

Dr. Rajesh Kumar Prusty

Assistant Professor

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[Google scholar link](#)



1. EDUCATION

Exam/ Degree	Board/ University	Institute	Period		Specialization	% of Marks/ Grade	Rank
			From	To			
Ph.D.	NIT, Rourkela	NIT, Rourkela	2014	2017	Composite Materials	-	-
M.E.	IISc, Bangalore	IISc, Bangalore	2011	2013	Materials Engineering	7.9 (out of 8)	1st
B.Tech.	NIT, Rourkela	NIT, Rourkela	2006	2010	Metallurgical and Materials Engineering	9.19 (out of 10)	1st
10+2	CHSE, Orissa	BJB Junior College, Bhubaneswar	2003	2005	Physics, Chemistry, Mathematics, Statistics	92.22%	
10	BSE, Orissa	Mathasahi High School, Puri	1993	2003	Mathematics, Science, Social Study	91.73%	1st

2. ACHIEVEMENTS

- **All India Rank 1** in Metallurgical Engineering GATE 2011.
- Awarded **scholarship** of ₹1,00,000 for pursuing higher study by [JSL Stainless Ltd](#), Hisar, India.
- Awarded **K K Malik** award for being the **best graduate** from Materials Engineering (M.E.), [IISc, Bangalore](#) 2011-13 batch.

- Awarded **Silver Medal** for being the **first rank** holder from Metallurgical & Materials Engineering (B.Tech.), [NIT, Rourkela](#) 2006-10 batch.
- Secured a SGPA of **8/8** in 1st Semester during M.E. at [IISc, Bangalore](#).
- Secured a SGPA of **10/10** in 8th Semester during B.Tech. at [NIT, Rourkela](#).
- Awarded **Silver medal** for being the first rank holder in matriculation exam from school.

3. CURRENT RESEARCH INTERESTS

- Synthesis of advanced Fibre Reinforced Polymer (FRP) composites.
- Mechanical behavior and damage assessment of FRP composites.
- Impact of environmental conditionings on the performance of polymer matrix composites.
- Impact of nano-filler on interfacial durability of FRP composites.
- Theoretical and Mathematical modeling using experimental data.
- Mechanical behavior of fibrous polymeric composites at different loading rates.

4. ACADEMIC EXPERIENCE

- Continuing as an **Assistant Professor** in Metallurgical and Materials Engineering dept. at [NIT, Rourkela](#) from March 2014.

Subjects taught/teaching at NIT Rourkela

- Nanostructured Materials (UG)
 - Composite Materials (UG and PG)
 - Phase Transformation laboratory (PG)
 - Product Development laboratory (UG)
 - Molecular Modelling of materials deformation behavior (UG)
 - Seminar and Technical Writing (UG)
- Served Mechanical Engineering dept., [KIIT University](#), Bhubaneswar as an **Assistant Professor** for 8 months during July 2013 – Feb 2014

Subjects taught at KIIT University:

- Engineering Metallurgy (UG)
- Introduction to Composite Materials (UG)
- Manufacturing Technology (UG)

5. INDUSTRIAL EXPERIENCE

- Served [JSL Stainless Ltd](#), Hisar, India as a Graduate Engineer Trainee (**GET**) for one year during July 2010- June 2011.

Responsibilities assigned during the job period:

- Costing.
- Analysis of casting defects and possible remedial measures.
- Optimization of processing parameters of Steel Melting Shop.
- Maximization of Chromium and Manganese recovery in Steel Melting Shop.
- Analysis of feasibility of new grade processing.

6. PAST RESEARCH EXPERIENCE

- Ph.D. thesis (2017): **Implication of CNT Fillers on Environmental Durability of GFRP Composites: An Evaluation of Microstructural Features and Mechanical Properties** at [NIT, Rourkela](#) under supervision of [Prof. B C Ray](#).

Project Outlines:

- Effects of CNT filler addition on the performance of GFRP composites at sub- and above- zero temperature environments.
 - Effects of liquid nitrogen conditioning on the mechanical properties of CNT filled GFRP composites.
 - Functionalized CNT reinforcement in GFRP composites for improved low- and elevated temperature durability.
 - Effects of water ageing temperature on the uptake kinetics and subsequent mechanical performance of CNT embedded GFRP composites.
- Master's degree (2013): **Nanoindentation of Ni-gyroids** at [IISc, Bangalore](#) under supervision of [Prof. U Ramamurty](#) (*Shanti Swarup Bhatnagar awardee-2011*).

Project Outlines:

- Structural Characterization using FESEM.
- To determine Hardness and Modulus as a function of Applied Load.
- To determine Hardness and Modulus as a function of Indentation Strain.
- Electrical Contact Resistance and its variation with indentation strain.

7. PUBLICATIONS IN INTERNATIONAL JOURNALS

16. S.K. Ghosh, P. Rajesh, B. Srikavya, D.K. Rathore, **R.K. Prusty**, B. Chandra Ray, Creep behavior prediction of multi-layer graphene embedded glass fiber/epoxy composites using time-temperature superposition principle, Compos. Part Appl. Sci. Manuf. (In Press). doi:[10.1016/j.compositesa.2018.01.030](https://doi.org/10.1016/j.compositesa.2018.01.030).

- 15 **R.K. Prusty**, D.K. Rathore, B.C. Ray, Water-induced degradations in MWCNT embedded glass fiber/epoxy composites: An emphasis on aging temperature, *J. Appl. Polym. Sci.* (In Press). doi:[10.1002/app.45987](https://doi.org/10.1002/app.45987).
14. **R.K. Prusty**, D.K. Rathore, B.C. Ray, Evaluation of the role of functionalized CNT in glass fiber/epoxy composite at above- and sub-zero temperatures: Emphasizing interfacial microstructures, *Compos. Part Appl. Sci. Manuf.* 101 (2017) 215–226. doi:[10.1016/j.compositesa.2017.06.020](https://doi.org/10.1016/j.compositesa.2017.06.020).
13. S.K. Ghosh, **R.K. Prusty**, D.K. Rathore, B.C. Ray, Creep behaviour of graphite oxide nanoplates embedded glass fiber/epoxy composites: Emphasizing the role of temperature and stress, *Compos. Part Appl. Sci. Manuf.* (2017). doi:[10.1016/j.compositesa.2017.08.001](https://doi.org/10.1016/j.compositesa.2017.08.001).
12. D.K. Rathore, **R.K. Prusty**, B.C. Ray, Mechanical, thermomechanical, and creep performance of CNT embedded epoxy at elevated temperatures: An emphasis on the role of carboxyl functionalization, *J. Appl. Polym. Sci.* 134 (2017). doi:[10.1002/app.44851](https://doi.org/10.1002/app.44851).
11. **R.K. Prusty**, S.K. Ghosh, D.K. Rathore, B.C. Ray, Reinforcement effect of graphene oxide in glass fibre/epoxy composites at in-situ elevated temperature environments: An emphasis on graphene oxide content, *Compos. Part Appl. Sci. Manuf.* 95 (2017) 40–53. doi:[10.1016/j.compositesa.2017.01.001](https://doi.org/10.1016/j.compositesa.2017.01.001).
10. **R.K. Prusty**, D.K. Rathore, S. Sahoo, V. Parida, B.C. Ray, Mechanical behaviour of graphene oxide embedded epoxy nanocomposite at sub- and above- zero temperature environments, *Compos. Commun.* 3 (2017) 47–50. doi:[10.1016/j.coco.2017.02.003](https://doi.org/10.1016/j.coco.2017.02.003).
9. D.K. Rathore, **R.K. Prusty**, S.C. Mohanty, B.P. Singh, B.C. Ray, In-situ elevated temperature flexural and creep response of inter-ply glass/carbon hybrid FRP composites, *Mech. Mater.* 105 (2017) 99–111. doi:[10.1016/j.mechmat.2016.11.013](https://doi.org/10.1016/j.mechmat.2016.11.013).
8. **R.K. Prusty**, D.K. Rathore, B.C. Ray, CNT/polymer interface in polymeric composites and its sensitivity study at different environments, *Adv. Colloid Interface Sci.* 240 (2017) 77–106. doi:[10.1016/j.cis.2016.12.008](https://doi.org/10.1016/j.cis.2016.12.008).
7. D.K. Rathore, B.P. Singh, S.C. Mohanty, **R.K. Prusty**, B.C. Ray, Temperature dependent reinforcement efficiency of carbon nanotube in polymer composite, *Compos. Commun.* 1 (2016) 29–32. doi:[10.1016/j.coco.2016.08.002](https://doi.org/10.1016/j.coco.2016.08.002).

6. M.J. Shukla, D.S. Kumar, D.K. Rathore, **R.K. Prusty**, B.C. Ray, An assessment of flexural performance of liquid nitrogen conditioned glass/epoxy composites with multiwalled carbon nanotube, *J. Compos. Mater.* 50 (2016) 3077–3088. doi:[10.1177/0021998315615648](https://doi.org/10.1177/0021998315615648).
5. **R.K. Prusty**, D.K. Rathore, B.P. Singh, S.C. Mohanty, K.K. Mahato, B.C. Ray, Experimental optimization of flexural behaviour through inter-ply fibre hybridization in FRP composite, *Constr. Build. Mater.* 118 (2016) 327–336. doi:[10.1016/j.conbuildmat.2016.05.054](https://doi.org/10.1016/j.conbuildmat.2016.05.054).
4. D.K. Rathore, **R.K. Prusty**, D.S. Kumar, B.C. Ray, Mechanical performance of CNT-filled glass fiber/epoxy composite in in-situ elevated temperature environments emphasizing the role of CNT content, *Compos. Part Appl. Sci. Manuf.* 84 (2016) 364–376. doi:[10.1016/j.compositesa.2016.02.020](https://doi.org/10.1016/j.compositesa.2016.02.020).
3. **R.K. Prusty**, D.K. Rathore, M.J. Shukla, B.C. Ray, Flexural behaviour of CNT-filled glass/epoxy composites in an in-situ environment emphasizing temperature variation, *Compos. Part B Eng.* 83 (2015) 166–174. doi:[10.1016/j.compositesb.2015.08.035](https://doi.org/10.1016/j.compositesb.2015.08.035).
2. G.R. Krishna, R. Devarapalli, **R. Prusty**, T. Liu, C.L. Fraser, U. Ramamurty, C.M. Reddy, Structure-mechanical property correlations in mechanochromic luminescent crystals of boron difluoride dibenzoylmethane derivatives, *IUCrJ.* 2 (2015). doi:[10.1107/S2052252515015134](https://doi.org/10.1107/S2052252515015134).
1. **R.K. Prusty**, P. Kuruva, U. Ramamurty, T. Thomas, Correlations between mechanical and photoluminescence properties in Eu doped sodium bismuth titanate, *Solid State Commun.* 173 (2013) 38–41. doi:[10.1016/j.ssc.2013.09.002](https://doi.org/10.1016/j.ssc.2013.09.002).

8. PRESENTATIONS IN CONFERENCES

8. **R.K. Prusty**, D.K. Rathore, B.C. Ray, Effect of In-Service Temperature on the Flexural and Creep Behaviour of Carbon Nanofiber Embedded Epoxy Nanocomposite, Presented at 3rd International Congress on Advanced Materials (AM 2016), Bangkok, Thailand, November 27 - 30 2016.
7. K.K. Mahato, D.K. Rathore, **R.K. Prusty**, K. Dutta, B.C. Ray, Tensile behavior of MWCNT enhanced glass fiber reinforced polymeric composites at various crosshead speeds, Presented at 6th National Conference on Processing and Characterization of

- Materials (NCPCM 2016), NIT Rourkela, India, December 9 – 10, 2016. Published in: IOP Conf. Ser. Mater. Sci. Eng. 178 (2017) 012006. doi:10.1088/1757-899X/178/1/012006.
6. S.C. Mohanty, D.K. Rathore, B.P. Singh, **R.K. Prusty**, B.C. Ray, Effect of post-mixing vacuum degassing time of MWCNT/epoxy mixture and MWCNT content on the flexural behaviour of MWCNT filled glass/epoxy composite, Presented at International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites (ICNPM 2015), MG University, Kottayam, India, November 13 – 15, 2015.
 5. K.K. Mahato, M. Biswal, D.K. Rathore, **R.K. Prusty**, K. Dutta, B.C. Ray, Effect of loading rate on tensile properties and failure behavior of glass fibre/epoxy composite, Presented at 5th National Conference on Processing and Characterization of Materials (NCPCM 2015), NIT Rourkela, India, December 12 – 13, 2015. Published in: IOP Conf. Ser. Mater. Sci. Eng. 115 (2016) 012017. doi:10.1088/1757-899X/115/1/012017.
 4. S.C. Mohanty, B.P. Singh, K.K. Mahato, D.K. Rathore, **R.K. Prusty**, B.C. Ray, Water absorption behavior and residual strength assessment of glass/epoxy and glass-carbon/epoxy hybrid composite, Presented at 5th National Conference on Processing and Characterization of Materials (NCPCM 2015), NIT Rourkela, India, December 12 – 13, 2015. Published in: IOP Conf. Ser. Mater. Sci. Eng. 115 (2016) 012029. doi:10.1088/1757-899X/115/1/012029.
 3. B.P. Singh, D.K. Rathore, S.C. Mohanty, **R.K. Prusty**, B.C. Ray, In-situ Elevated Temperature Mechanical Performance of MWCNT/epoxy Nanocomposite, Presented at International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites (ICNPM 2015), MG University, Kottayam, India, November 13 – 15, 2015. Published in: Sens. Transducers. 210 (2017) 17.
 2. M.J. Shukla, D.S. Kumar, K.K. Mahato, D.K. Rathore, **R.K. Prusty**, B.C. Ray, A comparative study of the mechanical performance of Glass and Glass/Carbon hybrid polymer composites at different temperature environments, Presented at 4th National Conference on Processing and Characterization of Materials (NCPCM 2014), NIT Rourkela, India, December 5 – 6, 2014. Published in: IOP Conf. Ser. Mater. Sci. Eng. 75 (2015) 012002. doi:10.1088/1757-899X/75/1/012002.

1. D.S. Kumar, M.J. Shukla, K.K. Mahato, D.K. Rathore, **R.K. Prusty**, B.C. Ray, Effect of post-curing on thermal and mechanical behavior of GFRP composites, Presented at 4th National Conference on Processing and Characterization of Materials (NCPCM 2014), NIT Rourkela, India, December 5 – 6, 2014. Published in: IOP Conf. Ser. Mater. Sci. Eng., IOP Publishing, 2015: p. 012012.

9. REVIEWER OF

- Construction and Building Materials (Elsevier)
- Composites Part A: Applied Science and Manufacturing (Elsevier)
- Chemical Engineering Journal (Elsevier)
- Journal of Applied Polymer Science (Wiley)
- Steel and Composite Structures (Techno-Press)

10. THESIS SUPERVISION

- **M.Tech/Dual degree**

S. No.	Name and Roll No. of student	Thesis Title	Year	Others
8	Sohan Kumar Ghosh (712MM1117)	Flexural and creep performance of graphene oxide reinforced glass fiber/epoxy composite at elevated temperatures	2017	Prof. B C Ray (Co-supervisor)
7	Sai Seetha Ram Nomula (712MM1168)	Durability assessment of Carbon nano tubes embedded glass fiber reinforced polymer composites at elevated temperature and different corrosive environments	2017	Prof. B C Ray (Supervisor)
6	Debaraj Sahoo (215MM1242)	Effect of Humid Ageing on the Durability of Functionalized CNT Embedded GFRP Composite	2017	Prof. B C Ray (Co-supervisor)
5	Pradeep Kumar Biswal (215MM1425)	Mechanical Performance of Glass/Carbon Hybrid Polymer Composites under Cryogenic Temperature and Humid Environments	2017	Prof. B C Ray (Supervisor)
4	Bhanu Pratap Singh (214MM2361)	Mechanical performance evaluation of carbon nanotube reinforced polymer nanocomposites at above ambient temperature environments	2016	Prof. B C Ray (Co-supervisor)
3	Sarat Chandra Mohanty (214MM1340)	Development of CNT modified GFRP composite and assessment of its elevated temperature mechanical performance	2016	Prof. B C Ray (Supervisor)
2	Devalingam Santhosh	new generation fibre reinforced polymer	2015	Prof. B C Ray

	Kumar (213MM1470)	composites for low and cryogenic temperature applications		(Co-supervisor)
1	Meet Jayesh Shukla (213MM1474)	Elevated temperature performance of hybrid polymer composites	2015	Prof. B C Ray (Supervisor)

• **B.Tech Thesis**

S. No.	Name and Roll No. of student	Thesis Title	Year	Others
10	Akula Gayatri Sri Anjani (113MM0435) Arunesh Kumar Pandey (113MM0456)	Effect of Loading Rate and Temperature on Mechanical Performance of CNT Modified Glass Epoxy Fiber Reinforced Composite	2017	Prof. B C Ray (Co-supervisor)
9	Dipesh Divyanshu (113MM0443)	Cryogenic performance of Nano-Silica embedded Glass Fibre Reinforced Polymer composite	2017	Prof. B C Ray (Co-supervisor)
8	Ashika Agrawal (113MM0434) Bata Krishna Giri (113MM0445)	Flexural and Creep behavior of CNF enhanced GFRP composites at different temperatures 2017	2017	Prof. B C Ray (Supervisor)
7	Tanmay Mahendra Goswami (113MM0602)	Effect of Nano-Silica reinforcement on mechanical behaviour of GFRP composites at different temperatures	2017	Prof. B C Ray (Supervisor)
6	Swastik Somaray Mashyal (112MM0407)	ole of environmental temperature on the mechanical behaviour of 0.5 wt % carbon nano fiber modified epoxy nanocomposite and glass fibre reinforced composite	2016	Prof. B C Ray (Co-supervisor)
5	Sweta Sahoo (112MM0419) Varsha Parida (112MM0413)	Elevated Temperature Performance of Carbon Nanotube Modified Epoxy Nanocomposites	2016	Prof. B C Ray (Co-supervisor)
4	Jyoti Prakash (112MM0387) Philkhana Naga Harshita (112MM0499)	Role of environmental temperature on the mechanical behaviour of Nanoclay modified epoxy composite	2016	Prof. B C Ray (Supervisor)
3	Brajesh Ranjan (112MM0385)	Mechanical performance of epoxy with varying content of carbonaceous nano-filler at elevated temperature	2016	Prof. B C Ray (Supervisor)
2	Hem Shruti Bhardwaj (111MM0357) Prangya Paramita Sahoo (111MM0378)	Environmental Study of Nano-Filler Embedded Fiber Reinforced Polymer Composite	2015	Prof. B C Ray (Supervisor)

1	Abhisek Agrawalla (111MM0264) Namrata Keshri (111MM0365)	Durability Assessment of Multiwalled Carbon-Nanotubes Modified Advanced Fibrous Polymeric Composite in Different Marine Environment	2015	Prof. B C Ray (Supervisor)
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11. SPONSORED PROJECTS

- Project Title:** Effect of Hygrothermal conditioning and cycling on CNT embedded GFRP composite: A Study on marine environment durability.

Funding Agency: Naval Research Board (NRB), DRDO, Govt. of India.

Cost of the project: ₹ 11,88,000.

Duration: November, 2016 to November, 2019.

Status: Continuing.
- Project Title:** Moisture uptake kinetics and its subsequent effect on mechanical performance of nano-phased fibrous polymeric composites.

Funding Agency: Council of Scientific and Industrial Research (CSIR), Govt. of India.

Cost of the project: ₹ 5,50,000.

Duration: August, 2017 to August, 2020.

Status: Continuing.

12. INVITED/GUEST LECTURES

- Delivered a keynote lecture at National seminar on “Polymer Nanocomposites for Engineering Applications” organized at NIT, Rourkela held on 14th March, 2015.

13. REFERENCES

- 1. Prof. U Ramamurty**
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- 2. Prof. B C Ray**
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- 3. Dr. B C Tripathy**
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