

**Name** : Dr. Rajkumar. N  
**Designation** : Assistant Professor  
**Department** : Physics  
**Date of Joining** : 04/03/2014  
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**Educational Qualification:**

Degree	Subject	College / University & Place	Year Completed
Ph. D.,	Physics	Madurai Kamaraj university, Madurai	2011
M. Sc.,	Physics	Madurai Kamaraj university, Madurai	2006
B. Sc.,	Physics	Vivekananda College, Madurai	2004

**Specialisation in Teaching:** Solid State Physics, Spectroscopy, Mathematical Physics, and Optics

**Specialisation in Research:** Raman Spectroscopy, Nanotechnology, and Material Science

**Research Interests:** Synthesis and Characterization of Metal Oxide Semiconductor Nanomaterials. Metaloxide, Raman Spectroscopy, Diluted Magnetic Semiconductors (DMS), Gas Sensors, and Dye-Sensitized Solar Cells (DSSC)

**Other Work Experience:**

Designation	Institution / Company	Year - From (month/year) To (month/year)
Dr. D.S.K. Postdoc Fellow	Indian Institute of Science, Bangalore	June-2010 to Feb. 2014

**Administrative /Academic Position/s (held / currently holding):** Nill

**Membership in Professional Bodies:** Nill

**Publications:** 14

## Articles Published in International Journals:

14. Effect of chlorine substitution on triplet state structure of thioxanthone: A time-resolved resonance Raman study, R. Pandey, **N. Rajkumar** and S. Umapathy, *J. Raman Spectroscopy*, **44**, 270–276 (2013)
13. Oxygen deficiency and room temperature ferromagnetism in undoped and cobalt doped TiO<sub>2</sub> nanoparticles, **N. Rajkumar** and K. Ramachandran, *IEEE Trans. Nanotechnol.*, **10**, 513-519 (2011)
12. Ethanol gas sensing of Mn-doped CoFe<sub>2</sub>O<sub>4</sub> nanoparticles, P. Indra Devi, **N. Rajkumar**, B. Renganathan, D. Sastikumar, and K. Ramachandran, *IEEE Sensors J.*, **11**, 1395-1402 (2011)
11. On the possibility of ferromagnetism in CdO:Mn at room temperature, **N. Rajkumar**, V.M. Susila, and K. Ramachandran, *J. Exp. Nanosci.*, **6**, 389-398 (2011)
10. Dumbbell shaped ZnO nanorods: Growth and Characterization, **N. Rajkumar**, M. Prabhu, and K. Ramachandran, *Int. J. Nanosci.*, **10**, 87-92 (2011)
9. On the phonon confinement and particle size in TiO<sub>2</sub>:ZnO nanocomposite, S.S. Kanmani, **N. Rajkumar**, and K. Ramachandran, *Int. J. Nanosci.*, **10**, 227-231 (2011)
8. Performance of dye-sensitized solar cell based on TiO<sub>2</sub>:ZnO nanocomposites, **N. Rajkumar**, S.S. Kanmani, and K. Ramachandran, *Adv. Sci. Lett.*, **4**, 627-633 (2010)
7. Structural Characterization and Magnetic Properties of Zn<sub>1-2x</sub>Mn<sub>x</sub>Co<sub>x</sub>O Nanostructures, **N. Rajkumar**, V. Parthibaraj and K. Ramachandran, *J. Nanosci. Nanotechnol.*, (2010) (In Press)
6. Structural, optical, and magnetic investigations on undoped and Mn-doped ZnO nanoparticles, **N. Rajkumar** and K. Ramachandran, *Int. J. Nanosci.*, **9**, 495-502 (2010)
5. Photoacoustics and magnetic studies of Fe<sub>3</sub>O<sub>4</sub> nanoparticles, **N. Rajkumar**, D. Umamaheswari, and K. Ramachandran, *Int. J. Nanosci.*, **9**, 243-250 (2010)
4. Synthesis and characterization of dye (Phenosafranine) sensitized flower-type ZnO nanorods, **N. Rajkumar**, R.N. Mariammal, and K. Ramachandran, *Int. J. Mod. Phys. B*, **24**, 1289-1298 (2010)
3. Observation of ferromagnetism in Mn-doped nano ZnO, **N. Rajkumar** and K. Ramachandran *Int. J. Mod. Phys. B*, **23**, 5881-5890 (2009)
2. On the ferromagnetic phase transition in nano ZnO:Mn by electron paramagnetic resonance, P. Vinotha Boorana Lakshmi, B. Ranganathan, **N. Rajkumar**, and K. Ramachandran, *Int. J. Mod. Phys. B*, **23**, 3221-3229 (2009)
1. On the heat transfer of the anatase titanium dioxide nanocrystals, P. Vinotha Boorana Lakshmi, **N. Rajkumar**, B. Ranganathan, and K. Ramachandran, *Int. J. Nanomanufacturing*, **2**, 181-191 (2008)

## Articles published in National Journals: Nill

### Conference / Seminar Presentations:

12. *National workshop and conference on Monte Carlo Simulation*, School of Physics, Madurai Kamaraj University, Madurai, Aug. 9-13, 2010.
11. *Workshop on Recent Trends in Astrophysics*, Madurai Kamaraj University, Madurai, Jan. 28-29, 2010.
10. *4<sup>th</sup> Advanced School on Nanoscience and Technology*, S.N. Bose National Centre for Basic Sciences, Kolkata, Jan. 12-24, 2009.
9. *School on Spintronic and Magneto-electronic Materials and Device*, Harish-Chandra Research Institute, Allahabad, Jan. 5-7, 2009.
8. Magnetism in Zn<sub>1-2x</sub>Mn<sub>x</sub>Co<sub>x</sub>O (x = 0.00, 0.01, 0.02, and 0.03) Nanostructures  
**N. Rajkumar** and K. Ramachandran  
*55<sup>th</sup> DAE Solid State Physics Symposium*, Manipal University, Manipal, Dec. 26-30, 2010.
7. Absence of ferromagnetism in Zn<sub>1-x</sub>Gd<sub>x</sub>O (x=0.00, 0.01, 0.03 and 0.05 at.%) nanoparticles

**N. Rajkumar** and K. Ramachandran

*National Seminar on Recent Advances in Inorganic and Nano Chemistry*, Madurai Kamaraj University, Madurai, Mar. 29-30, 2010.

6. Observation of ferromagnetism in  $Zn_{1-2x}Mn_xCo_xO$  ( $x = 0.00, 0.01, 0.02$  and  $0.03$ ) nanostructures

**N. Rajkumar**, V. Parthibaraj, and K. Ramachandran

*International Conference on Nano Science and Technology*, IITB, Mumbai, Feb. 17-20, 2010.

5. Dumbbell-like ZnO nanorods: Growth and Characterization

**N. Rajkumar**, M. Prabhu, and K. Ramachandran

*International Conference on Advanced Nanomaterials and Nanotechnology*, IITG, Guwahati, Dec. 9-11, 2009.

4. Observation of ferromagnetism in Co-doped nano  $TiO_2$

**N. Rajkumar** and K. Ramachandran

*National Conference on Spintronic and Magneto-electronic Materials and Device*, Harish-Chandra Research Institute, Allahabad, Jan. 8-9, 2009.

12. On the Optical study of dye (Phenosafranin) sensitized flower-type ZnO nanorods

**N. Rajkumar**, R.N. Mariammal and K. Ramachandran

*53<sup>rd</sup> DAE Solid State Physics Symposium*, Bhabha Atomic Research Center, Mumbai, Dec. 16-20, 2008.

11. Thermal properties of nano ZnO and nano ZnO:Mn with annealing temperature

**N. Rajkumar** and K. Ramachandran

*52<sup>nd</sup> DAE Solid State Physics Symposium*, University of Mysore, Mysore, Dec. 27-31, 2007.

10. Synthesis, optical and thermal studies of anatase titanium dioxide nanocrystal

**N. Rajkumar**, P. Vinotha Boorana Lakshmi, and K. Ramachandran

*National Conference on Recent Advances in Materials Science*, Periyar University, Salem, Feb. 16-17, 2006.

#### **Awards / Fellowships:**

**Dr. D.S. Kothari Postdoc Fellowship from UGC**