**CURRICULUM VITAE**



Dr. Radhu S.

Assistant Professor

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**Professional Qualifications**

* Approved **Research guide** in M.G. University, Kottayam (2021)
* **PhD in Physics (awarded in July 2015)**

Joint PhD under the guidance of Prof. C. Vijayan, Department of Physics, Indian Institute of Technology (IIT), Madras, India and Prof. Ji Wei, Department of Physics, National University of Singapore (NUS), Singapore

* **Masters in Physics** (2006-2008) Cochin University of Science and Technology, Kerala, India
* **Bachelors in Physics** (2003-2006) M.G.University- St. Teresa’s College, Ernakulam.

**Awards/Fellowships**

* UGC – JRF with NET (2007 March)
* Second rank for M.Sc. Physics in Cochin University of Science and Technology (2008)
* First rank for B.Sc. in M.G. University (2006)

**Research Experience**

* Profound experience in the synthesis, characterization and non-linear optical studies of contrasting agents for multi-photon microscopy such as ZnS nanoparticles and Mn2+ doped ZnS nanoparticles.
* In-depth experience in design, synthesis and photophysical properties of nanocomposites and hetero-nanostructures such as ZnO/Ag nanocomposites, CdS-CdSe-CdS heterojunction nanorods, Au-Ag alloy nanoparticles, Ag/Au and Au/Ag core-shell nanoparticles
* Demonstrated experience in synthesis and non-linear optical studies in electrospun nanofibers of PVA ((Poly Vinyl Alcohol) and PVP (Poly Vinyl Pyrrolidone) decorated with silver/gold nanoparticles
* Thorough experience in the synthesis of oxides and tungstate nanomaterials such as TiO2 nanoparticles, Fe (iron) ions doped TiO2 nanoparticles, MnWO4 and terbium and europium doped MnWO4 nanoparticles.

**Ongoing research works**

* MnWO4 doped with Terbium and Europium for LED applications. MnWO4 was prepared by chemical precipitation.
* Synthesis of polyaniline - carbon nanotube (CNT) nanocomposites for energy storage devices is another research interest. This work is in progress in collaboration with M.A. College, Kothamangalam.
* Synthesis of nanocomposites of graphene and tungstate nanomaterials for supercapacitor applications

**Expertise in characterization techniques such as**

* XRD, UV-Visible spectroscopy, Photoluminescence spectroscopy, Raman Spectroscopy, Transmission Electron Microscopy, Scanning Electron Microscopy, Energy Dispersive X-Ray Analysis (EDAX), X-ray Photoelectron Spectroscopy
* Non-linear Optical Characterization by Z-scan and multi-photon absorption induced photoluminescence
* Carrier dynamics by transient pump-probe spectroscopy.
* Photocatalytic studies
* Cyclic Voltammetry
* Electrochemical impedance measurements
* Galvanostatic charge-discharge testing (GCD)

**Guideship experience**

Guided 8 post-graduate and 26 graduate students for their project works

Approved Ph.D. research guide in M.G. University (since 2021)

**Software**

Origin, MATLAB, Web of Science

**Publications in UGC Care List**

1. VA Nisha George, Radhu Subha, N.L. Mary,Agnes George, Functionalized electrospun nanofibers integrated with Ag/Au nanoparticles as a platform for enhanced nonlinearity, Optical and Quantum Electronics 54, 198 (2022).
2. Nisha George, Radhu Subha, Mary. N. L, Agnes George, Remya Simon, Electrospun polymer nanofibers decorated with Ag/Au nanoparticles — A smart material with enhanced nonlinearity, Optik, 204, 164180 (2020).
3. S. Radhu, Photocatalytic Degradation of Textile Dye Molecules by Ag@Au Core-Shell Nanoparticles, Materials Today Proceedings, 25, 285 – 288 (2020).
4. Nisha George, Radhu Subha, Anitta Rose Thomas, Mary. N. L, Plasmon Enhanced Two-photon Absorption in Modified Styrene – Maleic Anhydride Silver Nanocomposites, Nanostructures and Nano-objects 11 32–38 (2017).
5. Nisha George, Radhu Subha, Anitta Rose Thomas, Mary. N. L, Plasmon-enhanced, two-photon absorption in Schiff-base-modified poly(styrene-co-maleic anhydride)–gold nanocomposites, J. Appl. Polymer Sci., 134, 45377 (2017).
6. Radhu Subha, Venkatram Nalla, Lim Eugene, Wang Shuai, Chin Wee Shong, C. Vijayan and Wei Ji, Slow down of charge transfer owing to Auger recombinatin and two-photon action cross-section in CdS-CdSe-CdS segmented nanorods, ACS Photonics, 2, 43-52 (2015).
7. Radhu Subha, Venkatram Nalla, Jung Ho Yu, Samuel Woojoo Jun, Kwangsoo Shin, Taeghwan Hyeon, C. Vijayan and Wei Ji, Two-photon enhanced three-photon absorption in Mn2+-doped ZnS QDs in NIR-I window, AIP Conf.Proc., 1620, 401 (2014).
8. Radhu Subha, Venkatram Nalla, Jung Ho Yu, Samuel Woojoo Jun, Kwangsoo Shin, Taeghwan Hyeon, C. Vijayan and Wei Ji, Efficient Photoluminescence of Mn2+-doped ZnS Quantum Dots Excited by Two-Photon Absorption in Near-IR Window II, J. Phys. Chem. C, 117, 20905-20911 (2013).
9. S. Radhu and C. Vijayan, Observation of red emission in Wurtzite ZnS nanoparticles and the investigation of phonon modes by Raman Spectroscopy, Mater. Chem. Phys., 129,1132-1137 (2011).
10. S. Radhu, C. Vijayan, Suchand Sandeep and Reji Philip, Tunable optical limiting action due to nonlinear absorption in ZnO/Ag nanocomposites. AIP Conf. Proc., 1349, 425- 426 (2011).

**Book chapter**

Contributed a book chapter - Basics of Multi-photon Microscopy in the book “Physics of Nonlinear Optics”, Authored by Y.V.G.S. Murthy and C. Vijayan, **Springer International Publishing, ISBN:** 978-3-030-73978-2, Pages 157-168. <https://www.springer.com/gp/book/9783030739782>

**Conference Presentations**

1. **Radhu S.,** Photocatalytic Degradation of Textile Dye Molecules by Ag@Au Core-Shell Nanoparticles**,**International Conference on Science and Technology of Advanced Materials (STAM 20), Mar Athanasius College, Kothamangalam, Kerala 14 January-16 January (2020).
2. Served as **a resource person in National Seminar on Nanomaterials – Synthesis and Characterization**, organized by Post Graduate Department of Physics, Al-Ameen College, Edathala, 6th and 7th December (2018), Topic :- Introduction to hetero-nanostructures.
3. **Radhu S.**, Juliana Fernandez, Christina Jaina V.G., Photocatalytic degradation of textile dye molecules using Au-Ag alloy nanoparticles, Annual Physics Symposium, St. Teresa’s College, Ernakulam, 7-8 December (2017), ISBN:978-93-5291-017-5, 56-60.
4. **Radhu Subha**, Venkatram Nalla, Eugene J. Q. Lim, Cherianath Vijayan, Barry B. S. Huang, Wee Shong Chin and Wei Ji, Two-photon Absorption Induced Photoluminescence in CdS-CdSe- CdS segmented nanorods, Annual Physics Symposium, St. Teresa’s College, Ernakulam, 1-2 February (2017).
5. Mary Shalmia M.T., Sreekutty Prathapan, **Radhu Subha**, Photocatalytic degradation of textile dye using chemically synthesized silver nanoparticles, Annual Physics Symposium, St. Teresa’s College, Ernakulam, 1-2 February (2017).
6. **Radhu Subha**, Venkatram Nalla, C. Vijayan and Wei Ji, Observation of two-photon absorption induced photoluminescence in Mn2+-doped ZnS QDs in NIR-II window, National Conference in Current Trends in Material Science CTMS-16, Chengannur, Kerala, 28 March – 30 March (2016) (**Best Paper Award)**
7. **Radhu Subha,** Venkatram Nalla, Xiaobo Feng, C. Vijayan and Ji Wei, Enhanced Photoluminescence due to two-photon enhanced three-photon absorption in Mn2+-doped ZnS QDs, Optics-14, International Conference in Light, NIT Calicut, 18 March -21 March (2014) (**Best Paper Award)**
8. **Radhu Subha**, Venkatram Nalla, Xiabo Feng, C. Vijayan and Wei Ji, ‘Two-photon enhanced three-photon absorption in ZnS:Mn2+QDs’, 7th International Conference on Materials for Advanced Technologies (ICMAT), Singapore, 30 June-5 July (2013).
9. **S. Radhu**, C. Vijayan, Suchand Sandeep and Reji Philip, ‘Tunable optical limiting action due to non-linear absorption in ZnO/Ag nanocomposite’, 55th DAE Solid State Physics Symposium 2010, Manipal University, Karnataka. December 26-30 (2010).
10. **S. Radhu** and C. Vijayan, ‘Photoluminescence and Raman Spectroscopic Studies in Wurtzite ZnS nanoparticles’, National Seminar on current trends in Materials Science CTMS-2011, Chengannur, Kerala, August 4-7 (2011).
11. **S. Radhu**, C. Vijayan, Suchand Sandeep and Reji Philip, ‘Tunable optical limiting action due to non-linear absorption in ZnO/Ag nanocomposite’, 50th year of lasers, IIT Madras, October 30 (2010).