute Madras, Chennai- 2023, for the presentation on ‘First Demonstration of Active Embedded Cooling in β -Ga₂O₃ Utilizing Laser Etching Technology’.
- SERB travelling grant for presenting research work “Wearable Warmers” in IEEE Sensors 2023- Austria, Vienna, Oct-28th to Nov -1st, 2023.
- Best Achievement award, RSST Trust- RV College of Engineering in year 2015,2016,2018,2020, 2024, 2025.
- Best Project award, Shristi-2018 a State level Exhibition - Guided
- Best paper Award, EESCO-2015, IEEE conference

- **Best Project Awards:**

- Working model contest -2013 2nd place in BMSCE college for project demo on moisture meter
- 1st place in chemical Engg Dept, RVCE Frugal Engg -2013 for project demo on moisture meter
- 1st place in Dr. AIT for project demo on moisture meter in CCSO -2013

- **Certificate of Appreciation**

- Received Certificate of appreciation for presenting a project at innovation Lounge at TEDx RV Vidyaniketan held in RVCE
- Received Certificate of appreciation for conducting a workshop on “Embedded System Development using Intel Atom Processor” from Dept of ECE, RVCE.

Workshops/FDP conducted (Considered as consultancy)

- Conducted a FDP on Semiconductor Manufacturing: Materials, Sensors And Devices, during Feb 10th to 14th 2025

- Conducted workshop for engineers at BEL on Advanced Embedded Systems from 25th -28th October 2021.
- Member of a team conducted internship for students during August-September 2020 as a part of CoE- Macroelectronics in August 2021.
- Online workshop on “RTOS on ARM”, 5th -9th April 2021.
- Member of a team conducted internship for students during August-September 2020 as a part of CISCO-RVCE CoE in IoT in August 2020.
- Online workshop on “Application Programming with Real Time Kernel”, 22nd -28th July 2020.
- Online workshop on “Real Time Application Programming,” 6th -10th July 2020.
- Conducted certificate program on “Embedded system for IoT” as a part of CISCO-RVCE center of excellence in IoT during January, February, March 2019(3 batches).
- Conducted certificate program on “Embedded system for IoT” as a part of CISCO-RVCE center of excellence in IoT during February and March 2018: 2 Batches.
- Conducted a proficiency course on “Signal Processing on DSP & ARM” from July 26-29, 2016.
- Conducted a proficiency course on “Industrial Automation” from July 18 to 22, 2016.
- Conducted workshop on “Embedded Processor & Applications” for teaching staff at RVCE on 13th -18th July, 2015.
- Conducted two workshops on “Embedded System Development using Intel Atom Processor” on Jan 24th and 25th 2013 and 26th, 27th April 2013.