

# CURRICULUM VITAE

**DR. M S SWAPNA**

*Laboratory of Environmental and Life Sciences  
University of Nova Gorica, Slovenia  
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## ACADEMIC QUALIFICATIONS

1. **Ph. D. in Optoelectronics** (Awarded on 04/12/2021)  
**Title of the thesis:** NANOBIPHOTONIC APPLICATIONS AND THERMAL-INDUCED DYNAMICS OF SOOT: THEORETICAL, SPECTRAL, AND LASER-ASSISTED THERMAL LENS STUDIES  
**Guide:** Prof. S. Sankararaman, Department of Optoelectronics, University of Kerala.
2. **M.Phil. Photonics** (2017), O Grade (>90%), Dept. of Optoelectronics, University of Kerala  
**Title of the thesis:** SYNTHESIS AND CHARACTERIZATION OF CARBON NANOPARTICLES BY COMBUSTION METHOD  
**Guide:** Dr. S. Sankararaman, Department of Optoelectronics, University of Kerala.
3. **M.Sc. Physics** (2015), 87%, Dept. of Physics, University of Kerala.
4. **B.Sc. Physics** (2013), 92.5%, University of Kerala.

## OTHER CERTIFICATE COURSES

1. NPTEL Course on *Structural Analysis of Nanomaterials* conducted by IIT Roorkee -score: 72%
2. NPTEL Course on *Biology for engineers and other non-biologists* conducted by IIT Madras – score: 66%
3. Acquired *First class with Distinction* in **Diploma in Computer Application (Software)** conducted by LBS Centre for Science & Technology, TVPM

## RESEARCH OUTPUT AT A GLANCE

1. **Post-Doctoral Research Experience:**  
(i) Laboratory of Environment and Life Sciences, University of Nova Gorica, Slovenia

(since 6<sup>th</sup> June 2022)

(ii) Post-Doctoral Intern after Ph.D. thesis submission at Department of Optoelectronics, University of Kerala (08/04/2021 – 25/05/2022)

2. **Publications in International Journals: 90** (First author : 45, Co-author : 45)
3. **Patents Applied: 3**
4. Presentation in National/International Conferences: **25**
5. **Best Paper Awards : 8**
6. **Book Published: 2 -**
  - (i) Fascinating World of Soot, Lambert Publishers, 2020, ISBN:978-620-2-51691-4
  - (ii) Thermal Induced Dynamics of Soot: Monograph Series – 1, Department of Optoelectronics, University of Kerala, Kariavattom, Trivandrum, 2022  
ISBN-978-93-5593-789-6
7. **Book Edited : 2 –**
  - (i) Abstract book of Raman Optronics Webinar Series (ROWS 2020):Virtual International Conference, Publisher: Department of Optoelectronics, University of Kerala, ISBN: 978-93-5426-079-7
  - (ii) Abstract book of Raman Optronics Webinar Series (ROWS 2021):Virtual International Conference, Publisher: Department of Optoelectronics, University of Kerala, ISBN:978-93-5566-383-2
8. Book Chapters: **9**
9. RG Score: 32.59, h index: 14, i10 index – 27
10. International Recognition to the biomedical research at the Department of Optoelectronics, the University of Kerala for the feature article “Unwrapping Aortic valve dysfunction through complex network analysis: A biophysics approach” published in AIP Journal of Applied Physics (2022).
11. **Research Credentials can also be viewed at**

<https://www.researchgate.net/profile/M-S-Swapna-2>

<https://scholar.google.co.in/citations?hl=en&user=THIYZCAAAA>

## LIST OF RESEARCH PUBLICATIONS

### A. SELECTED RECENT 12 PUBLICATIONS

1. Soot effected sample entropy minimization in nanofluid for thermal system design: A thermal lens study, **M S Swapna**, Vimal Raj, K Satheesh Kumar, and S Sankararaman, **Journal of Molecular Liquids**, 318, 114038 (2020) 10.1016/j.molliq.2020.114038, (IF: 6.633).
2. Thermal Lensing of Multi-Walled Carbon Nanotube Solutions as Heat-Transfer Nanofluids, **M S Swapna**, Vimal Raj, Humberto Cabrera, and S Sankararaman, **ACS Applied Nanomaterials** 4, 3416–3425 (2021), 10.1021/acsanm.0c03219, (IF: 6.14).
3. Allotropic transformation instigated thermal diffusivity of soot nanofluid: Thermal lens study, **M S Swapna**, Vimal Raj, and S. Sankararaman, **Physics of Fluids (AIP)**, 31(11), 117106 (2019), 10.1063/1.5124030, (IF: 4.98).
4. Development of prototype of electronic speckle interferometry-based spirometer, **M S Swapna**, Arun Kumar, Sunil Kumar, S Sreejyothi, Vimal Raj, and S Sankararaman, **Optics and Lasers in Engineering**, 136, 106318 (2021) 10.1016/j.optlaseng.2020.106318, (IF: 4.939).
5. Downscaling of Sample Entropy of Nanofluids by Carbon Allotropes: A Thermal Lens Study, **M S Swapna**, Vimal Raj, K Satheesh Kumar, and S Sankararaman, **Chaos: An Interdisciplinary Journal of Nonlinear Science (AIP)**, 30, 073116 (2020), 10.1063/5.0009756, (IF: 3.741).
6. Generalized Theory of Thermal Conductivity for Different Media: Solids to Nanofluids, **M S Swapna** and S. Sankararaman, **Journal of Physical Chemistry C (ACS)**, 123, 23264–23271 (2019), 10.1021/acs.jpcc.9b07406, (IF: 4.189).
7. Carbon nanoparticles assisted energy transport mechanism in leaves: A thermal lens study, **M S Swapna**, Vimal Raj, H V Saritha Devi, and S Sankararaman, **The European Physical Journal Plus**, 134, 416 (2019), 10.1140/epjp/i2019-12780-1, (IF: 3.758).
8. Tuning the thermal diffusivity of the seed matter for enhanced biosynthesis: A thermal lens study, **M S Swapna** and S Sankararaman, **The European Physical Journal Plus**, 135, 224 (2020), 10.1140/epjp/s13360-020-00253-7, (IF: 3.758).
9. Time series and fractal analyses of wheezing: A novel approach, **M S Swapna**, A Renjini, Vimal Raj, S Sreejyothi, and S Sankararaman, **Physical and Engineering Sciences in Medicine** (2020) 10.1007/s13246-020-00937-5, (IF: 7.099).

10. Investigation of Fractality and variation of fractal dimension in germinating seed, **M S Swapna**, S Sreejyothi, and S Sankararaman, **The European Physical Journal Plus**, 135, 38 (2020), 10.1140/epjp/s13360-019-00061-8, (IF: 3.758).
11. Unravelling the potential of phase portrait in the auscultation of mitral valve dysfunction, **M S Swapna**, S Sreejyothi, A Renjini, Vimal Raj, and S Sankararaman, **The European Physical Journal Plus** 136, 184 (2021), (IF: 3.758).
12. Nonlinear time series and principal component analyses: Potential diagnostic tools for COVID-19 auscultation, **M S Swapna**, Vimal Raj, A Renjini, S Sreejyothi, and S Sankararaman, **Chaos, Solitons & Fractals**, 140, 110246, (2020) 10.1016/j.chaos.2020.110246, (IF: 9.922).  
[SEE APPENDIX FOR FULL LIST OF PUBLICATIONS]

## **B. RESEARCH PUBLICATIONS LISTED IN THE WEBPAGE OF WORLD HEALTH ORGANIZATION**

1. Nonlinear time series and principal component analyses: Potential diagnostic tools for COVID-19 auscultation, **M S Swapna**, Vimal Raj, A Renjini, S Sreejyothi, and S Sankararaman, **Chaos, Solitons & Fractals**, (2020) 10.1016/j.chaos.2020.110246, (IF:9.922).
2. Time series and fractal analyses of wheezing: A novel approach, **M S Swapna**, A Renjini, Vimal Raj, S Sreejyothi, and S Sankararaman, **Physical and Engineering Sciences in Medicine** (2020) 10.1007/s13246-020-00937-5, (IF: 7.099).
3. Bioacoustic signal analysis through complex network features, Vimal Raj, **M S Swapna**, and S Sankararaman, *Computers in Biology and Medicine*, 145, 105491 (2022) 10.1016/j.combiomed.2022.105491 (IF: 6.698)
4. Is SARS CoV-2 a multifractal? – Unveiling the Fractality and fractal structure, **M S Swapna**, Vimal Raj, S Sreejyothi, and S Sankararaman, **Brazilian Journal of Physics**, (2021), 10.1007/s13538-020-00844-w, (IF: 1.326).
5. Neural net pattern recognition based auscultation of croup cough and pertussis using phase portrait features, A Renjini, **M S Swapna**, Vimal Raj, S Sreejyothi and S Sankararaman, *Chinese Journal of Physics*, 72, 214-222 (2021), 10.1016/j.cjph.2021.05.002 (IF:3.957)
6. Complex network-based pertussis and croup cough signal analysis for digital auscultation: a machine learning approach, A Renjini, **M S Swapna**, Vimal Raj, K Satheesh Kumar, S

Sankararaman, Physica D: Nonlinear Phenomena, 133184, (2022), 10.1016/j.physd.2022.133184 (IF: 3.751)

7. Unwrapping the phase portrait features of adventitious crackle for auscultation and classification: A machine learning approach, **M S Swapna**, S Sreejyothi, A Renjini, Vimal Raj, and S Sankararaman, **J. of Biological Physics**, 2021, (IF: 1.56).
8. Fractal and inertia moment analysis of SARS CoV-2 proliferation through replication, Vimal Raj, S Sreejyothi, **M S Swapna**, S Sankararaman, Preprint | medRxiv | ID: ppmedrxiv-20206185
9. Graph based feature extraction and classification of wet and dry cough signals: A machine learning approach, A Renjini, **M S Swapna**, Vimal Raj, and S Sankararaman, Journal of Complex networks, 6 (2021), doi: 10.1093/comnet/cnab039 (IF: 1.492).

### **C. PATENTS APPLIED IN THE FIELD OF LASER APPLICATIONS**

1. Filed the patent titled "System and Method for Continuous Wave Low Power Laser Based Synthesis of Metal Nano Particles" on 19.07.2019 with Indian Patent Office. (Application No. 201941029216 and Filing Date. 19.07.2019.)
2. Filed the patent titled "System and method of convection current assisted chemical free synthesis of stabilised metal nano particles" on 02.03.2020 with Indian Patent Office. (Application No. 202041008870 and Filing Date 02.03.2020).
3. Filed the patent titled "Development of prototype of electronic speckle interferometry based spirometer" on 16.03.2020 with Indian Patent Office. (Application No. 202041011209 and Filing Date 16.03.2020).

### **D. BOOK CHAPTERS**

1. Synthesis and Characterisation of Zinc Incorporated Carbon Matrix-Cellulose, S Amala Devi, H V Saritha Devi, **M S Swapna** and S Sankararaman, International Conference On Energy Environment & Health, Grenze Scientific Society (2020) , ISBN: 978-81-940627-0-7
2. Water quality analysis by thermal lens technique, V Gokul, **M S Swapna** and S Sankararaman, International Conference On Energy Environment & Health, Grenze Scientific Society(2020) , ISBN: 978-81-940627-0-7
3. Speckle Interferometry Based Spirometer, R Sunil Kumar, Vimal Raj, **M S Swapna** and S Sankararaman, International Conference On Energy Environment & Health, Grenze Scientific Society(2020), ISBN: 978-81-940627-0-7

4. Thermal And Spectroscopic Characterization Of Blood, **M S Swapna**, Vimal Raj, and S. Sankararaman, Recent Trends in Biomedical Science and Informatics (RTBSI), Published by Grenze Scientific Society, 207-210 (2018) ISBN: 978-81-936117-3-9.
5. Baby Cry Analysis using Wavelet Transform, **M S Swapna**, S S Jijitha, and S Sankararaman, Recent Trends in Energy and Environment, (NCEE – 2019), Published by Grenze Scientific Society, 182-184 (2019) ISBN: 978-81-936117-9-1.
6. Thermal diffusivity study of copper oxide nanofluid through thermal lens, Riya Sebastian, H V Saritha Devi, **M S Swapna** and S Sankararaman, Recent Trends in Energy and Environment, (NCEE – 2019), Published by Grenze Scientific Society, 27-31 (2019) ISBN: 978-81-936117-9-1.
7. Low cost synthesis of nanocrystalline Zinc Oxide for Solar cells, R Arun kumar, **M S Swapna**, and S Sankararaman, Recent Trends in Energy and Environment, (NCEE – 2019), Published by Grenze Scientific Society, 6-9 (2019) ISBN: 978-81-936117-9-1.
8. Understanding the emotion of baby from cry: FFT analysis, S S Jijitha, **M S Swapna**, and S Sankararaman, Recent Trends in Energy and Environment, (NCEE – 2019), Published by Grenze Scientific Society, 95-98 (2019) ISBN: 978-81-936117-9-1.
9. Thermal Energy Exchange Characteristics Of Medicinal Oils – A Thermal Lens Study, Vimal Raj, **M S Swapna**, H V Saritha Devi and S Sankararaman, Recent Trends in Biomedical Science and Informatics (RTBSI), Published by Grenze Scientific Society, 202-206 (2018) ISBN: 978-81-936117-3-9.

## **E. NATIONAL/INTERNATIONAL CONFERENCE PRESENTATIONS**

1. Unwrapping the soot assisted intra-pigment energy transfer in leaves through the thermal lens technique: Time series analysis in nanobiophotonics, **M S Swapna** and S Sankararaman, ICPPP21 International Conference on Photoacoustic and Photothermal Phenomena, June 19 - 24, 2022, Bled, Slovenia
2. Markov chain approach to rectifier circuits, V Vijesh, K Satheesh Kumar, **M S Swapna**, and S Sankararaman, 4th International Conference “Recent Innovations in Science & Technology (RIST 2022), 08th & 09th July 2022, ERANAD Knowledge City Technical Campus, Malappuram, Kerala, India

3. Development of electronics speckle interferometric weight sensor, V Aswathy Gopal, Abin Oscar, **M S Swapna**, and S Sankararaman, 4th International Conference “Recent Innovations in Science & Technology (RIST 2022), 08th & 09th July 2022, ERANAD Knowledge City Technical Campus, Malappuram, Kerala, India.
4. Novel approach to fish classification: Fractalysis and machine learning based approach, Jothy Thampy, **M S Swapna**, and S Sankararaman, 4th International Conference “Recent Innovations in Science & Technology (RIST 2022), 08th & 09th July 2022, ERANAD Knowledge City Technical Campus, Malappuram, Kerala, India
5. Complex network based fourier analysis for signal processing, V Vijesh, K Satheesh Kumar, **M S Swapna**, and S Sankararaman, 4th International Conference “Recent Innovations in Science & Technology (RIST 2022), 08th & 09th July 2022, ERANAD Knowledge City Technical Campus, Malappuram, Kerala, India
6. Order fluctuation induced tunable light emission from carbon nano system, **M S Swapna** and S Sankararaman, 5<sup>th</sup> International Conference on Nanoscience and Nanotechnology (ICONN-2019), 28-30 January, 2019, SRM Institute of Science And Technology (SRM IST), Chennai, India.
7. Thermal lens study of effect of carbon nanoparticles in the intra-pigment energy transfer in leaves, **M S Swapna**, Vimal Raj, H V Saritha Devi and S Sankararaman, National Laser Symposium- 27, December 3-6, 2018, RRCAT, Indore, Madhya Pradesh (Poster).
8. Sankar-Loeb model for absolute porosity analysis: A thermal lens study, **M S Swapna**, and S Sankararaman, National Laser Symposium- 28, January 8-11, 2020, Vellore Institute of Technology, Chennai (Poster).
9. Thermal induced dynamics in MWCNT-nanofluid: nonlinear time series analyses of thermal lens signal, **M S Swapna**, and S Sankararaman, Raman Optronics Webinar Series (ROWS 2020): Virtual International Conference, 29-09-2020 to 18-12-2020, Department of Optoelectronics, University of Kerala, Kariavattom, Trivandrum.
10. Raman spectral modifications of blood on dengue infection, International Topical Meeting On Applied And Adaptive Optics, **M S Swapna** And S Sankararaman (INTOPMAA-17), IIST, Trivandrum, Aug 2017
11. Synthesis and characterization of carbon Necklace – A simple method, **M S Swapna**, Anamika S Anand, Pooja V Menon, Ashik A S, Krishnanunni R A, V.P. Mahadevanpillai And S Sankararaman, 29<sup>th</sup> Kerala Science Congress, Thiruvalla, Jan 2017.

12. Study of enhanced light harvesting by nanocarbon photon antennae aided leaf pigments, **M S Swapna** & S Sankararaman, 27<sup>th</sup> Swadeshi Science Congress, Amrita University, 7-9 November 2017 [BEST PAPER AWARD].
13. Heart murmur for defect identification – A FFT and wavelet study, **M S Swapna**, Anakha Balakrishnan, , S V Varun, and S Sankararaman, 31<sup>st</sup> Kerala Science Congress, 2-3 February 2019, FMN College, Kollam.
14. Monitoring air pollution through chlorophyll fluorescence, **M S Swapna** and S Sankararaman, 28<sup>th</sup> Swadeshi Science Congress, 7-9 November 2018, CSIR-NIIST, Trivandrum.
15. Green Synthesis Of Advanced Functional Materials And Turning Futile Materials For Fruitful Fuel Cell Applications, **M S Swapna**, H V Saritha Devi, and S Sankararaman, HEAM SCIENTIST 2018, 5-6<sup>th</sup> March, Department of Chemistry, University of Kerala.
16. Investigation of carbon nanotubes and carbon dots from camphor soot, **M S Swapna**, Saritha Devi H V and S Sankararaman, National conference on recent trends in Engineering and Technology, Trinity college, Trivandrum, Feb 2017.
17. Synthesis of carbon nanoparticles from sesame oil, **M S Swapna**, Anamika S Anand, Pooja V Menon and S Sankararaman, National Seminar on Theoretical and Experimental Physics -2016, Govt. Women's College, TVM, Dec 2016.
18. Synthesis and characterisation of aluminium nano particles by continuous wave low power laser ablation, **M S Swapna**, Ashik A.S, Krishnanunni R A, and S Sankararaman National Seminar on Theoretical and Experimental Physics -2016, Govt. Women's College, TVM, Dec 2016.
19. Impact of aging of internal combustion engine on carbon nanotube formation– A Raman spectroscopic analysis, **M S Swapna**, Dani Dileep, R C Arsha, And S Sankararaman, Trips-2017: National Workshop On Trends In Physical Sciences, Aug 2017.
20. Defective heart identification through murmur analysis- A fractal and phase portrait study, **M S Swapna**, Anakha Balakrishnan, K Satheesh Kumar, and S Sankararaman, National Seminar on Theoretical and Experimental Physics (STEP-18), 24-26 October 2018, Govt. College for Women, Trivandrum.
21. Thermal And Spectroscopic Characterization Of Blood, **M S Swapna**, Vimal Raj, and S Sankararaman, INFOFEST 2018, National Seminar on Recent trends in Biomedical Science and Informatics, APRIL 27<sup>TH</sup>-28<sup>TH</sup> 2018, Sree Ayyapa College, Chenganoor.



22. Fluorescent study of sodium incorporated natural carbon matrix, **M S Swapna**, H V Saritha Devi, G Ambadas, and S Sankararaman, National Seminar on Advanced Materials-ADMAT 2018, School of Pure and Applied Physics, 23<sup>rd</sup> – 24<sup>th</sup> of March 2018, Mahatma Gandhi University.
23. Time Series and FFT analysis of Mitral Regurgitation, **M S Swapna**, K Satheesh Kumar K, and S Sankararaman, 32nd Kerala Science Congress, 25-27 January 2020, Yuvakshetra Institute of Management Studies, Mundoor, Palakkad.
24. Analysis of carbon nanoparticle assisted intra-pigment energy transfer in leaves through green technology, **M S Swapna**, and S Sankararaman, National seminar on Green Technologies for Natural Product Analysis, November 8<sup>th</sup> 2019, Department of Botany, University of Kerala, Karyavattom, Trivandrum.
25. Baby Cry Analysis using Wavelet Transform, **M S Swapna**, S S Jijitha, and S Sankararaman, National Conference on Energy and Environment (NCEE – 2019), Feb 15<sup>TH</sup>-16<sup>TH</sup> 2019, Sree Ayyapa College, Chenganoor.

## **F. WORKSHOP ATTENDED**

1. One Week Online Training Program on Statistical Data Analysis using "R" Software Organised By Science Tech Institute, Lucknow, UP, India, December 21-27, 2021.
2. Seven Day National Online WORKSHOP ON 'R programming for statistical data analysis' organized by St. Xavier's college of management and technology, Patna, Bihar in association with Lore & Ed Research Associates, Kottayam, march 23-31, 2022.

## **G. INVITED LECTURES**

1. Delivered an invited talk in the 'Capacity Building Lecture Series 2020, in School Of Nanoscience and Biotechnology, Shivaji University, Kolhapur Maharashtra, India to undergraduate and post graduate students on 27/02/2021.

## **H. AWARDS**

1. **Sir C. V. Raman Best Researcher Award 2022 in Optoelectronics**, International Multidisciplinary Research Foundation, Institute of Higher Education and Research, Andhra Pradesh, India 26-01-2022

2. **DR. V. R. Ravindran Memorial Prize** for the Best Researcher in the year 2021 constituted by The Optoelectronics Alumni Association of Kerala University (OPTAAK).
3. **DR. V. R. Ravindran Memorial Prize** for the Best Researcher in the year 2020 constituted by The Optoelectronics Alumni Association of Kerala University (OPTAAK).
4. **DR. V. R. Ravindran Memorial Prize** for the Best Researcher in the year 2019 constituted by The Optoelectronics Alumni Association of Kerala University (OPTAAK).
5. **DR. V. R. Ravindran Memorial Prize** for the Best Researcher in the year 2018 constituted by The Optoelectronics Alumni Association of Kerala University (OPTAAK).
6. **BEST PAPER AWARD-** Raman Optronics Webinar Series (ROWS 2020):Virtual International Conference, Department of Optoelectronics, University of Kerala, Kariavattom, Trivandrum, 29-09-2020 to 18-12-2020 - "Thermal induced dynamics in MWCNT-nanofluid: nonlinear time series analyses of thermal lens signal".
7. **BEST PAPER AWARD IN MATHEMATICAL AND STATISTICAL SCIENCES-** 32nd Kerala Science Congress, Yuvakshetra Institute of Management Studies, Mundoor, Palakkad, 25-27 January 2020 for the "Time Series and FFT analysis of Mitral Regurgitation".
8. **BEST PAPER AWARD-** 27<sup>th</sup> Swadeshi Science Congress, Amrita University, 7-9 November 2017 for the "Study of enhanced light harvesting by nanocarbon photon antennae aided leaf pigments".
9. **First prize in the short presentation** competition as part of National seminar on Green Technologies for Natural Product Analysis, November 8<sup>th</sup> 2019, Department of Botany, University of Kerala, Karyavttom, Trivandrum - Analysis of carbon nanoparticle assisted intra-pigment energy transfer in leaves through green technology.
10. **First prize in Three minute thesis competition** at Department Level, organized by University of Kerala as part of Science Week Celebrations 2019.
11. Certificate of Appreciation by IQAC, University of Kerala in 2017 for the **outstanding research achievements**.

## G. RESEARCH IN NEWS MEDIA

- <https://publishing.aip.org/publications/latest-content/low-cost-disease-diagnosis-by-mapping-heart-sounds/>
- <https://physicsworld.com/a/listening-for-disease-heart-sound-maps-provide-low-cost-diagnosis/>

- <https://www.sciencedaily.com/releases/2022/08/220830131046.htm>
- <https://www.eurekalert.org/news-releases/962922>
- <https://www.newsweek.com/scientists-build-system-allows-heart-diseases-detection-1738538>
- <https://publishing.aip.org/publications/latest-content/low-cost-disease-diagnosis-by-mapping-heart-sounds/>
- <https://www.deccanchronicle.com/nation/in-other-news/250819/invisible-ink-paint-from-soot.html>

## MEMBERSHIP IN ACADEMIC BODIES

- Member, Raman International Optronic Society (RIOS), 2022
- Secretary, Raman International Optronic Society (RIOS), 2022
- Member, International Multidisciplinary Research Foundation, Institute of Higher Education and Research, Andhra Pradesh, India, 2022

## ADDITIONAL SKILLS

- **Organizing and Programme Committee Member**, ICPPP21 International Conference on Photoacoustic and Photothermal Phenomena, June 19 - 24, 2022, Bled, Slovenia
- **Student Convenor**, Raman Optronics Webinar Series (ROWS 2020 and ROWS 2021): Virtual International Conference, Department of Optoelectronics, University of Kerala, Kariavattom, Trivandrum (7<sup>th</sup> November - 7<sup>th</sup> December).
- Regularly work with Operating Systems- Windows (XP/7/8/10)
- Familiar with MATLAB, TISEAN, RStudio, Image J software
- **Experience in handling equipment like Raman Spectrophotometer, Fourier Transform Infrared spectrometer, Ultra-Violet Visible spectrophotometer, Photoluminescence Spectrometer, Laser.**
- Acquired **A<sup>+</sup>** grade in the course **MS Office and Internet** conducted by LBS Centre for Science & Technology, TVPM.
- Got **First place** in the **Intensive course on Personality Development & Communicative English** organized by Centre for Adult, Continuing Education and Extension, University of Kerala.

- Active in National Service Scheme during graduation course.
- Interested in soot painting

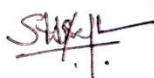
## REFERENCES

1. Prof. S. Sankararaman  
Head, Department of Optoelectronics, Kariavattom Campus, University of Kerala,  
Thiruvananthapuram - 695581  
Mob: 9447421844 ; Email: drssraman@gmail.com
2. Prof. Mladen Franko  
University of Nova Gorica, Slovenia  
Email: mladen.franko@ung.si
3. Dr. Humberto Cabrera  
ICTP, Italy  
Mob: +393459187450; Email: hcabrera@ictp.it
4. izr. prof. dr. Dorota Korte  
Laboratory for Environmental and Life Sciences,  
University of Nova Gorica, Slovenia  
Mob: +38630380465; Email: dorota.Korte@ung.si

## DECLARATION

I, M S Swapna, hereby declare that the details given above are true to the best of my knowledge.

Thiruvananthapuram  
21-11-2022

  
Swapna M S



## **APPENDIX – FULL LIST OF PUBLICATIONS**

### **A. LASER APPLICATIONS**

1. Thermal Lensing of Multi-Walled Carbon Nanotube Solutions as Heat-Transfer Nanofluids, **M S Swapna**, Vimal Raj, Humberto Cabrera, and S Sankararaman, **ACS Applied Nanomaterials** 4, 3416–3425 (2021), 10.1021/acsanm.0c03219, (IF: 6.14).
2. Development of prototype of electronic speckle interferometry based spirometer, **M S Swapna**, Arun Kumar, Sunil Kumar, S Sreejyothi, Vimal Raj, and S Sankararaman, **Optics and Lasers in Engineering**, 136, 106318 (2021) 10.1016/j.optlaseng.2020.106318, (IF: 5.666).
3. Low power CW laser-assisted synthesis of plasmonic aluminium nanoparticles using low duty cycle optical chopper, **M S Swapna**, S Sankararaman, **Canadian Journal of Physics** 100(3) (2021), 10.1139/cjp-2021-0042 (IF: 1.358)
4. Scientific validation of Vedic knowledge on 'Rajatam' and the convection-current assisted synthesis of silver nanoparticles, **M S Swapna**, and S Sankararaman, **Indian Journal of Traditional Knowledge**, (2022) (IF: 1.091)
5. Soot effected sample entropy minimization in nanofluid for thermal system design: A thermal lens study, **M S Swapna**, Vimal Raj, K Satheesh Kumar, and S Sankararaman, **Journal of Molecular Liquids**, 318, 114038 (2020) 10.1016/j.molliq.2020.114038, (IF: 6.633).
6. Downscaling of Sample Entropy of Nanofluids by Carbon Allotropes: A Thermal Lens Study, **M S Swapna**, Vimal Raj, K Satheesh Kumar, and S Sankararaman, **Chaos: An Interdisciplinary Journal of Nonlinear Science**, 30, 073116 (2020), 10.1063/5.0009756, (IF: 3.741)
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