
Dr. Rajesh Kumar B

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Education

Ph.D. in Physics from Mahatma Gandhi University, Kerala, India

B.Ed. in Physical science, from Mahatma Gandhi University, Kerala, India

M.Phil. in Photonics, from the Department of Optoelectronics University of Kerala, Kerala, India

M.Sc. in Physics, from Mahatma Gandhi University, Kerala, India

B.Sc. in Physics, from Mahatma Gandhi University, Kerala, India

Pre-Degree, from Mahatma Gandhi University, Kerala, India

SSLC from the Board of Public Examinations, Kerala, India

Research Interests

Nanoscale engineering, Plasmonics, Quantum dots, Thin films, Fluorescence spectroscopy, photothermal spectroscopy.

Research Experience

Ph.D. Tunable thermo-optical properties of fluids using nanoparticles

Description A laser based dual-beam thermal-lens technique that offers the advantages of non-contact nature and high precision is employed to study the dye-nanoparticle (Rhodamine 6G-gold nanoparticle) interaction and to investigate how energy transfer is happening between dye molecules and a metallic nanoparticle. Additionally, this technique is employed to evaluate the thermal diffusivity of gold nanofluid-ethylene glycol mixture.

M.Phil. Effect of substrate temperature on the structural and optical properties of laser ablated zirconium dioxide films

Description Zirconium dioxide films are prepared by pulsed laser deposition method. The effect of substrate temperature on the structural and optical properties of these films is studied.

Teaching Experience

Worked as an Assistant Professor (on Ad hoc basis) in the Department of Physics, National Institute of Technology, Calicut, India from 28-7-2015 to 16-12-2015, 28-12-2015 to 20-05-2016, 18-7-2016 to 7-12-2016, 15-12-2016 to 15-5-2017 and 11-07-2017 to 30-11-2017.

Assistant Professor, Department of Physics, Nirmala College Muvattupuzha from 04-06-2018 to till date.

Languages Known

Malayalam and English

Computer Skills

Software
Programming
Tool

MS Office, Photoshop
C++
MATLAB

Awards

Won the Dayawathi Rostogi award for the best poster presentation in the International conference on molecular spectroscopy of advanced materials and biomolecules held at Bishop Moore College, Mavelikara, Kerala, India on 7-9th August 2012.

Other Activities and Hobbies

Served as the President of Society of Photo Optical Instrumentation Engineers (SPIE, USA), Catholicate College student chapter.

Reviewer of the Journal 'Plasmonics' (Springer)

Publications

International Journals

- (1) Shape dependent heat transport through green synthesized gold nanofluids, Jisha John, Lincy Thomas, **B. Rajesh Kumar**, Achamma Kurian and Sajana D George, **Journal of Physics D: Applied Physics**, Volume 48, page 335301(2015).
- (2) Thermal-lens probing of the enhanced thermal diffusivity of gold nanofluid-ethylene glycol mixture, **B. Rajesh Kumar**, N. Sheemena Basheer, Achamma Kurian and Sajana D. George **Journal of thermal analysis and calorimetry**, Volume 119, pages 453-460 (2015).
- (3) Study of concentration dependent quantum yield of Rhodamine 6G by gold nanoparticles using thermal-lens technique, **B. Rajesh Kumar**, N. Sheemena Basheer, Achamma Kurian and Sajana D. George, **Applied Physics B**, Volume 115, pages 335-342 (2014).
- (4) Thermal-lens study on the distance dependent energy transfer from Rhodamine 6G to gold nanoparticles, **B. Rajesh Kumar**, N. Sheemena Basheer, Achamma Kurian and Sajana D. George, **International Journal of Thermophysics**, Volume 34, Pages 1982-1992 (2013).
- (5) Silver nanoparticle size-dependent measurement of quantum efficiency of Rhodamine 6G, N. Sheemena Basheer, **B. Rajesh Kumar**, Achamma Kurian and Sajana D. George. **Applied Physics B**, Volume 113, Pages 581-587 (2013).
- (6) Thermal-lens probing of distance dependent fluorescence quenching of Rhodamine 6G by silver nanoparticles, N. Sheemena Basheer, **B. Rajesh Kumar**, Achamma Kurian and Sajana D. George, **Journal of Luminescence**, Volume 137, Pages 225-229 (2013).
- (7) Thermo-optic characterization of neodymium/nickel doped silica glasses prepared via sol-gel route, Anny Manuel, **B. Rajesh Kumar**, N. Sheemena Basheer, B. Syamala Kumari P. I. Paulose Achamma Kurian and Sajana D. George, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy**, Volume 98, Pages 474-478 (2012).

International Conference Proceedings

- (1) Effect of polyethylene glycol on the structural and optical properties of manganese tungstate nanorods synthesized by precipitation method, M. H Muhammed, **B. Rajesh Kumar**, N. Aloysius Sabu, and Thomas Varghese, AIP Conference Proceedings, Volume 2162, page (2019)
- (2) Thermal diffusivity of gold nanoparticle reduced by polyvinyl alcohol using dual beam thermal lens, Lincy Thomas, Jisha John, B. Rajesh Kumar, Nibu. A. George, Achamma Kurian **Materials Today: Proceedings**, volume 2, pages 1017 – 1020 (2015)
- (3) Thermal conductivity measurement of organic solvents incorporated with silver nanoparticle using photothermal techniques, N. Shemeena Basheer, **B. Rajesh Kumar**, Achamma Kurian and Sajana D. George, **IOP Conf. Proc.** Volume 73, Pages 012039(1-4) (2015)
- (4) Effect of particle size on the thermo-optic properties of gold nanofluids - A thermal-lens study, **B. Rajesh Kumar**, N. Shemeena Basheer, Achamma Kurian and Sajana D. George, **AIP Conf. Proc.** Volume 1576, Pages 118-121 (2014)
- (5) Effect of gold nanoparticle size on fluorescence quenching of Rhodamine 6G measured using dual-beam thermal-lens technique, **B. Rajesh Kumar**, N. Shemeena Basheer, Achamma Kurian and Sajana D. George, 3rd International Conference on Photonics (ICP), Malaysia, **IEEE**, Pages 149–153 (2012)
- (6) Effect of annealing temperature on the thermo-optic properties of holmium doped silica glasses prepared by sol-gel method, **B. Rajesh Kumar**, N. Shemeena Basheer, Ancy Manuel, Achamma Kurian and Sajana D. George, **AIP Conf. Proc.** Volume 1391, pages 158-160 (2011)
- (7) Thermal characterization of nano ZnO incorporated natural rubber latex, **Rajesh Kumar B**, Shemeena Basheer N, Achamma Kurian and Sajana D. George, Proc. **SPIE**, USA, Volume **7755**, Nanophotonic Materials VII, 77550N1-7 (2010)
- (8) Thermal characterization of nanofluids using laser induced thermal lens technique, Achamma Kurian, **Rajesh B Kumar**, and Sajana D George, Proc. SPIE 7393, Nanophotonic Materials VI, 73930U (2009)

National Conference Proceedings

- (1) Concentration dependence of silver nanoparticle on the quantum efficiency of Rh6G calculated using thermal lens signal, N. Shemeena Basheer, B. Rajesh Kumar, Achamma Kurian and Sajana D. George, Proceedings of DAE-BRNS National Laser Symposium (**NLS-22**), Manipal University, Manipal (2014)

- (2) Particle size dependence on the thermo-optic properties of silver nanofluid — A laser induced photothermal study, N. Shemeena Basheer, **B. Rajesh Kumar**, Achamma Kurian and Sajan D. George, Proceedings of **DAE-BRNS** National Laser Symposium (**NLS-21**), Bhabha Atomic Research Centre, Mumbai (2013)
- (3) Thermal effusivity of gold nanofluid measured using laser induced open photoacoustic technique, **Rajesh Kumar B**, Shemeena Basheer N and Achamma Kurian, Proceedings of **DAE-BRNS** National Laser Symposium (**NLS-20**), Anna University, Chennai (2012)
- (4) Laser induced open cell photoacoustic technique to characterize thermal property of silver nanofluid, Shemeena Basheer N, **Rajesh Kumar B** and Achamma Kurian, Proceedings of **DAE-BRNS** National Laser Symposium (**NLS-20**), Anna University, Chennai (2012)