

Faculty Profile



Dr. S Ramya
Assistant professor - ECE

HIGHLIGHTS:

- Number of Journal Publications: 56
- H-Index: 6
- Project Funding Received: Rs.10,47,000/-
- Patents Published: 5
- Patents Granted: Nil

PROFESSIONAL LINKS:

- Scopus ID: 57527550200
- Scopus Link: <https://www.scopus.com/authid/detail.uri?authorId=57527550200>
- Google Scholar ID: <https://scholar.google.com/citations?user=LL4FS4sAAAAJ&hl=en>
- Anna University Faculty ID: 2122309
- AICTE Faculty ID: 13184979075
- LinkedIn: <https://www.linkedin.com/in/ramya-kalpana-59b7b076/>

PROFESSIONAL BACKGROUND:

- Teaching Experience till date: 6.03

AREA OF SPECIALIZATION:

- BioMEMS
- Microfluidics
- Microgrippers
- Nanomaterials

SPONSORED RESEARCH / FUNDING APPLIED / CONSULTANCY:

- Received Intramural Research Grant of Rs.10,47,000/- for project titled " Fabrication and testing of microfluidic device for blood cell separation", Ref. No: SEC/P/R&D/2024-2025/184.

PATENTS PUBLISHED/GRANTED:

- Published a patent on "Microfluidic blood cell separation and detection kit for point of care diagnosis" (2021).

- Published a patent on “A Novel fabrication approach of testosterone meter kit for hormone level detection” (2021).
- Published a patent on “Force controlled electrothermally activated micro-gripper for biomanipulation” (2021).
- Published a patent on “A Novel fabrication approach in porous silicon based biosensing device for cholesterol detection” (2022).
- Published a patent on "Paper Microfluidic and Lateral Flow Immunoassay Techniques based Kit for Detection of TSH" (2023).

COURSES CERTIFIED:

- Completed two NPTEL courses with Elite certification: Experimental Nanobiotechnology (4-week course) and Microsensors and Nanosensors (2026)
- Completed a Module 1 of the National Level FDP on "ICT Tools for Technology Infused Learning", conducted by Saveetha Engineering College (2020).
- Completed a Module 2 of the National Level FDP on "ICT Tools for Technology Infused Learning", conducted by Saveetha Engineering College (2020).
- Attended AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "BioMEMS and LAB ON CHIP Technologies for Point of Care Applications" from 2021-7-5 to 2021-7-9 at C Abdul Hakeem College of Engineering and Technology.

ACHIEVEMENTS AND AWARDS:

- Selected at the first level of the YUKTI Innovation Challenge for the project titled “*Low-Cost Point-of-Care Device for Cancer Cell Separation*” and presented at the IIC Regional Meet 2025, hosted by St. Joseph’s Institute of Technology, Chennai, on 28 November 2025.
- Received “Outstanding Facilitator Award” at the technical symposium DRESTEIN’25 for serving as a resource person in the workshops NanoSpark’25 and HATOM’25, Saveetha Engineering College.
- Selected one among the 10 teams for the final of SUKSHMA SAMRACHANA-21 MEMS INNOVATION CHALLENGE conducted at national level in the year 2021-2022.
- Organized – Two - weeks Online certification courses under CMNDF (Centre for Micro and Nano Fabrication) on MEMS, Saveetha Engineering College (2020).
- Organized – Two - weeks Online certification courses under CMNDF (Centre for Micro and Nano Fabrication) on Microfluidics, Saveetha Engineering College (2020).

JOURNAL PUBLICATIONS:

1. S. Ramya, S. Praveen Kumar, M. Yousuff Caffiyar, and N. V. Hemamalini, “Microfluidic separation device for blood components with lipids and cancer cells,” **Microsystem Technologies**, vol. 31, no. 6, pp. 1561–1579, 2025.
2. R. Sekar, A. Thangavel, S. P. Kumar, and G. Dinesh Ram, “Design of Chevron electrothermal microgripper and its prototyping using SLM based additive manufacturing,” **Transactions on Electrical and Electronic Materials**, vol. 25, no. 5, pp. 685–694, 2024.
3. R. Sekar, S. P. Kumar, G. Dinesh Ram, and D. Lingaraja, “Numerical simulation of inertial based PDMS microchannel for blood cell sorting,” **Transactions on Electrical and Electronic Materials**, vol. 24, no. 5, pp. 412–420, 2023.

4. D. Lingaraja, S. P. Kumar, G. Dinesh Ram, and R. Sekar, "Experimental investigation of influence of electrolytic solution in porous silicon formation for solar energy conversion," **Silicon**, vol. 15, no. 9, pp. 3855–3862, 2023.
5. G. Dinesh Ram et al., "Green synthesis of silver nanoparticles using *Chrysopogon zizanioides* root extract and their antibacterial activities," **Materials Today: Proceedings**, 2023. [Full author list and volume/pages not shown in the Scopus export.]
6. D. Lingaraja et al., "Green synthesis of SnO₂ nanoparticles using *Chrysopogon zizanioides* root extract to degrade the methylene blue dye," **Materials Today: Proceedings**, 2023. [Full author list and volume/pages not shown in the Scopus export.]
7. R. Sekar, S. P. Kumar, G. Dinesh Ram, and D. Lingaraja, "A short review of spiral microfluidic devices with distinct cross-sectional geometries," **Microfluidics and Nanofluidics**, vol. 26, no. 12, Art. no. 95, 2022.
8. R. Sekar et al., "Green synthesis of Ag-doped ZnO using *Nelumbo nucifera* flower extract for antibacterial activity," **Materials Today: Proceedings**, 2022. [Full author list and volume/pages not shown in the Scopus export.]
9. S. P. Kumar, S. S. Nath, G. Dinesh Ram, R. Sekar, and M. Priya, "Design optimization and simulation of micro-electro-mechanical system based solar energy harvester for low voltage applications," **Journal of Renewable and Sustainable Energy**, vol. 10, no. 5, Art. no. 053503, 2018.
10. A. Thangavel, R. K. Ramesh, S. P. Kumar, and R. Sekar, "Modelling of Chevron electrothermal actuator and its performance analysis," **Microsystem Technologies**, vol. 24, no. 4, pp. 1767–1774, 2018.

INTERNATIONAL CONFERENCE/PROCEEDINGS PUBLICATIONS

1. S. P. Kumar, R. Sekar, R. Siva, and S. Mohammed Hashim, "Implementation of a hardware-accelerated real-time AI weapon detection system on the PYNQ-Z2 FPGA for security," **Lecture Notes in Networks and Systems**, vol. 2021, pp. 605–614, 2026.
2. R. Sekar, C. T. Kalaivani, T. H. Varshine, and A. Hamshitha Shri, "Finite-element study on stress distribution and voltage response in a multi-layer piezoelectric sensor," in **Proc. 2026 Int. Conf. on Electrical and Electronics for Sustainable Innovations (ICEESI)**, 2026.
3. R. Sekar, C. T. Kalaivani, T. H. Varshine, and A. Hamshitha Shri, "Experimental fabrication of graphene-PDMS sponges with tensile characterization, and microstructural insights," in **Proc. Int. Conf. on Smart Electronic Devices and Intelligent Systems (ICSEDIS)**, 2026, pp. 275–280.
4. S. P. Kumar, R. Sekar, R. Nanda Kishore, and S. Subashini, "Feasibility analysis of lightweight convolutional neural networks for rapid white blood cell differential counting in microfluidic point-of-care diagnostics," in **Proc. IEEE Int. Conf. on Emerging Computing and Intelligent Technologies (ICoECIT)**, 2026.
5. G. Dinesh Ram, S. P. Kumar, T. K. Srinivasan, R. Sekar, and D. Lingaraja, "Design and analysis of paper-based microfluidic channel to detect potassium concentration in human sweat," **AIP Conference Proceedings**, vol. 3159, no. 1, Art. no. 020031, 2025.
6. D. Lingaraja et al., "Design and analysis of micro cantilever based piezoresistive sensor," **AIP Conference Proceedings**, vol. 3159, no. 1, Art. no. 020030, 2025. [Author list truncated in Scopus export.]
7. S. P. Kumar, R. Sekar, B. Jayashree, and V. Soundariya, "Design of a microfluidic microchannel for controlled drug delivery," in **Proc. 3rd Int. Conf. on Emerging Research in Computational Science (ICERCS)**, 2025.
8. S. P. Kumar, R. Sekar, R. Rahul, and T. S. Charumathy, "Design and development of a cost-effective passive microfluidic separator for size-based microparticle purification," in **Proc. 3rd Int. Conf. on Emerging Research in Computational Science (ICERCS)**, 2025.
9. S. P. Kumar, R. Sekar, V. Soundariya, and B. Jayashree, "Stimuli-responsive microchannel architectures for precision-controlled therapeutic delivery: Integrating laminar flow dynamics, material optimization, and adaptive drug release kinetics," in **Proc. 3rd Int. Conf. on Emerging Research in Computational Science (ICERCS)**, 2025.
10. S. P. Kumar, J. S. Swarrup, D. Lingaraja, G. Dinesh Ram, and R. Sekar, "Study on fabrication of porous silicon formation and analyze its effective parameters," in **Proc. IEEE 10th Int. Conf. on Smart Structures and Systems (ICSSS)**, 2025.

11. S. P. Kumar, J. S. Swarrup, G. Dinesh Ram, D. Lingaraja, and R. Sekar, "Design analysis of a MEMS based micro-sized gripper for micro-bio-assembly applications," in **Proc. IEEE 10th Int. Conf. on Smart Structures and Systems (ICSSS)**, 2025.
12. M. M. Kumar et al., "Virtual ID based vehicle accident detection and patient alerting system using IoT," in **Proc. Int. Conf. on Intelligent Computing and Knowledge Extraction (ICICKE)**, 2025. [Author list truncated in Scopus export.]
13. P. Roselin Sneha, R. Sekar, S. P. Kumar, and A. Thangavel, "Applications of MEMS microphones in smart hearing aids and audio devices," in **Proc. 8th Int. Conf. on Trends in Electronics and Informatics (ICOEI)**, 2025, pp. 58–64.
14. J. Sulthana Begam, S. P. Kumar, A. Thangavel, and R. Sekar, "A power efficient sleepy-keeper and lector leakage control technique based on SRAM memory," in **Proc. Int. Conf. on Visual Analytics and Data Visualization (ICVADV)**, 2025, pp. 555–560.
15. K. Sowmiya, S. P. Kumar, A. Thangavel, and R. Sekar, "Design and evaluation of a hybrid adder employing the power gating method," in **Proc. Int. Conf. on Visual Analytics and Data Visualization (ICVADV)**, 2025, pp. 698–702.
16. D. Lingaraja, S. P. Kumar, J. Raguraman, R. Sekar, and G. Dinesh Ram, "Electrophoretic separation of platelets using cross flow microfluidic channel for clinical assays," **AIP Conference Proceedings**, vol. 2935, no. 1, Art. no. 020019, 2024.
17. S. P. Kumar et al., "Design and comparison of seutolerant 10T memory cell for radiation environment applications," **AIP Conference Proceedings**, vol. 2935, no. 1, Art. no. 020022, 2024. [Author list truncated in Scopus export.]
18. R. Sekar et al., "Design and development of effective arbitration system in a SoC," **AIP Conference Proceedings**, vol. 2935, no. 1, Art. no. 020020, 2024. [Author list truncated in Scopus export.]
19. R. Sekar, S. P. Kumar, M. Abinaya, D. Lingaraja, and G. Dinesh Ram, "Computational model of an inertially governed PDMS microchannel for blood cell sorting," **AIP Conference Proceedings**, vol. 2935, no. 1, Art. no. 020018, 2024.
20. S. P. Kumar et al., "Extracting ECG signals: A singular value and wavelet approach," in **Proc. 5th Int. Conf. on Sustainable Communication Networks and Application (ICSCNA)**, 2024, pp. 261–266. [Author list truncated in Scopus export.]
21. S. Srinivasan et al., "Optimized routing protocol for enhanced quality of service in 6G wireless sensor networks," in **Proc. 2nd IEEE Int. Conf. on Networking and Communications (ICNWC)**, 2024. [Author list and pages not fully shown in Scopus export.]
22. V. N. Abinaya et al., "Grossy Delaunay trilateration enhancement methods-based on positioning of RSUs for optimum lattice capacity in VANETs," in **Proc. 2nd IEEE Int. Conf. on Networking and Communications (ICNWC)**, 2024. [Author list and pages not fully shown in Scopus export.]
23. K. L. Ranganayagi et al., "Energy-efficient communication protocols for 6G wireless sensor network," in **Proc. 2nd IEEE Int. Conf. on Networking and Communications (ICNWC)**, 2024. [Author list and pages not fully shown in Scopus export.]
24. R. Sekar et al., "Left ventricle segmentation in cardiac MR images using deep neural network models," in **Proc. 3rd Int. Conf. on Pervasive Computing and Social Networking (ICPCSN)**, 2023, pp. 218–223. [Author list truncated in Scopus export.]
25. R. Sekar et al., "Smart solid waste collection for a sustainable smart city using Arduino Uno," in **Proc. Int. Conf. on Computer Communication and Informatics (ICCCI)**, 2023. [Author list and pages not fully shown in Scopus export.]
26. R. Sekar et al., "Design of Chevron electrothermal actuator for high force defense applications," in **Proc. 7th Int. Conf. on Computing Methodologies and Communication (ICCMC)**, 2023. [Author list and pages not fully shown in Scopus export.]
27. R. Sekar, S. P. Kumar, S. P. Vinodhini, D. Lingaraja, and G. Dinesh Ram, "Design of MEMS based micro-pumps transdermal insulin administration," in **Proc. 2nd Int. Conf. on Electronics and Renewable Systems (ICEARS)**, 2023.
28. R. Sekar, S. P. Kumar, C. T. Kalaivani, G. Dinesh Ram, and D. Lingaraja, "Eigen frequency analysis of single axis 3D comb drive accelerometer," in **Proc. 5th Int. Conf. on Smart Systems and Inventive Technology (ICSSIT)**, 2023.
29. D. Lingaraja et al., "Design of solar energy harvester for smart home application," in **Proc. 5th Int. Conf. on Smart Systems and Inventive Technology (ICSSIT)**, 2023. [Author list and pages not fully shown in Scopus export.]

30. G. Dinesh Ram et al., "Simulation and investigation of wide-band piezoelectric MEMS energy harvester for smart electronic applications," in *Proc. IEEE Int. Conf. on Service Operations and Logistics, and Informatics (SOLI)*, 2022. [Author list and pages not fully shown in Scopus export.]
31. R. Sekar et al., "Robotic electrothermal microgripper with V-beam configuration for handling microobjects," in *Proc. IEEE Int. Conf. on Service Operations and Logistics, and Informatics (SOLI)*, 2022. [Author list and pages not fully shown in Scopus export.]
32. R. Sekar et al., "Design of electrothermally actuated micromirror for low power switching applications," in *Proc. 6th Int. Conf. on Electronics, Communication and Aerospace Technology (ICECA)*, 2022, pp. 74–78.
33. D. Lingaraja et al., "Microfluidic analysis of micro needle array for drug delivery applications," in *Proc. IEEE Int. Conf. on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)*, 2022, pp. 266–270.
34. G. Dinesh Ram et al., "Analysis of piezoelectric based MEMS micromirror for optical communication," in *Proc. 3rd Int. Conf. on Smart Electronics and Communication (ICOSEC)*, 2022, pp. 1–4.
35. D. Lingaraja et al., "Design and analysis of MEMS based actuator using shape memory alloy," in *Proc. 3rd Int. Conf. on Smart Electronics and Communication (ICOSEC)*, 2022, pp. 111–115.
36. R. Sekar et al., "MEMS based chip for blood cell sorting using microfluidic channel," in *Proc. 3rd Int. Conf. on Smart Electronics and Communication (ICOSEC)*, 2022, pp. 20–23.
37. D. Lingaraja et al., "Design and analysis of MEMS bimaterial cantilever using piezoelectric layer for solar energy conversion," in *Proc. 3rd Int. Conf. on Electronics and Sustainable Communication Systems (ICESC)*, 2022, pp. 258–264.
38. R. Sekar et al., "Air damping effects on perforated RF MEMS switches," in *Proc. 3rd Int. Conf. on Electronics and Sustainable Communication Systems (ICESC)*, 2022, pp. 161–166.
39. G. Dinesh Ram et al., "Simulation and investigation of dual axis MEMS scanning mirror for LiDAR applications," in *Proc. 3rd Int. Conf. on Electronics and Sustainable Communication Systems (ICESC)*, 2022, pp. 126–130.
40. R. Sekar et al., "Thermal inplane microgripper for handling micro-objects," in *Proc. 7th Int. Conf. on Communication and Electronics Systems (ICCES)*, 2022, pp. 210–214.
41. D. Lingaraja, S. P. Kumar, G. Dinesh Ram, and R. Sekar, "Optimization of flow rate in MEMS based drug delivery systems," in *Proc. 8th Int. Conf. on Smart Structures and Systems (ICSSS)*, 2022.
42. G. Dinesh Ram et al., "Design and analysis of stress distribution in V-beam electrothermal actuator," in *Proc. 8th Int. Conf. on Smart Structures and Systems (ICSSS)*, 2022. [Author list and pages not fully shown in Scopus export.]
43. D. Lingaraja, S. P. Kumar, G. Dinesh Ram, and R. Sekar, "Design and analysis of microneedle array for transdermal drug delivery," in *Proc. 8th Int. Conf. on Smart Structures and Systems (ICSSS)*, 2022.
44. R. Sekar, S. P. Kumar, D. Lingaraja, and G. Dinesh Ram, "Design and simulation of microfilter for separation of plasma," in *Proc. 8th Int. Conf. on Smart Structures and Systems (ICSSS)*, 2022.
45. R. Sekar, D. Lingaraja, G. Dinesh Ram, S. P. Kumar, and A. Thangavel, "Microfluidic circulating tumour cell sorter using deterministic lateral displacement," in *Proc. IEEE Int. Conf. on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)*, 2021, pp. 313–317.
46. A. Thangavel, R. Ramesh, S. P. Kumar, and R. Sekar, "Comparative study of different materials on performance of Chevron shaped bent-beam thermal actuator," *Communications in Computer and Information Science*, vol. 837, pp. 743–751, 2018.