

Curriculum Vitae

Name: Dr. Pitamber Mahanandia

Research Areas: Experimental Condensed Matter Physics

Designation and Affiliation:

Professor (From-July 2024- Till this date)

Physics & Astronomy

National Institute of Technology Rourkela, Sundergarh, 769008 Odisha, India

Associate Professor: February 2020- July 2024

Physics & Astronomy

National Institute of Technology Rourkela, Sundergarh, 769008 Odisha, India

Assistant Professor: July 2011 – February 2020)

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Educational Qualification:

Ph.D., Department of Physics, Indian Institute of Science Bangalore, Karnataka, India

Graduate Aptitude Test in Engineering for Physics (GATE) -1999

M.Sc. Physics, Sambalpur University, Sambalpur, Odisha, India

B.Sc. PhyHonors, Sundergarh Govt. College, Sundergarh, Odisha, India

10+2 Science, Sundargarh Government Collage, Odisha

10th – Lambodar High School, Kundukela, Sundargarh, Odisha

Research Experience:

Visiting Professor, Technical University Darmstadt, D-64287 Darmstadt, Germany (May 2019-May 2020).

Guest Scientist, Germany (Leibniz Institute of Polymer Research Dresden, Germany), Hohe Str. 6, D-01069 Dresden, Germany (August 2010-July -2011).

Visiting Professor, Louisiana University at Lafayette 104 University Circle, Lafayette LA 70504, Louisiana, USA, (January 2010-June 2010).

Postdoctoral Research Associate, FB Chemie, Eduard-Zintl-Institut,

Technical University Darmstadt, D-64287 Darmstadt, Germany, (June 2008- January 2010).

Postdoctoral Research Associate, Department of Physics, Oakland University, Michigan, USA, (April 2007 - March 2008).

Awards & Recognition

1. Best Poster Award: International Conference on Advanced Materials Design & Development) for the poster presentation which was held on 14-16th December 2005 in Goa, India.

Title of the poster presentation: **Synthesis of multiwall carbon nanotubes. Pyrolysis assisted chemical vapour deposition.**

2. The following is the cover story on nanotechnology webpage/ Credited to Dr. P.

Mahanandia et al. <http://nanotechweb.org/cws/article/yournews/56776>

3. The following is the cover story on nanotechnology webpage/ Credited to Dr. P. Mahanandia and Dr. K. K. Nanda. <http://nanotechweb.org/cws/article/tech/33725>

Available Experimental Facilities

1. PL Micro Raman (Institute Fund)

2. Chemical Vapour Deposition (SERB fund)

3. Solar Simulator (SERB Fund)

4. External Quantum Efficiency Setup (Institute Fund)

5. Electrochemical Workstation (CPRI, Bangalore Fund)

6. Electrochemical Setup (SERB Fund)

7. Spin Coating Unit (SERB Fund)

8. I-V Measurement Setup for transport measurement (SERB Fund)

9. Vacuum Drier (SERB Fund)

Publication in Journals

1. Pitamber Mahanandia, Prakash Nath Vishwakarma, Prasad Vishnu Bhotla, S. V. Subramanyam, and Karuna Kar Nanda. "Electron field emission from sp² -induced insulating to metallic behaviour of amorphous carbon (a-C) films". Bulletin of Materials Science. vol.33, no.3, pp.215–220,2010. [10.1007/s12034-010-0033-9](https://doi.org/10.1007/s12034-010-0033-9) (IF-1.9).
2. Pitamber Mahanandia, Jörg J. Schneider, Martin Engel, Bernd Stühn, Somanahalli V. Subramanyam, and Karuna Kar Nanda. "Studies towards synthesis, evolution and alignment characteristics of dense, millimetre long multiwalled carbon nanotube arrays". Beilstein Journal of Nanotechnology. vol.2, pp.293–301,2011. [10.3762/bjnano.2.34](https://doi.org/10.3762/bjnano.2.34) (IF-3.953)
3. P. Mahanandia and K. K. Nanda. "Anisotropic electrical transport properties of poly(methyl methacrylate) infiltrated aligned carbon nanotube mats". Applied Physics Letters. vol.100, pp.022108, Jan 2012. [org/10.1063/1.3675873](https://doi.org/10.1063/1.3675873) (IF-3.971)
4. Pitamber Mahanandia, and K K. Nanda. "Anisotropic electrical transport properties of poly(methyl methacrylate) infiltrated aligned carbon nanotube mats". Applied Physics Letters. vol.100, no.2, pp.1-4,2012. [10.1063/1.3675873](https://doi.org/10.1063/1.3675873) (IF-3.971)
5. Barun Kumar Barman, Pitamber Mahanandia and Karuna Kar Nanda. "Instantaneous reduction of graphene oxide at room temperature". RSC Advances. vol.3, pp.12621–12624, Jun 2013. [10.1039/c3cc48055k](https://doi.org/10.1039/c3cc48055k) (IF-4.036)
6. Barun Kumar Barman, Pitamber Mahanandia, and Karuna Kar Nanda. "Instantaneous reduction of graphene oxide at room temperature". RSC Advances. vol.3, no.31, pp.12621-12624,2013. [10.1039/c3ra41359d](https://doi.org/10.1039/c3ra41359d) (IF-4.036)
7. Pitamber Mahanandia, Frank Simon, Gert Heinrich and Karuna Kar Nanda. "An electrochemical method for the synthesis of few-layer graphene sheets for high-temperature applications". Chemical Communications. vol.50, pp.46134615, Mar 2014. [10.1039/c3cc48055k](https://doi.org/10.1039/c3cc48055k) (IF-6.222)
8. Pitamber Mahanandia, Frank Simon, Gert Heinrich, and Karuna Kar Nanda. "An electrochemical method for the synthesis of few layer graphene sheets for high temperature applications". Chemical Communications. vol.50, no.35, pp.4613-4615,2014. [10.1039/c3cc48055k](https://doi.org/10.1039/c3cc48055k) (IF-6.222)
9. Kadambinee Sa, Prakash C. Mahakul , Bamadev Das , B.V.R.S. Subramanyam, Jonaki Mukherjee , Sunirmal Saha, Jagatpati Raiguru , Khirod C. Patra , Karuna K. Nanda , Pitamber Mahanandia. "Large scale synthesis of reduced graphene oxide using ferrocene and HNO₃". Materials Letters. vol.211, pp.335–338, Oct 2017. [org/10.1016/j.matlet.2017.10.031](https://doi.org/10.1016/j.matlet.2017.10.031) (IF-3.574)
10. Prakash Chandra Mahakul , Kadambinee Sa , Bamadev Das , Pitamber Mahanandia. "Structural investigation of the enhanced electrical, optical and electrochemical properties of MWCNT incorporated Poly [3- hexylthiophene-2,5-diyl] composites". Materials Chemistry and Physics. vol.199, pp.477-484,Jul 2017. [org/10.1016/j.matchemphys.2017.07.030](https://doi.org/10.1016/j.matchemphys.2017.07.030) (IF-4.778)
11. Kadambinee Sa, P.C.Mahakul,S.Saha,D.Behera,P.N.Vishwakarma,Pitamber Mahanandia. "Investigation of Electrical and Thermal Properties of Reduced Graphene Oxide–Multiwalled carbon nanotubes/PMMA Hybrid Nanocomposite". Phys. Status Solidi A. vol.215, pp.700476-6, Nov 2017. [10.1002/pssa.201700476](https://doi.org/10.1002/pssa.201700476) (IF-2.09)
12. Prakash Chandra Mahakul and Pitamber Mahanandia. "Structural, morphological and electrical characterization of rGO-P3HT composite film for photovoltaic applications". International Journal of Renewable Energy Technology. vol.9, pp.181-190, Feb 2017. [10.1504/IJRET.2018.10009548](https://doi.org/10.1504/IJRET.2018.10009548) (IF-0.2999)
13. Prakash Chandra Mahakul, Kadambinee Sa, Bamadev Das, B. V. R. S. Subramaniam, Sunirmal Saha, Bhaskar Moharana, Jagatpati Raiguru, Satyasiddha Dash, Jonaki Mukherjee, and Pitamber Mahanandia. "Preparation and characterization of PEDOT:PSS/ reduced graphene oxide–carbon nanotubes hybrid composites for transparent electrode applications". Journal of Materials Science. vol.52, pp.5696–5707, Jan 2017. [10.1007/s10853-017-0806-2](https://doi.org/10.1007/s10853-017-0806-2) (IF-4.682)
14. Kadambinee Sa, Prakash C. Mahakul, Bamadev Das, B.V.R.S. Subramanyam, Jonaki Mukherjee, Sunirmal Saha, Jagatpati Raiguru, Khirod C. Patra, Karuna K. Nanda, and Pitamber Mahanandia. "Large scale synthesis of reduced graphene oxide using ferrocene and HNO₃". Materials Letters. vol.211, pp.335-338,2017. [10.1016/j.matlet.2017.10.031](https://doi.org/10.1016/j.matlet.2017.10.031) (IF-3.574)
15. Prakash Chandra Mahakul, Kadambinee Sa, Bamadev Das, B V Ramagouri Surya Subramanyam, Sunirmal Saha, Bhaskar Chandra Moharana, Jagatpati Raiguru, Satyasiddha Dash, Jonaki Mukherjee, and Pitamber Mahanandia. "Preparation

and characterization of PEDOT: PSS/ reduced graphene oxide–carbon nanotubes hybrid composites for transparent electrode applications". Journal of Materials Science. vol.52, no.10, pp.5696–5707,2017. [10.1007/s10853-017-0806-2](https://doi.org/10.1007/s10853-017-0806-2) (IF-4.682)

16. Kadambinee Sa, Prakash Chandra Mahakul, Sunirmal Saha, Dhruvananda Behara, Prakash Nath Vishwakarma, and Pitamber Mahanandia. "Investigation of electrical and thermal properties of reduced graphene oxide–multiwalled carbon nanotubes/PMMA hybrid nanocomposite". Physica Status Solidi. vol.215, no.5, 2017. [10.1002/pssa.201700476](https://doi.org/10.1002/pssa.201700476) (IF-2.8)

17. Prakash Chandra Mahakul, Kadambinee Sa, Bamadev Das, and Pitamber Mahanandia. "Structural investigation of the enhanced electrical, optical and electrochemical properties of MWCNT incorporated Poly [3- hexylthiophene-2,5-diyl] composites". Materials Chemistry and Physics. vol.199, pp.477-484,2017. [10.1016/j.matchemphys.2017.07.030](https://doi.org/10.1016/j.matchemphys.2017.07.030)(IF-4.778)

18. Sonali Das, Kadambinee Sa, Injamul Alam, Pitamber Mahanandia. "Synthesis of CZTS QDs decorated reduced graphene oxide nanocomposite as possible absorber for solar cell". Materials Letters. vol.232, pp.232-236,May 2018. [org/10.1016/j.matlet.2018.08.074](https://doi.org/10.1016/j.matlet.2018.08.074)(IF-3.574)

19. Kadambinee Sa, P.C.Mahakul,K.K.Nanda,Pitamber Mahanandia. "Effect of ionic liquid functionalized carbon nanotubes on mechanical, thermal and electrical properties of carbon nanotubes-reduced graphene oxide/PMMA nanocomposites". Chemical Physics Letters. vol.706, pp.76-81,May 2018. [org/10.1016/j.cplett.2018.05.034](https://doi.org/10.1016/j.cplett.2018.05.034) (IF-2.719)

20. Bamadev Das, Kadambinee Sa, Prakash Chandra Mahakul, B.V.R.S. Subramanyam, Sonali Das, Injamul Alam, Jagatpati Raiguru, Pitamber Mahanandia. "Efficient ultraviolet photodetector device based on modulated wide band gap Type-II CuO/CdSe core-shell nanowires". Superlattices and Microstructures. vol.123, pp.234–241, Aug 2018. [org/10.1016/j.spmi.2018.08.021](https://doi.org/10.1016/j.spmi.2018.08.021) (IF-3.22)

21. Prakash Chandra Mahakul¹, Kadambinee Sa¹ , B. V. R. S. Subramanyam , Khirod Chandra Patra , and Pitamber Mahanandia. "Investigation of optical and electrical properties of MWCNT/rGO/poly (3- hexylthiophene) ternary composites". Journal of Materials Science. vol.53, pp.8151–8160, Mar 2018. [org/10.1007/s10853-018-2161-3](https://doi.org/10.1007/s10853-018-2161-3) (IF-4.682)

22. Sonali Das, Injamul Alam, Jagatpati Raiguru, B.V.R.S. Subramanyam, Pitamber Mahanandia. "A facile method to synthesize CZTS quantum dots for solar cell applications". Physica E: Low-dimensional Systems and Nanostructures. vol.105, pp.19–24, Sep 2018. [org/10.1016/j.physe.2018.08.020](https://doi.org/10.1016/j.physe.2018.08.020) (IF-3.369)

23. Prakash Chandra Mahakul, and Pitamber Mahanandia. "Structural, morphological and electrical characterization of rGO-P3HT composite film for photovoltaic applications". International Journal of Renewable Energy Technology. vol.9, no.1-2, 2018. [10.1504/IJRET.2018.10009548](https://doi.org/10.1504/IJRET.2018.10009548) (IF-0.2999)

24. Sonali Das, Kadambinee Sa, Injamul Alam, and Pitamber Mahanandia. "Synthesis of CZTS QDs decorated reduced graphene oxide nanocomposite as a possible absorber for solar cell". Materials Letters. Principal 2018 International SCI vol.232, pp.233-236,2018. [10.1016/j.matlet.2018.08.074](https://doi.org/10.1016/j.matlet.2018.08.074) (IF 3.574)

25. Kadambinee Sa, Prakash Chandra Mahakul, Karuna Kar Nanda, and Pitamber Mahanandia. "Effect of ionic liquid functionalized carbon nanotubes on mechanical, thermal and electrical properties of carbon nanotubes-reduced graphene oxide/PMMA nanocomposites". Chemical Physics Letters. vol.706, pp.76–81,2018. [10.1016/j.cplett.2018.05.034](https://doi.org/10.1016/j.cplett.2018.05.034) (IF-2.719)

26. Bamadev Das, Kadambinee Sa, Prakash Chandra Mahakul, B V Ramagouri Surya Subramanyam, Sonali Das, Injamul Alam, Jagatpati Raiguru, and Pitamber Mahanandia. "Efficient ultraviolet photodetector device based on modulated wide band gap Type-II CuO/CdSe core-shell nanowires". Superlattices and Microstructures. vol.123, pp.234- 241,2018. [10.1016/j.spmi.2018.08.021](https://doi.org/10.1016/j.spmi.2018.08.021) (IF-3.22)

27. Prakash Chandra Mahakul, Kadambinee Sa, B V Ramagouri Surya Subramanyam, Khirod Chandra Patra, and Pitamber Mahanandia. "Investigation of optical and electrical properties of MWCNT/rGO/poly (3- hexylthiophene) ternary composites". Journal of Materials Science. vol.53, no.11, pp.8151–8160,2018. [10.1007/s10853-018-2161-3](https://doi.org/10.1007/s10853-018-2161-3) (IF-4.682)

28. P.C. Mahakula,b, K. Sab, B.V.R.S. Subramanyamb, P. Mahanandiab. "Mesoscopic investigation of the effect of MWCNT/rGO network on the performance of P3HT:PC60BM solar cells". Materials Chemistry and Physics. vol.266, pp.113–117, Jan 2019. [org/10.1016/j.matchemphys.2019.01.012](https://doi.org/10.1016/j.matchemphys.2019.01.012)(IF-4.778)

29. Sonali Das, Kadambinee Sa, Injamul Alam, and Pitamber Mahanandia. "Enhancement of photocurrent in Cu₂ZnSnS₄ quantum dot-anchored multi-walled carbon nanotube for solar cell application". *Journal of Materials Science: Energy Materials*. vol.54, pp.8542–8555, Jun 2019. [org/10.1007/s10853-019-03467-y](https://doi.org/10.1007/s10853-019-03467-y) (IF-4.682)
30. Kadambinee Sa, Prakash Chandra Mahakul, Sunirmal Saha, Prakash Nath Vishwakarma, Karuna Kar Nanda, Pitamber Mahanandia. "Investigation of Electrical, Mechanical, and Thermal Properties of Functionalized Multiwalled Carbon Nanotubes-Reduced Graphene Oxide/PMMA Hybrid Nanocomposites". *Polymer Engineering and Science*. vol.59, pp.1075-1083, Feb 2019. DOI 10.1002/pen.25084 (IF-2.573)
31. B.V.R.S. Subramanyam, P.C. Mahakulb, 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*. vol.186, pp.146–155, Apr 2019. [org/10.1016/j.solener.2019.04.097](https://doi.org/10.1016/j.solener.2019.04.097) (IF-7.188)
32. Prakash Chandra Mahakul, Kadambinee Sa, B V Ramagouri Surya Subramanyam, and Pitamber Mahanandia. "Mesoscopic investigation of the effect of MWCNT/rGO network on the performance of P3HT: PC60BM solar cells". *Materials Chemistry and Physics*. vol.226, pp.113-117, 2019.bn [10.1016/j.matchemphys.2019.01.012](https://doi.org/10.1016/j.matchemphys.2019.01.012) (IF-4.778)
33. Kadambinee Sa, Prakash Chandra Mahakul, Sunirmal Saha, Prakash Nath Vishwakarma, Karuna Kar Nanda, and Pitamber Mahanandia. "Investigation of electrical, mechanical, and thermal properties of functionalized multiwalled carbon nanotubes-reduced graphene Oxide/PMMA hybrid nanocomposites". *Polymer Engineering and Science*. vol.59, no.5, pp.1075-1083, 2019. [10.1002/pen.25084](https://doi.org/10.1002/pen.25084) (IF-2.573)
34. B V Ramagouri Surya Subramanyam, Prakash Chandra Mahakul, Kadambinee Sa, Jagatpati Raiguru, Injamul Alam, Sonali Das, Manoranjan Mandal, Subhasri Subudhi, and Pitamber Mahanandia. "Improved stability and performance of organic photovoltaic cells by application of carbon nanostructures and PEDOT: PSS composites as additional transparent electrodes". *Solar Energy*. vol.186, pp.46– 155, 2019. [10.1016/j.solener.2019.04.097](https://doi.org/10.1016/j.solener.2019.04.097) (IF-7.188)
35. Sonali Das, Injamul Alam, Jagatpati Raiguru, B V Ramagouri Surya Subramanyam, and Pitamber Mahanandia. "A facile method to synthesize CZTS quantum dots for solar cell application". *Physica E: Low-dimensional Systems and Nanostructures*. vol.105, pp.19-24, 2019. [10.1016/j.physe.2018.08.020](https://doi.org/10.1016/j.physe.2018.08.020) (IF-3.369)
36. Injamul Alam, Kadambinee Sa, Sonali Das, Bhyri Venkata Ramagouri Surya Subramanyam, Jagatpati Raiguru, Budhhadeb Samanta, Pawan Kumar, and Pitamber Mahanandia. "Dielectric Behavior of PZT/Graphene Oxide Composites". *Phys. Status Solidi A*. vol.216, no.20, pp.1-8, 2019. [10.1002/pssa.201900108](https://doi.org/10.1002/pssa.201900108) (IF-2.09)
37. Kadambinee Sa, and Pitamber Mahanandia. "Conducting reduced graphene oxide film as transparent electrode". *Thin Solid Films*. vol.692, pp.137594-137601, 2019. [10.1016/j.tsf.2019.137594](https://doi.org/10.1016/j.tsf.2019.137594) (IF-2.358)
38. Sonali Das, Kadambinee Sa, Injamul Alam, and Pitamber Mahanandia. "Enhancement of photocurrent in Cu₂ZnSnS₄ quantum dotanchoredmulti- walled carbon nanotube for solar cell application". *Journal of Materials Science*. vol.54, no.11, pp.8542–8555, 2019. [10.1007/s10853-019-03467-y](https://doi.org/10.1007/s10853-019-03467-y) (IF-4.682)
39. Prakash Chandra Mahakul, and Pitamber Mahanandia. "RGO induced structural and microstructural properties of P3HT in the performance and stability of polymer solar cells". *Materials Research Express*. vol.6, no.12, pp.125338-125347, 2019. [10.1088/2053-1591/ab5a16](https://doi.org/10.1088/2053-1591/ab5a16) (IF-2.025)
40. Sonali Das, Prakash Chandra Mahakul, and Pitamber Mahanandia. "High efficient hybrid bulk hetero junction thin-film solar cell embedded with kesterite Cu₂ZnSnS₄ quantum dots". *Superlattices and Microstructures*. vol.148, pp.106719-11, 2020. [org/10.1016/j.spmi.2020.106719](https://doi.org/10.1016/j.spmi.2020.106719) (IF-3.22)
41. B V Ramagouri Surya Subramanyam, Injamul Alam, Subhasri Subudhi, Manoranjan Mandal, Santosini Patra, and Pitamber Mahanandia. "Enhanced stability of bulk heterojunction organic solar cells by application of few layers of electrochemically exfoliated graphene". *Journal of Renewable and Sustainable Energy*. vol.12, pp.054701-14, 2020. [10.1063/5.0021208](https://doi.org/10.1063/5.0021208) (IF-2.5)

42. Subhasri Subudhi, Apurba Mahapatra, Manoranjan Mandal, Sonali Das, Kadambinee Sa, Injamul Alam, B V Ramagouri Surya Subramanyam, Jagatpati Raiguru, and Pitamber Mahanandia. "Effect of Co doping in tuning the band gap of LaFeO₃". *Integrated Ferroelectrics*. vol.205, no.1, pp.61-65,2020. [10.1080/10584587.2019.1674998](https://doi.org/10.1080/10584587.2019.1674998) (IF-0.836)
43. Jagatpati Raiguru, Pitamber Mahanandia, and Bidyadhar Subudhi. "Alternative approach for efficient hole transporting electrode by depositing MWCNT layer on CZTS-MWCNT material for perovskite solar cell application". *Optical Materials*. vol.111, pp.110612-16,2020. [/10.1016/j.optmat.2020.110612](https://doi.org/10.1016/j.optmat.2020.110612) (IF-3.754)
44. Jagatpati Raiguru, Bidyadhar Subudhi, B V Ramagouri Surya Subramanyam, and Pitamber Mahanandia. "Intermittent sulfurization—a method promoting MacroPorous Cu-Poor Zn-Rich—kesterite CZTS as HTM for inverted perovskite solar cell application". *Journal of Materials Science: Materials in Electronics*. vol.31, pp.18427–18444,2020. [org/10.1007/s10854-020-04388-2](https://doi.org/10.1007/s10854-020-04388-2) (IF-4.682)
45. Manoranjan Mandal, Subhasri Subudhi, Injamul Alam, B V Ramagouri Surya Subramanyam, Santosini Patra, Jagatpati Raiguru, Sonali Das, and Pitamber Mahanandia. "Facile synthesis of new hybrid electrode material based on activated carbon/multiwalled carbon nanotubes@ZnFe₂O₄ for supercapacitor applications". *Inorganic Chemistry Communications*. vol.123, pp.108332,2020. [org/10.1016/j.inoche.2020.108332](https://doi.org/10.1016/j.inoche.2020.108332) (IF-3.428)
46. B V R S Subramanyam, Prakash Chandra Mahakul, Kadambinee Sa, Jagatpati Raiguru, and Pitamber Mahanandia. "Investigation of improvement in stability and power conversion efficiency of organic solar cells fabricated by incorporating carbon nanostructures in device architecture". *Journal of Physics Materials*. vol.3, pp.045004- 045018,2020. [org/10.1088/2515-7639/abbf44](https://doi.org/10.1088/2515-7639/abbf44) (IF-5.1)
47. Injamul Alam, Kadambinee Sa, Sonali Das, Bv Ramagourisurya Subramanyam, Manoranjan Mandal, Subhasri Subudhi, Santosini Patra, and Pitamber Mahanandia. "Electrochemically prepared grain boundaries free few-layer graphene sheets for applications in transport-based devices". *International Journal of Innovative Research in Physics*. vol.2, no.4, pp.8-14,2021. [10.15864/ijiip.2402](https://doi.org/10.15864/ijiip.2402) (IF-1.51)
48. Injamul Alam, Kadambinee Sa, Sonali Das, B.V.R.S. Subramanyam, Subhasri Subudhi, Manoranjan Manda, Santosini Patra, Buddhadev Samanta, Rashmi Rekha Sahu, Sujata Swain, Apurba Mahapatra, Pawan Kumar, and Pitamber Mahanandia. "Graphene field-effect transistor using gated ferroelectric thin film". *Solid State Communications*. vol.340, pp.114533,2021. doi.org/10.1016/j.ssc.2021.114533 (IF-1.934)
49. Manoranjan Mandal, Subhasri Subudhi, Injamul Alam, B V Ramagouri Surya Subramanyam, Santosini Patra, Sonali Das, Jagatpati Raiguru, Apurba Mahapatra, and Pitamber Mahanandia. "Simple and Cost- Effective Synthesis of Activated Carbon Anchored by Functionalized Multiwalled Carbon Nanotubes for High-Performance Supercapacitor Electrodes with High Energy Density and Power Density". *Journal of Electronic Materials*. 50, (2021)2879-2889. [Doi.org/ 10.1007/s11664-021-08796-w](https://doi.org/10.1007/s11664-021-08796-w) (IF-2.047)
50. Sonali Das, Injamul Alam, and Pitamber Mahanandia. "Cu₂ZnSnS₄ QDs anchored 2-D few-layer graphene bridge enhanced photo-induced charge carrier transport behavior for high efficient kesterite photovoltaic cell". *Optical Materials*. vol.132, pp.112775,2022. [10.1016/j.optmat.2022.112775](https://doi.org/10.1016/j.optmat.2022.112775) (IF-3.754)
51. Sonali Das, and Pitamber Mahanandia. "Improved PCE of solution-processed kesterite Ag₂ZnSnS₄ quantum dot photovoltaic cell". *Materials Chemistry and Physics*. vol.281, pp.125878,2022. [10.1016/j.matchemphys.2022.125878](https://doi.org/10.1016/j.matchemphys.2022.125878) (IF-4.778)
52. Manoranjan Mandal, Subhasri Subudhi, Alok Kumar Nayak, Injamul Alam, Bv Ramagourisurya Subramanyam, Rabi Prakash Maheswari, Santosini Patra, and Pitamber Mahanandia. "In-situ synthesis of mixed phase carbon material using simple pyrolysis method for high performance supercapacitor". *Diamond and Related Materials*. vol.127, pp.109209,2022. [10.1016/j.diamond.2022.109209](https://doi.org/10.1016/j.diamond.2022.109209) (IF-4.23).
53. Manoranjan Mandal, Alok Kumar Nayak, Subhasri Subudhi, Injamul Alam, Santosini Patra, Sandeep Yadav, Pitamber Mahanandia, Design and preparation of ZnFe₂O₄ carbon composite: A new ternary hybrid electrode for high-performance symmetric supercapacitors (Communicated to *Electrochemical Acta*) (IF-7.336).
54. Santosini Patra Manasi Singh, SubhasriSubudhi,Manoranjan Mandal, Alok Kuma, Nayak, Binod Bihari Sahu,Pitamber Mahanandia,One-step green synthesis of in-situ functionalized carbon quantum dots from *Tagetes patula* flowers: Applications

as a fluorescent probe for detecting Fe^{3+} ions and as an antifungal agent, *Journal of Photochemistry & Photobiology, A: Chemistry*, 442(2023)114779, doi.org/10.1016/j.jphotochem.2023.114779 (IF-4.3).

55. Manoranjan Mandal, Alok Kumar Nayak, Pundrikaksha Upadhyay, Santosini Patra, Subhasri Subudhi, Apurba Mahapatra, Pitamber Mahanandia, Hydrothermal synthesis of ZnFe_2O_4 anchored graphene and activated carbon as a new hybrid electrode for high-performance symmetric supercapacitor applications, *Diamond and Related Materials*, 139 (2023) 110300, <https://doi.org/10.1016/j.diamond.2023.110300>. (3.806).

56. Injamul Alam, Sandeep Kumar Yadav, Sonali Das, B. V. R. S. Subramanyam, Manoranjan Mandal, Subhasri Subudhi, Santosini Patra, Somnath Mahapatra and Pitamber Mahanandia, Grain boundary-free graphene sheets for better electrical transport properties prepared by an electrochemical method, *International Journal of Materials Research*, vol. 114, no. 9, 2023, pp. 765-772., <https://doi.org/10.1515/ijmr-2022-0115> (IF-0.678).

57. Injamul Alam, Subhasri Subudhi, Sonali Das, Manoranjan Mandal, Santosini Patra, Rashmirekha Sahu, Smaranika Das, Pawan Kumar, Pitamber Mahanandia, Graphene-based field-effect transistor using gated highest-k ferroelectric thin film, *Solid State Communications*, 371 (2023) 115258, doi.org/10.1016/j.ssc.2023.115258. (IF-1.934).

58. Subhasri Subudhi, B.V.R.S. Subramanyam, Injamul Alam, Manoranjan Mandal, Santosini Patra, Alok Kumar Nayak, Pitamber Mahanandia, Enhancement of photoresponse and photovoltaic properties in $\text{KBiFe}_2\text{O}_5/\text{BiFeO}_3$ bilayer thin films, *Current Applied Physics*, 64 (2024) 74-81. <https://doi.org/10.1016/j.cap.2024.05.015> (IF-2.4)

Publication in Conference Proceedings

1. J Raiguru, BVRS Subramanyam, K Sa, I Alam, S Das, J Mukherjee, P C Mahakul, B Subudhi¹ and P Mahanandia “Impact of Annealing Temperature on the Phase of CZTS with the Variation in Surface Morphological Changes and Extraction of Optical Bandgap,” Vol. 178, Conference 1, IOP Conf. Series: Materials Science and Engineering (2017) 012017 [doi:10.1088/1757-899X/178/1/012017](https://doi.org/10.1088/1757-899X/178/1/012017)

2. Prakash Chandra Mahakul¹ and Pitamber Mahanandia “Structural and electrical characteristics of solution processed P3HT-carbon nanotube composite,” Vol. 178, Conference 1, IOP Conf. Series: Materials Science and Engineering (2017) 012017 [doi:10.1088/1757-899X/178/1/012024](https://doi.org/10.1088/1757-899X/178/1/012024).

3. Kadambinee Sa, Prakash Chandra Mahakul, B. V. G. S. Ram Subrahmanyam, Sunirmal Saha, Jonaki Mukherjee, and Pitamber Mahanandia, Scalable synthesis of reduced graphene oxide using FeSO_4 , *AIP Conference Proceedings* 1832, 050133 (2017); [doi: 10.1063/1.4980366](https://doi.org/10.1063/1.4980366).

4. Pitamber Mahanandia and K. K. Nanda, **Carbon-Based Material for Low Temperature Detection**, *AIP Conference Proceedings* Volume 1063(2008)91-97.

5. Kadambinee Sa, Prakash C. Mahakul, B.V.R.S. Subramanyam, Jagatpati Raiguru, Sonali Das, Injamul Alam, Pitamber Mahanandia, Effect of reduced graphene oxide-carbon nanotubes hybrid nanofillers in mechanical properties of polymer nanocomposites, *IOP Conf. Series: Materials Science and Engineering* 338 (2018) 012055 [doi:10.1088/1757-899X/338/1/012055](https://doi.org/10.1088/1757-899X/338/1/012055).

6. S Das, K Sa, P C Mahakul, J Raiguru, I Alam, BVRS Subramanyam, P Mahanandia, Synthesis of quaternary chalcogenide CZTS nanoparticles by a hydrothermal route, *IOP Conf. Series: Materials Science and Engineering* 338 (2018) 012062 [doi:10.1088/1757-899X/338/1/012062](https://doi.org/10.1088/1757-899X/338/1/012062).

7. I Alam, K Sa, S das, J Raiguru, BVRS Subramanyam, PC Mahakul and P Mahanandia, Preparation of few layer graphene sheets (FLGS) prepared by an electrochemical method, *IOP Conf. Series: Materials Science and Engineering* 338 (2018) 012063 [doi:10.1088/1757-899X/338/1/012063](https://doi.org/10.1088/1757-899X/338/1/012063).

8. S. Das, K. Sa, I. Alam, P. C. Mahakul, J. Raiguru, B. V. R. S. Subramanyam, and P. Mahanandia, Synthesis and characterizations of $\text{Cu}_2\text{ZnSnS}_4$ nanoparticles/carbon nanotube composite as an efficient absorber material for solar cell application, *AIP Conference Proceedings* 1961, 020006 (2018); [doi: 10.1063/1.5035199](https://doi.org/10.1063/1.5035199).

9. S. Das, K. Sa, I. Alam, J. Raiguru, BVRS Subramanyam, P. Mahanandia, Structural and optical study of CZTS-reduced graphene oxide composite towards photovoltaic device application, *Materials Today: Proceedings* 17 (2019) 131–137. **ICAMEES2018**

10. B V R S Subramanyam, J Raiguru, P C Mahakul, K Sa, I Alam, S Das, S Subudhi, M Mandal, S Saha, B Das, and P Mahanandia, Performance Of Organic Photovoltaic Cells Fabricated Using Reduced Graphene Oxide/PEDOT:PSS Composites As Transparent Electrodes, *AIP Conference Proceedings* 2115, 030559-03563 (2019); <https://doi.org/10.1063/1.5113398>.

11. Injamul Alam, B.V.R.S. Subramanyam, Sonali Das, Kadambinee Sa, Subhasri Subudhi, Manoranjan Mandal, Jagatpati Raiguru, Santosini Patra, Pitamber Mahanandia, *Materials Today Proceeding*, 2020, DOI: [10.1016/j.matpr.2020.08.376](https://doi.org/10.1016/j.matpr.2020.08.376).

12. S Das, I Alam, J Raiguru, BVRS Subramanyam, P Mahanandia, *AIP Conference Proceedings*, 2265(2020) 030602 DOI: [10.1063/5.0017755](https://doi.org/10.1063/5.0017755).

13. Manoranjan Mandal, SubhasriSubudhi, InjamulAlam, BVRS Subramanyam, Sonali Das, JagatpatiRaiguru and Pitamber Mahanandia, Effect of different aqueous electrolytes on electrochemical performance of activated carbon anchored by multiwalled carbon nanotube for super capacitor applications Effect of Different Aqueous Electrolytes on Electrochemical Performance of Activated Carbon Anchored by Multiwalled Carbon Nanotube for Super capacitor Applications, AIP Conference Proceedings, 2265(2020)030599, DOI:org/10.1063/5.0016727.
14. Santosini Patra, Sonali Das, JagatpatiRaiguru, BVRS Subramanyam, InjamulAlam, Manoranjan Mandal, SubhasriSubudhi, Pitamber Mahanandia, 2220(2020) 020100, DOI: [10.1063/5.0001290](https://doi.org/10.1063/5.0001290).

Presentation in Conferences

1. National Meeting on Nano and Novel Materials (NANM2006) for the invited talk, which was held in Department of Physics, Centre for advanced study in physics, Punjab University, Chandigarh (India) from 8th-9th March 2006. **Title of the talk presented**-Carbon Nanotubes: Its properties, application, synthesis and the challenges.
2. 8th International Conference on Nanostructured Materials “NANO-2006” held in August 20-25, 2006, Indian Institute of Science, Bangalore, India Title of the poster presentation: **A novel method to synthesize nano carbons**”.
3. Advanced Nanomaterials, held in the Department of Physics, Indian Institute of Technology, Bombay, Powai from 8th – 10th January 2007, Title of the poster presentation: **Synthesis of entangled carbon nanotubes and aligned carbon nanotubes by a simple pyrolysis**.
3. The American Physical Society for the March Meeting 2008, from March 10–14, 2008; New Orleans, Louisiana, USA. Title of the poster presentation: **Consequences of magneto electric interactions on ferroelectric domain structures**.
4. International Bunsen Discussion Meeting on Polymer Interfaces: Science and Technology held in Technical University Darmstadt, Germany from August 31st to 1st September 2009. Title of the poster presentation: Polymer Confinement Effects in Aligned Carbon Nanotubes Arrays.
5. NANO2014, Moscow State University, Russia
6. 3rd International Conference on Mechanics of Composites (MECHCOMP3) to be held in Università di Bologna, Italy from 4-7th July, 2017”.
7. Invited Speaker, ICN 2018, Kottayam held from 11-13 May 2018.

Sponsored Research Projects

1. Designing and tailoring of hierarchical graphene-carbon nanotubes and activated carbon for high performance hybrid supercapacitor, CPRI, Bangalore, India, August 2021-2023. (~Rs. **60.38 Lakhs**)
2. Institute Fund for PL Micro Raman ~ **Rs. 2.0 Crore**
3. DST, SERB, To investigate the effect of grain boundary on electrical properties of graphene prepared by electrochemical method and from Jan 2016-2020. (**Rs. 24,57,400/-**)
4. INDO-KOREA joint proposal, DST, International Cell, Novel photovoltaic cell made up of CZTS and graphene from July 2015- June 2018. (**Rs. 30,47,160/-**)
5. DST, SERB for investigation of efficiency of CNTs/graphene hybrid inorganic photovoltaic cells from September 2014- August 2017. (**Rs. 27,90,463/-**).
6. External Quantum Efficiency Setup (Rs. 52.00 Lakhs)-Institute Fund

Research Guidance

1. Dr. Sunirmal Saha- PhD degree Awarded in 2019
2. Kadambinee Sa - PhD degree awarded in 2019
3. Dr. P.C. Mahakul – PhD degree awarded in 2019
4. Mr. Bamadev Das (M.Tech.res) Awarded 2016
5. Deepankar Panda (M.Tech.Res)-Awarded 2016
6. BVRS Subramanyam- PhD Degree Awarded in 2021
7. JagatPatiRaiguru- PhD Degree Awarded in 2021
8. Sonali Das- PhD Degree Awarded January 2024
9. InjamulAlam- PhD Degree Awarded January 2024
10. ManoranjanMondal- PhD Degree Awarded January 2024
11. ShuhashriSubudhi PhD Thesis submitted July 2024
12. Santoshini Patra PhD Thesis submitted July 2024
13. Ravi Prakash Maheswari ((PhD Continuing)
14. Sanjoy Mishra (PhD Continuing)
15. Alok Kumar Nayak (PhD Continuing)

M.Sc.Research Project Guidance

Title-Preparation of Graphene Sheets by Microwave Irradiation.

Title-Synthesis and Characterization of CuO/graphene oxide composite.

Title-Unzipping of Multiwalled Carbon Nanotubes.

Title-reparation and Characterization of Carbon Nanotubes Barium Titanate Composites.

Title-Synthesis of carbon nanotube and the study of transfer characteristics of FET configured CNT device.

Title -Preparation of long aligned carbon nanotubes and study its physical properties.

Title-Nano/Micro fabrication using Lithography.

Title-Preparation and Characterization of graphene transition metal oxides.

Title-Preparation of helical carbon nanotubes.

Title-Preparation of carbon nanoribbon

Teaching Experience

No.	Position	Organization	Title of course taught	Postgraduate/ Undergraduate	Sole instructor or with others	Academic Year
1	Asst.Prof.	NIT,Rourkela	Waves and Oscillations	Undergraduate	Sole Instructor	2011-2012
2	Asst.Prof.	NIT,Rourkela	Atomic and Molecular Physics	Postgraduate	Sole Instructor	2011-2012 &2012-2013
3	Asst.Prof.	NIT,Rourkela	Physics-I	Undergraduate	Sole Instructor	2012-2013 .2013-2014 &2014-2015
4	Asst.Prof.	NIT,Rourkela	Thermodynamics	Under Graduate	Sole Instructor	2012-2013, 2016-2017
5	Asst.Prof.	NIT,Rourkela	Properties of Matter	Undergraduate	Sole Instructor	2012-2013
6	Asst.Prof.	NIT,Rourkela	X-Ray techniques for Structure Evaluation	Undergraduate	Sole Instructor	2013-2014
7	Asst.Prof.	NIT,Rourkela	Mesoscopic Physics	Postgraduate	Sole Instructor	2013-2014 2015-2016 2018-2019
8	Asst.Prof.	NIT,Rourkela	Fundamental of Thermal & Statistical Physics	Undergraduate	Sole Instructor	2014-2015
9	Asst.Prof.	NIT Rourkela	Classical Mechanics	Post graduate Level	Sole Instructor	2017-2018, 2018-2019
10	Asst.Prof.	NIT Rourkela	Physics-II	Undergraduate	Sole Instructor	2016-2017 2017-2018
11	Associate Professor	NIT Rourkela	Physics-II	Undergraduate	Sole Instructor	2019-2020
12	Associate Professor	NIT Rourkela	Mesoscopic Physics	Postgraduate	Sole Instructor	2020-2021
13	Associate Professor	NIT Rourkela	Basic Statistical Physics	Undergraduate	Sole Instructor	2020-2021
14	Associate Professor	NIT Rourkela	Physics-II	Under Graduate	Sole Instructor	2021-2022
15	Associate Professor	NIT Rourkela	Mesoscopic Physics	Graduate	Sole Instructor	2021-2022
16	Associate Professor	NIT Rourkela	Statistical Mechanics	Post Graduate	Sole Instructor	2022-2023
17	Professor	NIT Rourkela	Introduction to Classical Mechanics	Under Graduate	Sole Instructor	2024-2025