Dr. K. Thirupathaiah

Assistant Professor
Department of Electronics & Communication Engineering
Koneru Lakshmaiah Education Foundation (KLEF), Hyderabad, India
Email: kola.jntu@gmail.com,thirupathikola@ieee.org, Phone: (+91) 7032677645
Web: https://www.linkedin.com/in/dr-thirupathi-kola-ph-d-73917920/
Google scholar: https://scholar.google.co.in/citations?user=8-AWvBEAAAAJ&hl=en

RESEARCH INTERESTS

Nanophotonics, RF through THz Integrated Circuits, Systems & Sensors, RF Integrated Circuits, Systems & Sensors, Plasmonics.

TECHNICAL SKILLS

Computing skills/RFIC CAD/Simulation Tools:
Computer Simulation Technology (CST) Microwave Studio, COMSOL Multiphysics, Ansys High-Frequency Structural Simulator (HFSS), Nanophotonic FDTD Simulation Software - Lumerical FDTD Solutions, Origin (Plotting and Fitting) and Matlab,
Programming Languages:
C++, Python, HSPICE, MATLAB, 8086/8085 Microprocessor, Assembly Language

EDUCATION

Ph.D. (Department of Electronics & Communication Engineering) 07/2010 - 09/2016
Indian Institute of Technology Roorkee (IITR), Uttarakhand, India
Dissertation: *"Multiband photonic integrated circuits using plasmonic MIM waveguide"*

Master of Science (**MS**), (Fiber Optics & Optical Communications) 10/2002 - 10/2004
Jawaharlal Nehru Technological University (JNTU), Hyderabad, India
Project: *"Design and study of Optical Waveguides"*

Bachelor of Science (B.Sc) Electronics 07/1996 - 08/1999
Kakatiya University (KU), Warangal, India

WORK EXPERIENCE

Research Consultant, ASPIRE-Project (AARE19-062) 03/2023 - Present
Department of Electrical Engineering Abu Dhabi University, Abu Dhabi, UAE

Assistant Professor 03/2021 - Present
Department of Electronics & Communication Engineering, K L University, Hyderabad, Telangana, India

Assistant Professor 06/2018 - 06/2020
Department of Electronics & Communication Engineering, Saveetha Engineering College, Chennai, Tamilnadu, India

Assistant Professor 10/2015 - 05/2018
Department of Electronics & Communication Engineering, MLR Institute of Technology, Hyderabad, Telangana, India

Teaching Assistant 10/2010 - 06/2015
Department of Electronics & Communication Engineering, Indian Institute of Technology Roorkee (IITR), Roorkee, India

Assistant Professor 08/2005 - 06/2010
Department of Electronics & Communication Engineering, SS Institute of Technology, Hyderabad, Telangana, India

Senior Lecturer 10/2004 - 07/2005
Department of Physics, RJC Degree College, Khammam, India

AWARDS

- IEEE MTTS Roorkee Student Chapter Second Prize from the Department of Electronics and Communication, IIT Roorkee, for best Poster Presentation- 2013.
- PGCET-2002 (Post Graduate Common Entrance) with University first rank.
- Secured School First rank in SSC at Z.P.H.S.

GRANTS & FUNDINGS

- Department of Electrical Engineering, Abu Dhabi University-Abu Dhabi, UAE, ASPIRE-Project (AARE19-062) funding for The 67th IEEE Internationational Midwest Symposium on Circuits and Systems (MWSCAS 2024), August 11-14, Springfield, MA, USA.
- Department of Electrical Engineering, Abu Dhabi University-Abu Dhabi, UAE, ASPIRE-Project (AARE19-062) funding for The 2023 International Conference on IEEE Numerical Simulation of Optoelectronic Devices (NUSOD) was held from September 18-21 at Politecnico di Torino, Turin, Italy.
- Institute funding for IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE-2014), December 2014, Johor Bahru-Malaysia.
- 2010-2014 Indian Institute of Technology (IITR) fellowship for pursuing Ph.D. under MHRD Scheme.

SERVICE

- Nature Scientific Reports (Reviewer), 2024
- IEEE Access(Reviewer), 2024
- Taylor & Francis: Microwave and Optical Technology Letters, (Reviewer), 2019, 2021
- IEEE Transaction on Nanotechnology (Reviewer), 2020, 2022
- Optica Applicata (Reviewer), 2021
- Bentham Science: Recent Advances in Electrical & Electronic Engineering,(Reviewer), 2019
- Bentham Science: Electrical & Electronic Engineering, (Reviewer), 2019
- International Journal of Engineering Research in Africa (JERA), (Reviewer), 2021
- Advanced Engineering Forum" (AEF), (Reviewer), 2021, 2022
- Member, Organizing Committee, IEEE MTTS, IIT Roorkee Student Branch Chapter - 2013.
- IEEE Student Branch Counselor, KL University, Hyderabad, 2021-present
- IEEE Photonic Society Student Branch Chapter Adviser, KL University, Hyderabad, 2021-2022
- IEEE MTTS Student Branch Chapter Adviser, KL University, Hyderabad, 2024-Present

PROFESSIONAL BODY ASSOCIATION & MEMBERSHIPS

- IEEE Senior Member

- IEEE Photonics Society, Senior Member
- IEEE Microwave Theory and Techniques Society (MTTS), Senior Member
- IEEE Circuits & Systems Society (CAS)
- Indian Association of Physics
- National Association of Science Writers

RESEARCH STATEMENT

- Passionate nanophotonics researcher with 10+ years of experience in exploring and advancing the field through innovative projects and publications. My primary focus lies in developing novel nanophotonic devices, particularly integrated circuits for nanoscale wireless links, nonlinear plasmonic devices, and multi-functional structures using plasmonic MIM waveguides.
- Expertise in nanoplasmonic design and implementation: Designed and implemented nanoplasmonic filters, bandpass filters, directional couplers, and antennas, contributing significantly to the evolution of photonics research (list specific publications with impact here). Commitment to education: Active as a teacher and researcher for graduate and undergraduate students, fostering future generations of photonics experts.
- Extend research into high-frequency multifunctional devices: Leverage graphene and lithium niobate to push the boundaries of nanophotonics and explore advanced functionalities. Continue valuable research opportunities: Create exciting research avenues for undergraduate students within the Photonics & Optical Communications domain.
- My research holds immense promise for the future of telecommunications, offering potential for faster, more efficient data transmission. My dedication to education ensures continued advancement in the field, paving the way for future breakthroughs.

MAJOR COLLABORATIONS

2023- Present:
Prof. Montasir Qasymeh, Department of Electrical Engineering, Abu Dhabi University, Abu Dhabi, United Arab Emirates (UAE).

2022- Present:
Dr Pat Chambers, Department of Electronic Engineering & Communications, South East Technological University, Carlow Campus, Kilkenny Road, R93 V960, Ireland.

2022- Present:
Prof. Nagendra Prasad Pathak, Indian Institute of Technology Roorkee (IITR) & Prof. M. V. Kartikeyan, Director, International Institute of Information Technology, Design & Manufacturing (IIITDM)

PUBLICATIONS

1. **K. Thirupathaiah** and M. Qasymeh, "A Nanoplasmonic Directional Coupler Utilizing a Backed Conductor on Dielectric Substrate With Finite Width," EEE Journal of Quantum Electronics, vol. 60, no. 6, pp. 7200209 (1-9), Dec. 2024. DOI:10.1109/JQE.2024.3485503
2. **K. Thirupathaiah** and M. Qasymeh, "Miniaturized Dual-Band Filters Utilizing Square Ring Resonators with Coupling Gaps," Accepted for presentation and publication in IEEE 24th 2024 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD-2024), New Delhi, India, 2024.

3. **K. Thirupathaiah**, M. Qasymeh, "Ultra Compact Nanoplasmonic Dual-Band Filters with Tunable Silica Stubs for Nanoscale Networks," 67th IEEE Internationational Midwest Symposium on Circuits and Systems (MWSCAS 2024), Springfield, MA, USA, pp. 1162-1166, DOI:10.1109/MWSCAS60917.2024.10658727
4. **K. Thirupathaiah** and M. Qasymeh, "Terahertz Dual-Band Antennas Using Step Impedance Resonators with Coplanar Waveguides for Subwavelength Wireless Networks," *IEEE Access*, vol. 12, pp. 92484-92493, 2024, DOI:10.1109/ACCESS.2024.3423725.
5. **K. Thirupathaiah**, M. Qasymeh and A. Ramakrishna, "Nanoplasmonic Broadband Filters Using Broadside Edge Coupled Coplanar Waveguide," 2023 33rd International Telecommunication Networks and Applications Conference (ITNAC), Melbourne, Australia, 2023, pp. 124-127. DOI:10.1109/ITNAC59571.2023.10368518
6. **K. Thirupathaiah**, and M. Qasymeh, "Optical Ultra-Wideband Nano-Plasmonic Bandpass Filter Based on Gap-Coupled Square Ring Resonators," IEEE Access, vol. 11, pp. 106095-106102, Oct. 2023, DOI:10.1109/ACCESS.2023.3318878
7. **K. Thirupathaiah**, Montasir Qasymeh, "An UWB Band-Pass Filter Using Plasmonic Series and Parallel SRRs with Coupling Gaps", 2023 International Conference on Numerical Simulation of Optoelectronic Devices (NUSOD), Turin, Italy, 2023, pp.49-50, DOI:10.1109/NUSOD59562.2023.10273577.
8. **K. Thirupathaiah**, et al, "Nanoplasmonic Ultra Compact, Low Insertion Loss UWB Band-Pass Filter Using Square Ring Resonators", IEEE 22nd International Conference on Numerical Simulation of Optoelectronic Device (NUSOD-2022), pp. 207-208. doi.org/10.1109/NUSOD54938.2022.9894761.
9. **K. Thirupathaiah**, et al, "Nanoplasmonic Directional Coupler Using Asymmetric Parallel Coupled MIM Waveguides", IEEE Photonics Technology Letters, vol. 34, no. 8, pp. 401-404, 15 April, 2022, DOI:10.1109/LPT.2022.3161930.
10. **K. Thirupathaiah**, et al, "Nanoplasmonic Multiband Band Pass Filters For THz Wireless Communications", 2021 IEEE Research and Applications of Photonics in Defense Conference (RAPID), 2021, pp. 1-2, DOI:10.1109/RAPID51799.2021.9521462.
11. **K. Thirupathaiah**, et.al, "A Nanoplasmonic Branchline Coupler for Subwavelength Wireless Networks", IEEE Transactions on Nanotechnology, vol. 20, pp. 662-668, Aug., 2021, DOI:10.1109/TNANO.2021.3101981.
12. **K. Thirupathaiah**, Srinivas Konda, "A Nanoplasmonic Ultra Wide Band Antenna for Wireless Communications", 6th International Conference on Microelectronics, Electromagnetics and Telecommunications (ICMEET 2021), Lecture Notes in Electrical Engineering, vol.2, pp. 839. Springer, Singapore. DOI:org/10.1007/978-981-16-8554-5-48
13. **K. Thirupathaiah** et.al, "Nanoplasmonic Multiband Filters Using SIR for Wireless Networks", IEEE 21st International Conference on Numerical Simulation of Optoelectronic Device (NUSOD), 2021, pp. 111-112, DOI:10.1109/NUSOD52207.2021.9541517.
14. **K. Thirupathaiah**, "Nanophotonic MIM bend structure waveguides", 2017 IEEE International Conference on Technological Innovations in Communication, Control and Automation (TICCA), Chennai, 2017., DOI:org/10.1109/TICCA.2017.8344581.
15. **K. Thirupathaiah**, et al, "Concurrent Dual Band Filters Using Plasmonic MIM Waveguide Ring Resonator," ARPN Journal of Engineering and Applied Sciences, vol. 13, no. 5, pp. 1813-1818, 2017.
16. **K. Thirupathaiah**, Iyer B, N. P. Pathak and V. Rastogi, "Metal-Silica-Metal Plasmonic Waveguide Based Concurrent Dualband Directional Coupler", IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE 2014) Johor Bahru- Malaysia, December 2014.,DOI:org/10.1109/APACE.2014.7043784.

17. **K. Thirupathaiah**, Iyer B, N. P. Pathak and V. Rastogi, "Plasmonic Metal- Insulator-Metal-Waveguide Based Concurrent Dualband Antenna for Nanoscale Wireless Links", IEEE Asia-Pacific Conference on Applied Electromagnetics(APACE2014) December 2014 Johor Bahru Malaysia, 2014, DOI:10.1109/APACE.2014.7043783.
18. **K. Thirupathaiah**, Iyer B, N.P. Pathak, V. Rastogi, "Design and simulation of plasmonic MIM slot waveguide based dualband bandpass filter," Proceedings of Recent Advances in Photonics (WRAP- 2013), IIT Delhi, 2013., DOI:org/10.1109/WRAP.2013.6917645
19. **K. Thirupathaiah**, Iyer B, N.P.Pathak and V. Rastogi "Concurrent Dualband Diplexer for Nanoscale Wireless Links", IEEE Photonic Technology Letters, vol. 26, no. 18, pp. 1832-1835, Sept.15, 2014, DOI:10.1109/LPT.2014.2337016.
20. **K. Thirupathaiah**, N.P. Pathak and V. Rastogi, "Concurrent dual-band filters using plasmonic slot waveguide", IEEE Photonic Technology Letters, vol. 25, no. 22, pp. 2217-2220, Nov. 15, 2013, DOI:10.1109/LPT.2013.2283880.

REFERENCES

1. **Prof. Montasir Qasymeh,**
   Professor and Head I/C, Associate Provost R&D,
   Department of Electrical Engineering,
   Abu Dhabi University, Abu Dhabi, UAE.
   Phone: +971-509048410(O), **Email**: montasir.qasymeh@adu.ac.ae

2. **Prof. M.V. Kartikeyan,**
   Director, International Institute of Information Technology, Design & Manufacturing (IIITDM), Kancheepuram, Chennai-60012, India.
   Phone: +91-9897021157, **Email**: kartik@iitp.ac.in, kartik@ieee.org

3. **Prof. A. Karthigeyan,**
   Professor and Head I/C,
   Department of Physics and Nanotechnology,
   SRM University, SRM Nagar,
   Kattankulathur - 603 203, Tamil Nadu, India.
   Phone: +91-9841615368, **Email**: karthiga@srmist.edu.in