

Manu K S

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EDUCATION

Degree	Institution	CPI/ %	Field of study	Year
Ph.D. (Pursuing)	Indian Institute of Technology, Gandhinagar	9.62	Electrical Engineering	2022-present
Bachelor of Technology	Government Engineering College Barton Hill, Trivandrum	8.99	Electrical and Electronics Engineering	2016-2020
Higher Secondary	Viswabharathy Public School, Neyyattinkara, Trivandrum	93.4%	Computer Science	2014-2016

DOCTORAL RESEARCH

Advancing Passive Cavitation Detection for Ultrasound Mediated Therapy; July 2022 – present [Ph.D. Thesis]

- Developing multiple bandgap acoustic metamaterials for frequency filtering aimed at passive cavitation detection.
- Evaluating the effect of ambient conditions on the temporal evolution of subharmonic response from ultrasound contrast agents
- Investigating techniques for Fiber-Bragg Grating-based detection of ultrasound passive cavitation.

RESEARCH EXPERIENCE

Junior Research Fellow at Indian Institute of Science (IISc) Bangalore, on a collaborative project between IISc Bangalore, IIT Gandhinagar, and NIMHANS, Bangalore; March 2021 - June 2022.

- Designed and developed a diffused reflectance spectroscopy-based probe for breast cancer margin assessment.
- Developed hardware interfaces for microfabricated sensor-based intraoperative probes.
- Developed interfacing platforms for neonatal hearing screening assessment.

ACHIEVEMENTS

- Outstanding Graduate Teaching Fellow Award, Semester II, Academic year 2023-24 for co-teaching the course: ES116 - Principles and Applications of Electrical Engineering (IIT Gandhinagar).
- Best Poster Award at PhD research Showcase held at IIT Gandhinagar, August 2024.
- Best Poster Award at the IEEE South Asian Ultrasonics Symposium, IIT Gandhinagar, held from 27th-29th March 2024.
- Received the prestigious Prime Minister's Research Fellowship (PMRF), August 2023.

JOURNAL PUBLICATIONS

- **Manu, K. S.**, Surabhi Jagadeesh Menon, Anuj Kaushik, and Himanshu Shekhar. "Nonlinear Response of Phospholipid-Shelled Ultrasound Contrast Agents: Ambient Conditions Affect Temporal Evolution." *Ultrasound in Medicine & Biology* (2026).
- Mistry, Nishita, Ruchika Dhawan, **K. S. Manu**, Himanshu Shekhar, and Karla P. Mercado-Shekhar. "Gold Nanoparticle Coating Reduces Acoustic Pressure Threshold for Perfluorohexane Nanodroplet Vaporization: Potential Mechanisms and Therapy Implications." *IEEE Transactions on NanoBioscience* (2025).
- Joshi, Rathin K., **K. S. Manu**, R. S. Hari, Ajay Krishnan, M. Jayachandra, Manjunath Dandinarasaiah, and Hardik J. Pandya. "Automated ABR and MMN extraction using a customized headband for hearing screening." *Biomedical Signal Processing and Control* 94 (2024): 106264.

PRESENTATIONS/CONFERENCE PROCEEDINGS

- **K. S. Manu**, Hegde R, Shekhar H, “Improving passive cavitation detection using a metallic metamaterial acoustic filter.” **31st European Symposium for Ultrasound Contrast Imaging**, Rotterdam, the Netherlands, 22nd-23rd January 2026.
- **K. S. Manu**, Menon S. J, Kaushik A, Shekhar H, “Temporal evolution of nonlinear cavitation response in encapsulated microbubbles: effect of ambient conditions.” **31st European Symposium for Ultrasound Contrast Imaging**, Rotterdam, the Netherlands, 22nd-23rd January 2026.
- **K. S. Manu**, Hegde R, Shekhar H, “Improving Cavitation Detection Using a Metallic Metamaterial Acoustic Filter.” **International Symposium for Therapeutic Ultrasound**, Banff, Canada, 21st- 24th June 2025
- **K. S. Manu**, Ramesh H, Jahankir M. J. B, Kumar D, Mercado-Shekhar K, Shekhar H, “Shape modification of ex-vivo cartilage using focused ultrasound: A feasibility study.” **International Symposium for Therapeutic Ultrasound**, Banff, Canada, 21st- 24th June 2025
- Mistry, N., Dhawan, R., **K.S., Manu**, Shekhar, H., and Mercado-Shekhar, K.P. “Coating perfluorohexane nanodroplets with gold nanoparticles reduces the vaporization pressure threshold,” **International Symposium for Therapeutic Ultrasound**, Banff, Canada, 21st- 24th June 2025
- **K. S. Manu**, Menon S. J, Kaushik A, Shekhar H, “Effect of ambient conditions on the temporal evolution of the subharmonic response of ultrasound contrast agents: A comparative study.” **16th International Conference on Ultrasound Engineering for Biomedical Applications**, Daegu, South Korea, 16th-18th June 2025
- **K. S. Manu**, Bisht S, Mercado-Shekhar K. "Design and Development of a Compact and Inexpensive Sinusoidal External Mechanical Vibration System for Ultrasound Shear Wave Elastography" **IEEE South Asian Ultrasonics Symposium**, Gandhinagar, India 27th -29th March 2024. – ***Best Poster Award***
- Joshi, R. K., **K. S. Manu**, R. S. Hari, Jayachandra M, and Pandya H. J. "Design, Development, and Validation of a Portable Visual P300 Event-Related Potential Extraction System." In **2022 IEEE Biomedical Circuits and Systems Conference (BioCAS)**, pp. 409-413. IEEE, 2022.
- Kamal, A. M, Pal U. M, **K. S. Manu**, and Pandya H. J. "Towards the Development of an Intraoperative Probe for Breast Cancer Margin Assessment." In **Optical Tomography and Spectroscopy**, pp. JM3A-2. Optica Publishing Group, 2022.

APPLIED PATENTS

- Ultrasound Detection System and Method for Ultrasound Passive Cavitation Monitoring. (applied on 30 March 2026)
- External Mechanical Vibration (EMV) -Based Ultrasound Elastography System and an Approach to Correct for Anisotropy. (applied on 01 Jan 2026)
- A Nasal Septal Cartilage Device (applied on 21 Jan 2025)
- Multimodal Detection Device and Method for Cancer Margin Assessment (Filed from IISc Bangalore)

SERVICE AND LEADERSHIP ROLES

- Student board member, International Society for Therapeutic Ultrasound, USA (2023-Present)
- Local Organizing Committee Member: IEEE South Asian Ultrasonics Symposium, 2024
- Volunteer, PHASE 2023 workshop at IIT Gandhinagar (2023)
- Chairman of ISTE student chapter, Government Engineering College Barton Hill (2019-2020)