

Kadambinee Sa

Present Address

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Personal Information

Gender: Female
Marital status: Single
Nationality: Indian
Date of Birth: 26th June 1988
Father's Name: Arjun Kumar Sa
Mother's Name: Padmabati Sa



Educational qualification

Post Doc 24/05/2019-23/11/2021 (Indian Institute of Technology Kanpur)

PhD Awarded 19-1-2019 (Physics & Astronomy)

Title of the Thesis Electrical, mechanical and thermal properties of graphene-carbon nanotubes/PMMA hybrid nanocomposite

Supervisor Prof. Pitamber Mahanandia, National Institute of Technology Rourkela

Master of Philosophy in Physics (2011) (86%)

Sambalpur University, Odisha

Title of the Thesis: Study of momentum dependence of the isovector part of nuclear mean field with skyrme interactions

Master of Science in Physics (2010) (80%)

Sambalpur University, Odisha

Bachelor of Science in Physics (Hons) (2008) (Hons-75%, Agg-61%)

Dalmia College, Rajgangpur (Sambalpur University, Odisha)

H.S.E.C (+2) in Science (2005) (65%)

Panchayat Samiti College, Bargaon (C.H.S.E. Orissa)

H.S.C (10th) (2003) (75%)

Govt. High School, Bargaon (B.S.E. Orissa)

Scholastic Achievements

- Qualified in all India level Graduate Aptitude Test in Engineering, GATE 2012
- Secure First position in M.Sc. Physics (Sambalpur University)
- Secure 4th position in Sambalpur University based on merit in B.Sc. (Physics Hons.)

Course Taught

- Teaching Assistant, for B. Tech. 1st year Lab, NIT Rourkela
- Teaching Assistant, for M.Sc. Optics Lab, NIT Rourkela
- Teaching Assistant, for M.Sc. General physics Lab, NIT Rourkela

Research Interests

- Nanomaterials (carbon nanotubes, graphene)
- Polymer nanocomposites
- Charge transport properties
- Doped-carbon nanostructured materials
- Energy storage device (Supercapacitor)

Publications

1. I. Alam, **K. Sa**, S. Das, B.V.R.S. Subramanyam et al, Graphene field-effect transistor using gated ferroelectric thin film, *Solid State Comm.* **340** (2021) **114533**.
2. B.V.R.S. Subramanyam, P.C. Mahakul, **K. Sa**, J. Raiguru, P. Mahanandia, Investigation of improvement in stability and power conversion efficiency of organic solar cells fabricated by incorporating carbon nanostructures in device architecture, *J. Phys. Materials* **3** (2020) **045004**.
3. **K. Sa**, P.C. Mahakul, S. Saha, P.N. Vishwakarma, K.K. Nanda, P. Mahanandia, Investigation of electrical, mechanical and thermal properties of functionalized multiwalled carbon nanotubes-reduced graphene oxide/PMMA hybrid nanocomposites. *Polym. Eng. Sci.* **59** (2019)**1075-1083**.
4. **K. Sa**, P. Mahanandia, Conducting reduced graphene oxide film as transparent electrode, *Thin Solid Films* **2019** (692) **137594**.
5. B.V.R.S. Subramanyam, P.C. Mahakul, **K. Sa**, J. Raiguru, I. Alam, S. Das, M. Mondal, S. Subudhi, P. Mahanandia, Improved stability and performance of organic photovoltaic cells by application of carbon nanostructures and PEDOT:PSS composites as additional transparent electrodes, *Solar Energy* **186** (2019) **146-155**.
6. I. Alam, **K. Sa**, S. Das, B.V.R.S. Subramanyam, J. Raiguru, B. Samanta, P. Kumar, P. Mahanandia, Dielectric behavior of PZT/graphene oxide composites, *Phys. status solidi (a)* **216** (2019), **1900108**.
7. S. Das, **K. Sa**, I. Alam, P. Mahanandia, Enhancement of photocurrent in Cu₂ZnSnS₄ quantum dot anchored multi-walled carbon nanotube for solar cell application. *J. Mater. Sci.* **54** (2019) **8542–8555**.

8. P.C. Mahakul, **K. Sa**, B.V.R.S. Subramaniam, P. Mahanandia, Mesoscopic investigation of the effect of MWCNT/rGO network on the performance of P3HT:PC60BM solar cells, *Mater. Chem. Phys.* **226** (2019) 113–117.
9. **K. Sa**, P.C. Mahakul, B. Das, B.V.R.S. Subramanyam, J. Mukherjee, S. Saha, J. Raiguru, K.C. Patra, K.K. Nanda, P. Mahanandia, Large scale synthesis of reduced graphene oxide using ferrocene and HNO₃, *Mater. Lett.* **211** (2018) 335–338.
10. **K. Sa**, P.C. Mahakul, S. Saha, D. Behera, P.N. Vishwakarma, P. Mahanandia, Investigation of electrical and thermal properties of reduced graphene oxide-multiwalled carbon nanotubes/PMMA hybrid nanocomposite, *Phys. Status Solidi A* **215** (2018) 1700476.
11. **K. Sa**, P.C. Mahakul, K.K. Nanda, P. Mahanandia, Investigation of mechanical, thermal and electrical properties of ionic liquid functionalized multiwalled carbon nanotubes-reduced graphene oxide/PMMA hybrid nanocomposites, *Chem. Phys. Lett.* **706** (2018) 76–81.
12. P.C. Mahakul, **K. Sa**, B.V.R.S. Subramanyam, K.C. Patra, P. Mahanandia, Investigation of optical and electrical properties of MWCNT/rGO/poly(3-hexylthiophene) ternary composites, *J. Mater. Sci.* **53** (2018) 8151–8160.
13. S. Das, **K. Sa**, I. Alam, P. Mahanandia, Synthesis of CZTS QDs decorated reduced graphene oxide nanocomposite as efficient absorber for solar cell, *Mater. Lett.* **232** (2018) 232-236.
14. B. Das, **K. Sa**, P.C. Mahakul, B.V.R.S. Subramanyam, S. Das, I. Alam, J. Raiguru, P. Mahanandia, “Efficient Ultraviolet Photodetector device based on Modulated Wide Band Gap Type-II CuO/CdSe Core-Shell Nanowires”, *Superlattices Microstruct.*, **123** (2018) 234-241.
15. P.C. Mahakul, **K. Sa**, B. Das, B.V.R.S. Subramaniam, S. Saha, B. Moharana, J. Raiguru, S. Dash, J. Mukherjee, P. Mahanandia, Preparation and characterization of PEDOT:PSS/reduced graphene oxide–carbon nanotubes hybrid composites for transparent electrode applications, *J. Mater. Sci.* **52** (2017) 5696–5707.
16. P.C. Mahakul, **K. Sa**, B. Das, P. Mahanandia, Structural investigation of the enhanced electrical, optical and electrochemical properties of MWCNT incorporated Poly [3-hexylthiophene-2,5-diyl] composites, *Mater. Chem. Phys.* **199** (2017) 477-484.

Conferences

1. I. Alam, B.V.R.S. Subramanyam, S. Das, K. Sa, J. Raiguru, S. Subudhi, M. Mondal, S. Patra, P. Mahanandia, A few layers of graphene sheets prepared by an electrochemical method enhance the performance of organic photovoltaic device, *Materials today: Proceedings*, **39** (2021) 1941.
2. I. Alam, **K. Sa**, S. Das, B.V.R.S. Subramanyam, J. Raiguru, M. Mondal, S. Subudhi, P. Mahanandia, Investigation of wetting properties of few layers of graphene sheets prepared by electrochemical method, *AIP Conference Proceedings* **2115** (2019) 030096.
3. **K. Sa**, P.C. Mahakul, B.V.R.S. Subramanyam, J. Raiguru, S. Das, I. Alam, P. Mahanandia, “Effect of reduced graphene oxide-carbon nanotubes hybrid nanofillers in

- mechanical properties of polymer nanocomposites”, *NCPCM 2017, IOP Conf. Series: Materials Science and Engineering 338 (2018) 012055*.
4. **K. Sa**, P.C. Mahakul, B.V.R.S. Subrahmanyam, S. Saha, J. Mukherjee, P. Mahanandia, “Scalable synthesis of reduced graphene oxide using FeSO₄”, *AIP conference proceedings 1832 (2017) 050133*.
 5. I. Alam, **K. Sa**, S. das, J. Raiguru, BVRS Subrahmanyam, P.C. Mahakul, P. Mahanandia, Preparation of few layer graphene sheets (FLGS) prepared by an electrochemical method, *IOP Conf. Series: Mater. Sci. Eng. 338 (2018) 012063*.
 6. S. Das, **K. Sa**, I. Alam, P. C. Mahakul, J. Raiguru, B. V. R. S. Subrahmanyam, P. Mahanandia, Synthesis and characterizations of Cu₂ZnSnS₄ nanoparticles/carbon nanotube composite as an efficient absorber material for solar cell application, *AIP Conference Proceedings 1961 (2018) 020006*.
 7. S Das, **K Sa**, P C Mahakul, J Raiguru, I Alam, BVRS Subrahmanyam, P Mahanandia, Synthesis of quaternary chalcogenide CZTS nanoparticles by a hydrothermal route, *IOP Conf. Series: Mater. Sci. Eng. 338 (2018) 012062*.
 8. J. Raiguru, BVRS Subrahmanyam, **K. Sa**, I. Alam, S. Das, J. Mukherjee, P.C. Mahakul, B. Subudhi, P. Mahanandia, Impact of annealing temperature on the phase of CZTS with the variation in surface morphological changes and extraction of optical bandgap, *IOP Conf. Series.: Mater. Sci. Eng. 178 (2017) 012017*.
 9. **K. Sa**, P.C. Mahakul, B. Das, P. Mahanandia, “To study the electrical properties of carbon nanotubes and graphene based hybrid polymer nanocomposite”, Recent advances in nano science and technology 2015 (RAINSAT-2015), Satyabhama university, Chennai, India.