

BIO-DATA

1. Name and full correspondence address : **Dr. G. Thavasi Raja**
Associate Professor
Department of ECE
National Institute of Technology (NIT)
Tiruchirappalli – 620015, Tamil Nadu
2. Email(s) and contact number(s) : thavasi@nitt.edu
0431-2503317; Mobile: 9443485798
3. Institution : National Institute of Technology (NIT)
Tiruchirappalli – 620015, Tamil Nadu, India
4. Date of Birth : 16.06.1981
5. Gender (M/F/T) : M
6. Category Gen/SC/ST/OBC : OBC
7. Whether differently abled (Yes/No) : No

8. Academic Qualification (Undergraduate Onwards)

Sl. No.	Degree	Year	Subject	University/Institution	% of Marks
1.	B.E	2002	Electronics and Communication Engineering	MEPCO Schlenk Engineering College, Madurai Kamaraj University, TamilNadu	74.75 % (First Class)
2.	M.E	2004	Communication Systems Engineering	Thiagarajar College of Engineering, Madurai, Anna University, Chennai, Tamil Nadu	8.24 (CGPA) Distinction
3.	Ph.D.	2016	Photonics and Communication	E&ECE, IIT Kharagpur, West Bengal	8.1 (CGPA)

9. Ph.D. thesis title, Guide Name, Institute/Organization/University, Year of Award.

Thesis Title: Leakage Channel Fibers with Extremely Large Mode Area for High-Power Lasing Applications

Supervisor: Dr. S. K. Varshney

Department: Electronics and Electrical Communication Engineering

Institute: Indian Institute of Technology (IIT), Kharagpur

10. Work experience (in chronological order).

S.No	Positions held	Name of the Institute	From	To	Pay Scale
1.	Associate Professor	NIT, Tiruchirappalli, India	21.09.22	Till date	Rs.37,400-67,000
2.	Assistant Professor (Grade I)	NIT, Tiruchirappalli, India	12.03.18	21.09.22	AGP: Rs.9500/- Rs.15,600-39,100 AGP: Rs.8000/-
3.	Assistant Professor (Grade II)	NIT, Tiruchirappalli, India	01.06.11	11.03.18	Rs.15,600-39,100 AGP: Rs.7000/-
4.	Assistant Professor (Grade II)	NIT, Tiruchirappalli, India	01.06.06	31.05.11	Rs.15,600-39,100 AGP: Rs.6000/-

11. Professional Recognition/ Award/ Prize/ Certificate, Fellowship received by the applicant.

S.No	Name of Award	Institute	Awarding Agency	Year
1.	QIP Research Fellowship	IIT, Kharagpur	AICTE, New Delhi	2012-16
2.	NITT Faculty Award for Sponsored Research Projects	NIT Trichy	NIT Trichy	2017-18

12. **Book Chapter:** R. Rajasekar, **G. Thavasi Raja**, and S. Robinson, "Photonic Crystal-Based Sensors for Biosensing Applications," Chapter 10, *Advances in Photonic Crystals and Devices*, CRC Press, Sep. 2019.
13. **Publications** (List of papers published in SCI/SCIE/Scopus Journals).
 1. P. Agilandeswari, **G. Thavasi Raja**, and R. Rajasekar, "Deep Learning Based Inverse Design of Nanoscale Optical Bandpass Filter for Sub-THz 6G Network," *IEEE Transactions on Nanotechnology*, vol. 24, pp. 347-355, July 2025.
 2. P. Agilandeswari, **G. Thavasi Raja**, and R. Rajasekar, and R. Parthasarathy, "Deep Learning-Based Prediction of Multifunctional Photonic Crystal Ring Resonator with Ultra High-Quality Factor," *IEEE Journal on Multiscale and Multiphysics Computational Techniques*, vol. 10, pp. 295-303, July 2025.
 3. P. Agilandeswari, **G. Thavasi Raja**, and R. Rajasekar, "Ultrafast reconfigurable optical switch and tunable bandpass filter based on silicon photonic crystal waveguides," *Journal of the Optical Society of America B*, 42 (6), 1342-1349, June 2025.
 4. N. Ayyanar, M. Kamaleshwar, N. R. Ramanujam, **G. Thavasi Raja**, Julia S. Skibina, and Fahad A. Alzahrani, Numerical Design of a High-Sensitivity SPR Biosensor for Spike and Nucleoprotein RBD Detection in SARS-CoV-2 Diagnostics," *IEEE Transactions on Plasma Science*, (Early Access) 2025.
 5. Navya Solagudi, **G. Thavasi Raja**, and B. Shameedha Begum, "Energy Efficient Routing Algorithm for UWSNs using Fuzzy Sampling on Nodes filtered by Energy Distribution Analysis," *Springer Cluster Computing* (Accepted for Publication), 2025.
 6. C Annadurai, I Nelson, K Nirmala Devi, and **G Thavasi Raja**, "Dynamic multipath routing for energy-efficient and reliable communication in 6G networks with MIMO," *Wiley Internet Technology Letters (IoT)*, e559, Jul. 2024.
 7. P. Agilandeswari, K. Girish, R. Rajasekar, **G. Thavasi Raja**, R. Periyasamy, and T. Jaisingh, "Coupled Nanoring Resonators Based Reconfigurable and Multifunctional Platform for Photonic Integrated Circuits," *IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 28, No. 6, Nov. 2022.
 8. N. Ayyanar, **G Thavasi Raja**, Y. S Skibina, Yashar E. Monfared, A. A. Zanishevskaya, A. A. Shuvalov, and Gryaznov A. Yu, "Hollow-Core Microstructured Optical Fiber Based Refractometer: Numerical Simulation and Experimental Studies," *IEEE Transactions on NanoBioscience*, April, 2022
 9. R. Rajasekar, **G. Thavasi Raja**, and S. Robinson, "Numerical Analysis of Reconfigurable and Multifunctional Barium Titanate Platform Based on Photonic Crystal Ring Resonator," *IEEE Transactions on Nanotechnology*, vol. 20, pp. 282 – 291, Mar. 2021.
 10. S. Radhakrishnan, D. Sriram Kumar, **G. Thavasi Raja**, "Design and Simulation Analysis on TM-Pass GST-Assisted Asymmetric Directional Coupler-Based Polarizer," *Silicon*, 1-12, Oct. 2021.
 11. S. Radhakrishnan, J. S. Ramesh Gabriel, **G. Thavasi Raja**, and D. Sriram Kumar, "Numerical Investigation on GST assisted Reconfigurable Asymmetric Directional coupler-based Switches," *Optical Engineering (SPIE)*, May. 2021.
 12. D. Balaji, **G. Thavasi Raja**, and M. Magarini, "Low Complex Receiver Design for Modified Inverse Source Coded Diffusion Based Molecular Communication Systems," *IEEE Transactions on Molecular, Biological, and Multi-Scale Communications*, Jun. 2021.
 13. D. Balaji, **G. Thavasi Raja**, Maurizio Magarini, and H Birkan Yilmaz, "Transmit Signal Shaping for Molecular Communication," *IEEE Wireless Communications Letters*, 2021
 14. N Ayyanar, K. V Sreekanth, **G Thavasi Raja**, and M.S Mani Rajan, "Photonic Crystal Fiber Based Reconfigurable Biosensor Using Phase Change Material," *IEEE Transactions on NanoBioscience*, 2021.
 15. N. Ayyanar, and **G. Thavasi Raja**, "Lasing Characteristics of Highly Bend Compensated Large Mode Area Ytterbium Doped Modified Hybrid Multi Trench Fiber," *Optical Fiber Technology (Elsevier)* 61, 102444, Jan. 2021.
 16. R. Rajasekar, and **G. Thavasi Raja**, "Ultrafast Reconfigurable Nanoscale Optical Switch Based On Photonic Crystal Waveguide," *Optical Engineering (SPIE)*, 59 (12), 125107, Dec. 2020.
 17. R. Rajasekar, **G. Thavasi Raja**, K.J. Jayson, and S. Robinson, "High Speed Nano-Optical Encoder Using Photonic Crystal Ring Resonator," *Photonic Network Communications (Springer)*, 40, 31–39, Jun. 2020.
 18. R. Rajasekar, **G. Thavasi Raja**, and S Robinson, "Numerical Investigation of Reconfigurable Photonic Crystal Switch Based on Phase Change Nanomaterial," *IEEE Transactions on Nanotechnology*, 19, 545-552, Jun. 2020.
 19. S. Radhakrishnan, **G. Thavasi Raja**, and D. Sriram Kumar, "Numerical Investigation on Elliptic Cylindrical Nanowire Hybrid Plasmonic Waveguide-Based Polarization Beam Splitter," *Plasmonics (Springer)*, 1-8, Oct. 2020.
 20. B. M. Kurade, N. Ayyanar, **G. Thavasi Raja**, and S.K. Varshney, "Asymmetric-clad Multi- Trench Fibers with Large Mode-Area and Controlled Leakage Loss," *Optical Fiber Technology (Elsevier)*, vol. 48, 235-241, Mar. 2019.

21. N. Ayyanar, **G. Thavasi Raja**, M. Sharma, and D. Sriram Kumar, "Photonic Crystal Fiber- Based Refractive Index Sensor for Early Detection of Cancer," IEEE Sensors Journal, vol. 18, no. 17, pp. 7093- 7099, Sept. 2018.
22. **G. Thavasi Raja** and S. K. Varshney, "Large mode area modified clad leakage channel fibers with low bending and higher differential losses," J. Opt. (IOP), vol.16, Jan. 2014.
23. N. Ayyanar, P.G. Kuppusamy, **G. Thavasi Raja**, D. Vigneswaran, and A. H. Aly, "Tricore Photonic Crystal Fiber Based Refractive Index Sensor for Glucose Detection," IET Optoelectronics, 8pp., Dec. 2018.
24. K. R. Kishore, S. Utkarsh, N. Ayyanar, **G. Thavasi Raja**, and M.S. Sanathanan, "Hybrid Plasmonic Label-free Multi-analyte Refractive Index Sensor," Optoelectronics Letters (Springer), 15 (4), 269- 272, Jul. 2019.
25. C. Gunasekaran, B. S. Kumar, N. Ayyanar, **G. Thavasi Raja**, and R Mohan, "Surface-plasmon- based photonic crystal fibers for high-bandwidth filter realization," Journal of the Optical Society of America B, 36 (6), 1574-1580, Jun. 2019.
26. N. Ayyanar, A. E. Khalil, M. F. O. Hameed, **G. Thavasi Raja**, and S. Salah A Obayya, "Enhanced sensitivity of hemoglobin sensor using dual-core photonic crystal fiber," Optical and Quantum Electronics (Springer), 50, 453, Nov. 2018.
27. **G. Thavasi Raja** and S. K. Varshney, "Modified and double-clad large mode-area leakage channel fibers for extreme temperature conditions," J. Opt. (IOP), vol.17, Mar. 2015.
28. **G. Thavasi Raja** and S. K. Varshney, "Extremely Large Mode-Area Bent Hybrid Leakage Channel Fibers for Lasing Applications," IEEE J. Sel. Top. Quantum Electron, vol.20, pp.251- 259, Sep/Oct. 2014.
29. **G. Thavasi Raja**, Raktim Haldar, and S. K. Varshney, "Numerical analysis of lasing characteristics in highly bend-compensated large mode-area ytterbium-doped double-clad leakage- channel fibers," Appl. Opt. (OSA, USA), vol. 54, pp.10314–10320, Dec. 2015.

14. Research Projects:

- Principal Investigator for Projects

1. **"Highly-Compact Very Large Mode-Area Hybrid Multi-Trench Optical Fiber for High-Power Industrial Lasing Applications"** under Core Research Grant (2017-2020) funded by SERB, New Delhi. (Value: INR 20.89 lakhs) - **Completed**.
2. **"Reconfigurable and Multifunctional Nanophotonic Interconnects for High-speed Communication"** under Core Research Grant (2022-2025) funded by SERB, New Delhi. (Value: INR 25.10 lakhs) - **Completed**.

- Co-Principal Investigator for Projects

1. **"Self-Energised UAV-Assisted Communicationns for 5G Wireless Networks"** under Scheme for Promotion of Academic and Research Collaboration (SPARC) funded by Ministry of Education, New Delhi. (Value: INR 73.23 lakhs, Principal Investigator: Dr.P.Muthuchidambaranathan, Co-PIs: Dr. G. Lakshminarayanan, Dr. G. Thavasi Raja).
2. **"Technology Development Proposals on Passive Components"** under STIC-NITT cell funded by ISRO. (Value: INR 27.30 lakhs, Principal Investigator: Dr. R. Pandeewari, Co- PIs: Dr. S. Deivalakshmi, Dr. S. S. Karthikeyan, Dr. G. Thavasi Raja).

15. Supervision of Ph.D.

1. **Dr. N. Ayyanar** - Photonic Crystal Optical Fiber Sensors with Enhanced Sensitivity for Biomedical Applications (2017 - 2020)
2. **Dr. D. Balaji** - Wireless Molecular Communication Systems: Transceiver Design and Performance Analysis (2016 - 2021)
3. **Dr. R. Rajasekar** - Reconfigurable and Multifunctional Nanophotonic Devices for Lightwave Communication Applications (2019 - 2022)

Co-supervision:

4. **Dr. S. Radhakrishnan** - Design and Analysis of Passive Optical Devices on SOI Platform for Communication and Network Applications (2017-2023)

16. Resume of Professional Experience/Any other information (maximum 500 words)

Dr. G. Thavasi Raja was born in Virudhunagar, Tamil Nadu, India, in 1981. He received the B.E. degree in Electronics and Communication Engineering (ECE) from Madurai Kamaraj University, Tamil Nadu, India, in 2002 and the M.E degree in Communication Systems from Thiagarajar College of Engineering, Madurai affiliated to Anna University, Chennai, India in 2004. He received Ph.D. in the Department of Electronics & Electrical Communication Engineering (E&ECE), Indian Institute of Technology (IIT), Kharagpur, India under Quality Improvement Program (QIP), sponsored by All India Council for Technical Education (AICTE), New Delhi, India in 2016. In June 2006, he joined as an Assistant Professor in the Department of Electronics and Communication Engineering (ECE), National Institute of Technology (NIT), Tiruchirappalli, India. He promoted as an Associate Professor in the department of ECE at NIT, Tiruchirappalli in Sep. 2022. He was a Lecturer in Sri Sivasubramaniya Nadar (SSN) College of Engineering, Chennai, (September 2004-May 2006). His research interest includes Communication systems, Speciality optical fibers, photonic crystal fibers, fiber optic sensors, fiber optic devices, optical waveguides, Reconfigurable and Reprogrammable photonic integrated circuits and devices. He is a senior member of the Institute of Electrical and Electronics Engineers (IEEE) in Communications and Photonics Society, USA, Member in Optical Society of India and Optical Society of America (OSA).

NIT, Trichy- 620015
15.07.2025

G. Thavasi Raja