

Faculty Profile

Personal Details

Name: Dr. KALA M. S.
Department: Physics
Designation: Associate Professor
Date of Joining: 7 – 10 - 1994
Educational Qualifications: M. Sc., Ph. D.
Professional Experience: 24 years

Research Details

Area: Nanoscience, Material Science, Thin films

Research Scholars : Completed : 1
: Submitted : 1
Pursuing : 4

Major and Minor Projects : 2 Minor Projects

| Title of the Project | Name of the Funding Agency | Period | Remarks |
|---|-----------------------------|-------------|-----------|
| Synthesis and characterization of nanofilms | U. G. C. (Minor Project) | 2007 - 2009 | Completed |
| Investigation on the electrical and optical properties of spin coated polymer – nano composite thin films | U. G. C. (Minor Project) | 2012 - 2014 | completed |

Honors and Awards

Positions held in College

- Governing Council member of the college from 2014 for two consecutive terms
- Member of the Research Committee of the college (TRACC) from 2011 onwards

- Coordinator of Ph. D. course work of the research students of the college
- Head of the Purchase Committee of the college
- Joint coordinator of IQAC

Publications

1. In Situ Synthesis of Silver Nanospheres, Nanocubes, and Nanowires over Boron-Doped Graphene Sheets for Surface-Enhanced Raman Scattering Application and Enzyme-Free Detection of Hydrogen Peroxide
Anju K. Nair, Kala Moolepparambil Sukumaran Nair, Sabu Thomas, Didier Rouxel, Subbiah Alwarappan and Nandakumar Kalarikkal , *Langmuir*, **2018**, 34 (45), pp 13603–13614
2. In situ dose dependent gamma ray irradiated synthesis of PMMA–Ag nanocomposite films for multifunctional applications
K. B. Bhavitha, Anju K. Nair, Hanna Mariya, Jiya Jose, Anshida Mayeen, Kala M. S., Abhijit Saha, Sabu Thomas, Oluwatobi S. Oluwafemi, Nandakumar Kalarikkal , *New Journal of Chemistry* 2018, **42** (19) pp 15750 – 15761
3. Reduced graphene oxide produced by chemical and hydrothermal methods
Priya Parvathi Ameena Jose, M. S. Kala, Sabu Thomas and Nandakumar Kalarikkal *Materials Today Proceedings* **2018**, 5 pp 16306
4. Silver attached reduced graphene oxide nanocomposite as an ecofriendly photocatalyst for organic dye degradation
Priya Parvathi Ameena Jose, M. S. Kala, Nandakumar Kalarikkal and Sabu Thomas, *Research on Chemical Intermediates*, 2018, **44** pp 5597
5. Multifunctional nitrogen sulphur co – doped reduced graphene oxide Ag nanohybrids (sphere, cube and wire) for nonlinear optical and SERS applications
Anju K. Nair, K.B. Bhavitha, Sreekanth Perumbilavil , Pranitha Sankar, Didier Rouxel, M.S. Kala, Sabu Thomas, Nandakumar Kalarikkal, *Carbon*, Vol. 132, pp 380 – 393 (2018)
6. Dopamine functionalization of BaTiO₃ : an effective strategy for the enhancement of electrical, magnetoelectric and thermal properties of BaTiO₃ – PVDF – TrFE nanocomposites
Anshida Mayeen, Kala M. S., M. S. Jayalakshmi, Sabu Thomas, Didier Rouxel, Jacob Philip, R. N. Bhowmik, Nandakumar Kalarikkal, *Dalton Transactions*, Vol. 47, pp 2039 – 2051, 2018
7. Investigating solvent effects on aggregation behavior, linear and nonlinear optical properties of silver nanoclusters

K. B. Bhavitha, Anju K. Nair, Sreekanth Perumbilavil, Saju Joseph, M. S. Kala, Abhijit Saha, R. Aravind Narayanan, Nishar Hameed, Sabu Thomas, Oluwatobi S. Oluwafemi, Nandakumar Kalarikkal, *Optical Materials*, Vol. 73, pp 695 – 705, 2017

8. Boron doped graphene wrapped silver nanowires as an efficient electrocatalyst for molecular oxygen reduction
Anju K. Nair, Vineesh Thazheveetil, Nandakumar Kalarikkal, Sabu Thomas, M. S. Kala, Veena Sahajwalla, Rakesh K. Joshi & Subbiah Alwarappan, *Scientific Reports* | 6:37731 | DOI: 10.1038/srep37731, Dec. 2016
9. Rapid and facile synthesis of graphene oxide quantum dots with good linear and nonlinear optical properties,
El hadji Mamour Sakho, Oluwatobi S. Oluwafemi, Sreekanth Perumbilavil, Reji Philip, M. S. Kala, Sabu Thomas, Nandakumar Kalarikkal *Journal of Materials Science: Materials in Electronics (JMSE)* vol. 27, issue 10, pp 10926 33, Oct.2016
10. Slowness surfaces, ray velocity surfaces and phonon focusing in high T_c superconductor crystals.
J. Philip and M. S. Kala, *Pramana*, **49**, 555 (1997)
11. Anisotropy in elastic wave propagation in selected high T_c superconductors
M. S. Kala and J. Philip, *Indian Journal of Physics*, **71A (2)**, 117 (1997)
12. Effect of Ga doping on the elastic properties of $GdBa_2Cu_3O_{7-\delta}$ high T_c superconductor : An ultrasonic study.
M. S. Kala, R. Sreekumar, J. Philip and N. C. Mishra, *Phys..Status Solidi (a)*, **158**, 537 (1996)
13. Effect of SnO_2 addition on the thermal diffusivity of high T_c superconductor $YBa_2Cu_3O_{7-\delta}$.
M. S. Kala, J. Philip, M. T. Sebastian and A. D. Damodaran, *Advances in Phonon Physics*, Wiley Eastern (1996)
14. Spectral characteristics of the blood of streptozotocin diabetic rats using photoacoustic technique.
T. T. Shreedevi, P. S. Padayatti, M. S. Kala, J. Philip and C. S. Paulose, *Current Science*, **66**, 763 (1994)

Book Chapters

1. Graphene based hybrids for energy storage and energy conversion applications, **Anju K Nair**, Kala M S, Sabu Thomas and Nandakumar Kalarikkal, *Polymeric and Nanostructured Materials- Synthesis, Properties and Advanced Applications*, Apple Academic Press, ISBN hard: 978-1-77188-644-4, 2018, 255-272

2. Optical Characterization of Nanomaterials, **Anju K Nair**, Layena Shaji, Anshida Mayeen, Kala M S, Sabu Thomas, Nandakumar Kalarikkal, Synthesis and Characterization of Nanomaterials: Advances and Key Technologies, Micro and Nanotechnologies Series, Elsevier, ISBN: 978-0-08-101973-3, 2018, 269-299.

Refresher and Orientation Course Attended

Presentations in Seminars/Conferences Attended

1. Structural and magnetoelectric investigations of CaFe₂O₄- PVDF – HFP self poled nanofibres
Anshida Mayeen, Sabu Thomas, Kala M. S., Nandakumar Kalarikkal,
Annual Physics Symposium, St. Teresa's College, Ernakulam 7-8 January 2019
2. Core shell architecture based on cobalt ferrite and Zinc oxide
Praveena M. G., Kala M. S.
Annual Physics Symposium, St. Teresa's College, Ernakulam 7-8 January 2019
3. Synthesis and characterization of silver nanoparticles and conductivity study of Ag/PVA nanocomposites.
Sruthy Xavier, Anjumol Joy, Ifrath Zameena C. K and Kala M. S.,
Annual Physics Symposium, St. Teresa's College, Ernakulam 7-8 January 2019
4. Dielectric performance of PMMA film reinforced with GO/Ag hybrid nanocomposites,
Priya Parvathi Ameena Jose, Kala M.S
National Seminar On Nano Materials- Synthesis And Characterization, organized by Post Graduate Department of Physics, Al-Ameen College, Edathala on 6-7 December 2018.
5. Monitoring UV Degradation of Polyurethane by a Nondestructive Technique
Anu John A, Kala M S International Conference On Advances In Materials Science ICAMS 2018 organised by Sree Sankara College, Kalady on 24th -25th October 2018 p - 137
6. Synthesis and characterization of zno flower / reduced graphene oxide composites
Susan Mathew, Kala M.S International Conference OnAdvances In Materials Science ICAMS 2018 organised by Sree Sankara College, Kalady on 24th -25th October 2018 p 263 -270
7. Graphene oxide /silver hybrid as SERS substrate for detection of Malachite Green –an antifungal agent used in aquaculture
Priya Parvathi Ameena Jose, Kala M.S International Conference OnAdvances In Materials Science ICAMS 2018 organised by Sree Sankara College, Kalady on 24th - 25th October 2018 p -210 - 219

8. Synthesis And Characterisation Of Silver Nanowires
Aparna JyothiKumar and Kala. M.S International Conference on Chemistry and Physics of Materials,organized by St. Thomas College, Trichur, 19-21 December 2018
9. Gas Sensing Application Of Molybdenum Trioxide
Richu Rajan and Kala M. S., International Conference on Chemistry and Physics of Materials, organized by St. Thomas College, Trichur, 19-21 December 2018
10. Reduced graphene oxide wrapped Ag nanostructures for enhanced SERS activity
Anju K. Nair, M. S. Kala, Sabu Thomas and Nandakumar Kalarikkal
AIP Conference Proceedings, **1942**, 050094 (2018); doi: 10.1063/ 1.5028725
11. Synthesis of hydrothermally reduced graphene oxide and its luminescent behaviour
Priya Parvathy Ameena Jose and Kala M. S.
Kerala Science Congress organized by the Kerala State Council for Science, Technology & Environment on 28-30 January 2017.
- 12.Green synthesis and study of silver nanoparticles with special reference to Antimicrobial Activities and conductivity study of PANI – Ag nanocomposites.
Syno Paul, Athira S. Kumar, Mitchell M. Beveira, Ann Mary V. B., Lakshmi Priya, Reema Kuriakose, Kala M. S. and Ushamani M.
National Seminar on Advancements in Polymer Science and Technology organized by Post Graduate Department of Chemistry, St. Teresa's College, Ernakulam on 24 – 25 January 2016
13. Synthesis of reduced graphene oxide by chemical and hydrothermal methods
Priya Parvathy Ameena Jose and Kala M. S.
International Conference on Advanced Materials SCICON'16,organized by the Department of Sciences, AMRITA VishwaVidhyapeetham, Coimbatore on 19-21 December 2016.
- 14.Studies on the structural & Electrical properties of Silver nanoparticles doped polyvinyl alcohol thin films
Sreekutty C. S., Midhu Vincent, Ushmani M. and Kala M. S.
Advances in Applied Mathematics, Material Science & Nanotechnology for Engineering & Industrial Applications: ICAMMN-2K16 organized by FISAT, Angamaly on 7-9 Jan 2016
15. Electrical conductivity studies on PVA – Ag spin coated nanocomposite films
Benazeer K., Veena Vijayan, Ushamani M. and Kala M. S.

International conference on Photonics and Solar Water Splitting (PSWS – 2015), organized by Department of Physics, St. Teresas College, Ernakulam on 12 – 13 March 2015

16. Starch capped silver nanoparticles as an LSPR – based optical sensor for hydrogen peroxide

Anju K. Nair, Riju Chandran, Mohammed Arif P., Kala M. S., Nandakumar Kalarikkal International Conference on Energy Harvesting Storage and Conversion (IC – EEE 2015) , 4 – 7 February 2015

17. Preparation, Characterisation and antibacterial study on Silver and copper oxide nanoparticles and conductivity study on PVC – silver nanocomposite thin films

Archana Elizabeth, Safna Subair, Kala M. S. and Ushamani M.

Proceedings of the UGC sponsored National seminar on Current Trends in Material Science organized by Department of Physics, Aquinas College, Edacochin on 13 – 14 August 2014

18. Synthesis and characterization of spin – coated polyaniline – silver nanocomposite thin films.

Ashna Josey, Reyha Benedict, Ushmani M. and Kala M. S.

Proceedings of the national seminar on ‘Recent trends in conducting polymers and polymer nano structures’ organized by Department of Physics, Aquinas College, Edacochin on 29 – 30 August 2013 sponsored by U. G. C.

19. Synthesis and characterization of nano – structured copper tungstate films prepared at different temperatures by SILAR method

Neethu. T, Anu P. Das and Kala M. S.

Proceedings of the National seminar on “Nano structured Materials and Nano photonics” organized by Department of Physics, St. Teresa’s College, Ernakulam, on 4-5 February 2010, sponsored by U. G.C.

20. Preparation and characterization of nano – structured CuWO_4 film prepared by SILAR method.

Kala M. S., Anu P. Das and Neethu T.

Proceedings of the National Seminar on ‘Active and Smart Materials’ organized by Department of Physics, St. Paul’ s College, Kalamassery on July 2009, sponsored by U. G. C.

21. Resonant ultrasound technique to determine elastic constants of small size crystals – computational method

M. S. Kala and J. Philip, National Symposium on Instrumentation (NSI -22), 22- 25 October 1997, p.33

22. Phonon focusing in high T_c superconductors.

M. S. Kala and J. Philip, Proc. DAESSPS, vol. 39C, 49 (1996)

23. Investigations of thermal and elastic properties of selected high T_c superconductors

M. S. Kala , Proc. DAESSPS, vol. 39C, 49 (1996)

24. Specific heat of Al based quasicrystal alloys.

M. S. Kala , J. Philip, . Srinivasan and E. S. R. Gopal, Proc. DAESSPS, vol. 36C, 113 (1993)