Dr. Kavitha Balamurugan
Professor and Head
Department of Electronics and Communication Engineering
Teaching Experience: 23 Years
Specialization : Optical Communication, Antennas, Signal Processing
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Dr. Kavitha Balamurugan is Head of Electronics and Communication Engineering Department, KCG College of Technology, Chennai, India. She received her Bachelor's degree in Electronics and Communication from Hindustan College of Engineering, Chennai under Madras University and Master's in Applied Electronics under Anna University. Awarded Doctorate for the topic Optical Wireless from Anna University.

Dr. Kavitha Balamurugan has been in the field of teaching for the past 23 years. She received 2025 - Best Faculty – HoD based on Appraisal score and has received best teacher award twice and also teachers' day award. She has received a MODROB project grant from AICTE for an amount of Rs.11,44,000/- for modernization of Microprocessor and Internet of Things lab in 2019 and Rs.1,00,000/- from ATAL-AICTE towards conduction of FDP titled "Artificial Intelligence and Geospatial Technology for Surveillance for Infectious Disease" in May 2021

LIST OF SIGNIFICANT PUBLICATIONS:

International Journals:

1. Kaliappan, S., Manikanta, C., Natrayan, L. Kavitha Balamurugan *et al.* Sustainable EMI shielding in flexible PVA matrix using *Cymbopogon citratus*-derived ZnO nanoparticles and natural fiber hybridization. *J Mater Sci: Mater Electron* **36**, 1524 (2025). https://doi.org/10.1007/s10854-025-15536-x, Volume 36, article number 1524, (2025)

2. Kaliappan, S., Sekhar, A.H., Natrayan, L. Kavitha Balamurugan *et al.* Biomass extracted biocarbon and bronze nanoparticle-reinforced palm sprout fiber epoxy composite and their mechanical, dielectric, flammability, and shielding effectiveness behavior of composite. *J Mater Sci: Mater Electron* **36**, 2018 (2025). https://doi.org/10.1007/s10854-025-16093-z

3. V. Jennifer and K. Balamurugan, "IoT Driven Hybrid Locator," 2025 6th International Conference on Electronics and Sustainable Communication Systems (ICESC), Coimbatore, India, 2025, pp. 759-764, doi: 10.1109/ICESC65114.2025.11212387, **Scopus Indexed,IEEE Xplore**

4. L. S, B. S, H. S and K. Balamurugan, "Smart Level Notifier for Vending Machines," 2024 3rd Edition of IEEE Delhi Section Flagship Conference (DELCON), New Delhi, India, 2024, pp. 1-5, doi: 10.1109/DELCON64804.2024.10866490. **Scopus Indexed,IEEE Xplore**

    Posted Online Date 11 Feb 2025

5. High modulation depth and high modulated power with low noise figure for high speed modulation optical communication system performance signature, Journal of Optics, SPRINGER, Aug 24. **Scopus Indexed**
https://doi.org/10.1007/s12596-024-02104-5

6. Ultrahigh-fiber systems transmission capacity based on efficient optical single-/multi-mode band fiber parameters, Journal of Optical Communication, Journal of Optics, SPRINGER, Mar 24. **Scopus Indexed**
https://doi.org/10.1007/s12596-024-01717-0

7. Performance Enhancement of MANET based on Cross-layered Reconfigurable Hierarchical Routing Protocol, **Journal of Scientific & Industrial Research** Mar-23, **SCI Indexed**
10.56042/jsir.v82i03.71763

8. Ultra high reach optical fiber systems based on CW laser and VCSEL laser operation performance signature, Journal of Optical Communications, Nov-23, https://doi.org/10.1515/joc-2023-0293, **Scopus Indexed**

9. "Terahertz spectrum petrochemical sensing: a photonic crystal fber refractive index hybrid structure approach", , Dec-23, J Opt, **Scopus Indexed**
https://doi.org/10.1007/s12596-023-01553-8

10. K. Balamurugan, J. A. A., R. B., D. K. R., K. K. and M. J. N., "Implementation of Effective Rainfall Forecast Model using Machine Learning," 2023 4th International Conference on Smart Electronics and Communication (ICOSEC), Trichy, India, 2023, pp. 1655-1660, **Scopus Indexed**
doi: 10.1109/ICOSEC58147.2023.10275838 Journal of Optics.

11. K. Balamurugan, J. A. A., V. B., R. V. S. K. and S. S. N, "Design of an Intelligent and Smart Pill Box Using Arduino and Sensors," 2023 4th International

Conference on Smart Electronics and Communication (ICOSEC), Trichy, India, 2023, pp. 258-263, **Scopus Indexed**
doi: 10.1109/ICOSEC58147.2023.10276212.

12. "IoT based Cold Supply Chain for Food Processing," 2023 3rd Asian Conference on Innovation in Technology (ASIANCON), Ravet IN, India, 2023, pp. 1-6, doi: 10.1109/ASIANCON58793.2023.10270459, **Scopus Indexed**

13. "Fabrication of wearable piezoresistive strain sensors using graphene and its nanocomposites" , **SPAST Abstracts**, 1(01).
https://spast.org/techrep/article/view/2062 Oct 2021

14. "IoT based Electronic Voter Machine", **International Research Journal of Engineering and Technology (IRJET)**, Volume 7, Issue 04, ISSN: 2395 0056, pp. 1320-1323, Apr 2020,
https://www.irjet.net/archives/V7/i4/IRJET-V7I4248.pdf

15. "Monitoring Indoor Air Quality in Industries", **International Research Journal of Engineering and Technology (IRJET)**, Volume 7, Issue 04, ISSN: 2395 0056,pp.1933-1937, Apr 2020

16. "Bidirectional Video Transmission Using Li-Fi", **International Journal of Innovative Research in Technology,** Volume 5, Issue 11, ISSN: 2349-6002, 2019.

17. "Reconfigurable Routing Protocol with Optical Sphere in FSO MANET",**Concurrency and Computation-Practice & Experience**, Wiley Publishers, 2018; e4874, pp. 1-11. (ISSN online: 1532-0634 ISSN print: 1532-0626) IF.1.114, **Annexure 1, SCI Indexed**

18. "Performance Evaluation of Hierarchical Routing Protocol with Multiple Transceivers and Cluster Based Routing Protocol in FSO MANET", **Taga Journal of Graphic Technology**, Vol. 14,pp. 1169-1178 , 2018,
ANNEXURE 1

19. " Integrated Adaptive Headlight & Speed Limiting Systems with Parking Assistance", International Journal of Recent Innovation in Engineering & Research, Vol. 3, pp. 34-40, Mar 2018

20. "Enhanced Hierarchical Cluster Based Routing Protocol with Optical Sphere in FSO MANET**", Springer** (LNEE, volume 468), pp.1-8, 25 Nov 2017
SCI Indexed

21. "Cooperative Relay Based Communication over MultiUser Mobile Networks", **International Journal of Applied Science & Engineering Technology**, Volume 5 Issue VI, June 2017 IC Value: 45.98 ISSN: 2321-9653 dated 17.07.2017

22. "Multi-application Antenna for Indoor Distribution Antenna System like Wi-Fi, Wi-max and Bluetooth", Proceedings of 2nd International Conference on Intelligent Computing and Applications. Advances in Intelligent Systems and Computing, vol 467. Springer, Singapore. (2017) https://doi.org/10.1007/978-981-10-1645-5_21, **Scopus Indexed**

23. "Multi Application Antenna for Wi-Fi, Wi-Max and Bluetoooth for better Radiation Efficiency" in **International Journal of Scientific Engineering and Applied Science (IJSEAS)**,Vol 1, Issue 4, ISSN:2395-3470, Impact factor : 0.217, July 2015

24. "Distributed Game Theory Approach for Enriched Security Enhancement in MANET" in , ISSN:0973-4562 Vol.10, Number9, pp 7129-7133, Feb 2015 , (Annexure 2 AU Journal)

25. Data Transmission using Multiple Transcievers in Indoor Optical Wireless Communication   in **International Journal of Power Control and Computation (IJPCSC),** Vol.7, No.2 (2015) pp. 123-126 , Impact factor : 2.01, 2015

26. "Brain Tumor Detection using Fuzzy C Means Segmentation" in **International Journal of Power Control International Journal of Applied Engg. Research and Computation (IJPCSC),** Vol.7, No.2 (2015) pp. 123-126 , Impact factor : 2.01, 2015

27. "Achieving Higher Network Security by Preventing DDos Attacks Using HONEYPOT" in **International Journal of Computer Network & Security (IJCNS)** Vol.6, No.1 (2015) pp.40-45, Impact factor : 2.561, Jan-Mar 14

Conferences

1. V. Jennifer and K. Balamurugan, "IoT Driven Hybrid Locator," 2025 6th International Conference on Electronics and Sustainable Communication Systems (ICESC), Coimbatore, India, 2025, pp. 759-764, doi: 10.1109/ICESC65114.2025.11212387.

2. "Developing Subsea Valve Automation system using Fiber Optics Umbilical" International Conference on Integration of Advanced Technologies for Industry 4.0, 23 Jun 2023

3. "IoT based Cold Supply Chain for Food Processing" Asian Conference on Innovation in Technology (ASIANCON), 25.8.23 conducted by IEEE Mumbai

4. "Fabrication of wearable piezoresistive strain sensors using graphene and its nanocomposites" in ICTSGS Conference, 2021

5. Paper titled "Smart Pill Box" in National Conference on Innovation in Engineering and Technology" NCIET 2022, Velammal College of Engineering & Technology, Madurai on Nov 24,2022

6. Paper titled "MEDIBITS", in International Conference on Technological Advancement in Computer and Communication 2021 at Adhiparasakthi Engineering College, Melmaruvathur on 31.03.21.

7. Paper titled "IoT Based Smart Energy Meter and Theft detection", in International Conference on Technological Advancement in Computer and Communication 2021 at Adhiparasakthi Engineering College, Melmaruvathur on 31.03.21.

8. Paper titled " Adaptive Headlight , Speed Limiting & Parking Assistance" in IETE National Conference on Computing and Communication 2018 on 17.03.2018

9. Paper titled "Multi Application Microstrip Patch Antenna" in IETE National Conference on Computing and Communication 2018 on 17.03.2018

10. Optical and Microwave Technologies, Proceedings of International Conference on Nextgen Electronic Technologies: Silicon to Software (ICNETS2), Vol. IV, "Enhanced Hierarchical Cluster Based Routing Protocol with Optical Sphere in FSO MANET", Mar 23-25, 2017, VIT, Chennai.

11. Paper titled " Outage Analysis of Hybrid RF & FSO of MIMO Transmission Communication Systems" in National Level Conference on Contemporary Approaches of Industrial IOT in Real Time Environment in KCG College of Technology, 05.12.2017

12. Paper titled " Recontenna" in National Level Conference on Contemporary Approaches of Industrial IOT in Real Time Environment in KCG College of Technology, 05.12.2017

13. Paper titled "Survey on Cooperative Relay Based Data Transmission", International Conference on Advances in Engineering and Technology (ICAET-2016)

14. Paper titled "Multi-application Antenna for Indoor Distribution Antenna System like Wi-Fi, Wi-max and Bluetooth", [2nd International Conference on Intelligent Computing and Applications](#)", 2016

15. Paper titled "Data Transmission using Multiple Transceivers in Indoor Optical Wireless Communication", National Conference on Recent Trends in Power, Control & Networking, Embedded & Communication Engg. RTPCNEC-2015

16. Paper titled "Brain Tumor Detection using Fuzzy C Means Segmentation", National Conference on Recent Trends in Power, Control & Networking, Embedded & Communication, 2015

17. Paper titled "Distributed Game Theory Approach for Enriched Security Enhancement in MANET", International Conference on Engineering Technology & Science,2015

18. Proceedings of the International Conference on Engineering and Applied Sciences (ICEAS 2014), Vol.5, "Efficient Routing Protocol for Smooth Routing in FSO MANET, Mar 5-7, 2014, S.R.I. College of Engineering and Technology, Vandavasi.

19. Proceedings of International Conference on Engineering and Applied Sciences (ICEAS 2014), "Achieving Higher Network Security by Preventing DDOS Attacks Using HONEYPOT"

Patents:

1. Patent titled "Dual Filters UWB Antenna for Imaging Applications" Design.No: 438371-001 Granted (25/11/24)
2. German patent titled "A MEDICAL DATA MANAGEMENT SYSTEM" was Patent titled "granted in Mar'22.
3. Life Vehicle Communication Using LIFI" Application Number 201741022947 published on 30/06/2017 and has been sent for re examination on 11.1.21
4. Patent titled "Secured Voting Protocol for Electronic Voting Machine based on IoT"" Application Number 202041040264 filed on 17/09/2020 and has been sent for re examination on 11.1.21

Invited Lectures:

Details	Activity	Period
Reviewer	Journal Photonic Communications	2018- Till date

	Springer Publishers ETRI Journal Anna University **Annexure 1**	
Optical Ground Wire Communication (OPGW)	GE training to Maharashtra Electricity Board Engineers Consultancy worth Rs. Rs.12,00,000 in 2017.	29.8.17 - 31.8.17 (3 Days) 1.9.17,4.9.17 & 5.9.17 for 3 batches .

- Session chair in many international conferences
- Completed assembling of 100 Low Cost LED Lamps for Y's Men 100 years Celebrations
- Invited as **core committee member** 3rd International Conference on Multidisciplinary Innovation in Academic Research (ICMIAR-2021), Chennai, India on November 25th and 26th 2021

Notable Contribution:

- Mentored team " Sparkle Fiddle" in SIH Senior Hardware Edition and won **first prize** and **1 Lakh cash prize** in **Smart India Hackathon** held at Kalasalingam University conducted by **AICTE**
- Invited to be a **member of Anna University Board of Studies** Framing of UG Curriculum & Syllabus (CSE Stream & Information and Communication)
- Invited to be a **member of Anna University Syllabus Sub Committee-**Revision of Curriculum and Syllabi under R2021 for constituent colleges and non-autonomous affiliated institutions.
- Mentored project titled "**THERMO ELECTRIC SELF HEATING SHOES**" and won 3rd place in **Innocon' 22** on 14.5.22
- Mentored project titled "**Monitoring Parameters in Cold Storage Supply Chain**" and they are into AICTE **SIH finals** conducted from **25.8.22 - 29.8.22**
- Mentored students for developing App " Brain Death Certification" for Mohan Foundation (NGO to promote ethical organ donation & transplantation) and " Organ Donation App" and it got published on 28 Jun 2020

Funding and MoU Details :

- Funding of Rs.11,44,000/- for MODROB from AICTE for an amount of Rs.11,44,000/- for modernization of Microprocessor and Internet of Things lab in 2019.

- Funding of Rs.1,00,000/- for conduction of FDP titled "Artificial Intelligence and Geospatial Technology in Surveillance for Infectious Disease" from 23.8.21 to 27.8.21

Book Published:

S.No	Title	Publisher	Year of Publication
1	Communication Theory Text Book	Alpha International Publication	2023
2	Enhanced Hierarchical Cluster Based Routing Protocol with Optical Sphere in FSO MANET	Springer, LNEE Book Chapter	2017
3	Multi-application Antenna for Indoor Distribution Antenna System like Wi-Fi, Wi-max and Bluetooth	Springer Book Chapter	2017

Awards received:
- Received 2025 Best Faculty – HoD based on Appraisal score
- I had received Best Teacher Award 2 times and also Teachers Day Award.
- Received certificate of Appreciation for receiving Modrob Fund
- Received certificate of Appreciation for completing Ph.D.
- Received Best Faculty Award from Knowledge Research Academy on 29th Jan,2023

Kavitha Balamurugan
Professor & Head