

Personal Details

Name : Dr. Gaurab Kumar Ghosh
 Date of Birth : 01/12/1990
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**Ph.D. Project**

Project titled “**Experimental and Mathematical analysis of Gear oil based nanolubricants**” under the supervision of Prof. Subrata Kumar Ghosh and Dr. Niranjana Kumar. This project aims to develop sustainable and cost-effective lubricants energized with Graphene nanoparticles for Heavy Earth Moving Machineries (HEMM).

Academic Credentials

<i>Educational Qualification</i>	<i>Institute Name</i>	<i>Board/ University</i>	<i>CGPA/ Percentage</i>	<i>Date/Year of Qualification</i>
PhD (Mechanical Engineering)	Indian Institute of Technology (ISM) Dhanbad	IIT (ISM), Dhanbad	9.00	30 th July 2024
M.Tech (Mechanical Engineering)	Indian School of Mines, Dhanbad	ISM Dhanbad	9.99	1 st June 2015
Bachelor of Technology (Mechanical Engineering)	Veer Surendra Sai University of Technology Burla	VSSUT, Burla	9.21	9 th July 2013
Higher Secondary (Science)	Christ Jyoti School, Singrauli (M.P)	CBSE, New Delhi	81.00	21 st May 2008
Secondary School Examination	Christ Jyoti School, Singrauli (M.P)	CBSE, New Delhi	88.40	27 th May 2006
Post Graduate Diploma	Indira Gandhi National Open University	IGNOU, New Delhi	89.10	19 th Feb 2021

Organizational Experience

<i>Name of the employer</i>	<i>Designation</i>	<i>From</i>	<i>To</i>	<i>Type of Organization</i>
Indira Gandhi Institute of Technology, Sarang	Assistant Professor (Level-10, Cell-08)	19 th July 2017	Present	State Government
Aakash Educational Services Pvt Limited, New Delhi	Assistant Lecturer and Academic Coordinator	17 th July 2015	13 th July 2017	Private

Publications (Journals)

1. **Gaurab Kumar Ghosh**, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, Sikta Panda, CFD-Driven Insights into load independent Loss of a hydraulic gearbox with Nanolubricants, *International Journal for Multiscale Computational Engineering*, 24 (3), 2026, 1-20, I.F: 1.4 (SCIE)
2. **Gaurab Kumar Ghosh**, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, Sikta Panda, (2025). Comparative measurement of super-lubricity behavior elucidated by HEMM gear oil based nanolubricants followed by field training on FZG test rig, *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology*, 2025, 13506501251361669, I.F: 1.8 (SCIE)
3. Sikta Panda, **Gaurab Kumar Ghosh**, Subrata Kumar Ghosh, Forecasting the viscosity of Bio-Nano Oils Using the Best Fit Algorithm for Artificial Neural Network, *Journal of Tribology*, 2025, 1-34, 147(10): 10210, I.F.: 3 (SCIE)
4. Sikta Panda, **Gaurab Kumar Ghosh**, Ritesh Kumar Patel, Sandeep Bhoi, Subrata Kumar Ghosh (2025) Formulation of In-situ synthesized TiO₂-Jatropha oil bio-nanolubricants- A green alternative for petroleum-based lubricant, *Journal of Tribology*, 2025, 147(8): 084602, I.F.: 3 (SCIE)
5. **Gaurab Kumar Ghosh**, Sikta Panda, Niranjana Kumar, Subrata Kumar Ghosh, Ankit Kotia, Thermodynamic Formulation of Specific Heat Capacity Considering Steady-state Heat Transfer Across Solid-Liquid Interface in Nanolubricants, *Heat Transfer Research*, 2025, 56 (9), 15-35, I.F. 1.7 (SCIE)
6. **Gaurab Kumar Ghosh**, Sikta Panda, Niranjana Kumar, Subrata Kumar Ghosh, Ankit Kotia, Jayant Giri, Mohammad Kanan, T. Sathish, A multi-faceted review on industrial grade nanolubricants: Applications and rheological insights with global market forecast, *Results in Engineering*, 2025, 103628. I.F. 7.9 (SCOPUS)
7. **Gaurab Kumar Ghosh**, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, Multi-response optimization of tribological characteristics for Graphene-Gear oil nanolubricants using Grey-Taguchi methodology followed by scrutinization of lubrication mechanisms. *Journal of Materials Engineering and Performance*, 2024, 34(15), 16631-16649. I.F: 2 (SCIE)
8. **Gaurab Kumar Ghosh**, Sikta Panda, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, The conjoint effect of lab-grown nano-graphene dispersant and omega-9 fatty acid surfactant on performance of CI engine, *Journal of Dispersion Science and Technology*, 2024, 1-14. I.F. 1.9 (SCIE)
9. **Gaurab Kumar Ghosh**, Sikta Panda, Ritesh Kumar Patel, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, Evaluation of tribological efficacy and EP lubricity properties of gear oil (EP90) energized with molybdenum disulfide (MoS₂) nano-additives, *Journal of Dispersion Science and Technology*, 2024, 46(6), 875-885, I.F. 1.9 (SCIE)
10. **Gaurab Kumar Ghosh**, Ankit Kotia, Niranjana Kumar, Subrata Kumar Ghosh, Optimization and modeling of rheological characteristics for graphene-gear oil based nanolubricant using response surface methodology. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 2021, 630, 127605. I.F: 5.4 (SCIE)
11. Ankit Kotia, **Gaurab Kumar Ghosh**, Isha Srivastava, Piyush Deval, Subrata Kumar Ghosh, Mechanism for improvement of friction/wear by using Al₂O₃ and SiO₂/Gear oil Nanolubricants, *Journal of Alloys and Compounds*, 2019, 782, 592-599. I.F: 6.3 (SCIE)
12. Ankit Kotia, **Gaurab Kumar Ghosh**, Subrata Kumar Ghosh, Analytical modelling of interfacial thermal conductivity of nanofluids for advanced energy transfer, *Iranian Journal of Science and Technology, Transactions A: Science*, 2016, 42(3), 1603-1611. I.F: 1.4 (SCIE)

Patents

S. No	Title of IPR	Regd. ID	Date of filing	Date of publication	Patent No and Date of grant	Name of Applicant	Name of Inventor(s)
1.	Novel gear oil-based nanolubricants and their application thereof	202531011416	11/02/2025	21/02/2025	57051209/09/2025	Indian Institute of Technology (Indian School of Mines), Dhanbad	Gaurab Kumar Ghosh, Dr. Sikta Panda, Niranjana Kumar, Prof. Subrata Kumar Ghosh
3	Hybrid Bio-Nano oils for Improved Lubrication Efficiency	202531128227	17/12/2025				Sikta Panda, Gaurab Kumar Ghosh, Prof. Subrata Kumar Ghosh

Publications From Conference

1. Amiya Ranjan Pani, Ritesh Kumar Patel, **Gaurab Kumar Ghosh** (2020). Buckling analysis and material selection of connecting rod to avoid hydro-lock failure. *Materials Today: Proceedings*, 27, 2121-2126, <https://doi.org/10.1016/j.matpr.2019.09.079>
2. Ankit Saxena, Swati Gangwar, **Gaurab Kumar Ghosh**, Ritesh Kumar Patel, Vivek Chaudhary (2020). Rheological properties analysis of MWCNT/graphene hybrid-gear oil (SAE EP-90) nanolubricants. *Materials Today: Proceedings* 33, 5313-5316. <https://doi.org/10.1016/j.matpr.2020.02.973>
3. Abhishek Kumar, Sikta Panda, **Gaurab Kumar Ghosh**, Ritesh Kumar Patel, Numerical simulation of weld nugget in resistance spot welding process, *Materials Today: Proceedings*, 27(3), 2020, 2958-2963
4. Sikta Panda, Subhakanta Nayak, **Gaurab Kumar Ghosh**, Comparative study on mechanical properties of luffa cylindrica and jute fibre reinforced epoxy with graphene nanoparticles. *AIJR Abstracts*. 2021 Feb 6:48.
5. **Gaurab Kumar Ghosh**, and Ritesh Kumar Patel. A non-linear model for interfacial layer's thermal conductivity of nanofluid. 2nd National Conference on Multi-Dimensional Advancement in Mechanical Engineering, 27-28th December, 2017, Government College of Engineering, Kalahandi, India. *International Journal of Advanced Mechanical Engineering*. ISSN 2250-3234 Volume 8, Number 1 (2018), pp. 9-16
6. Jyoti Prakash Sahoo, Ritesh Kumar Patel, **Gaurab Kumar Ghosh**, Design and analysis of high-pressure hydraulic accumulator, 2nd International conference on Industrial and Manufacturing systems (CIMS-2021), 11-13th November 2021, jointly organized by Punjab Engineering college and National Institute of Technology, Jalandhar
7. **Gaurab Kumar Ghosh**, and Ritesh Kumar Patel, Experimental investigation of resistance spot welding on mild steel (G3302) and stainless steel (SS202) Sheets, conference proceedings: International Conference on Contemporary Design and Analysis of Manufacturing and Industrial Engineering Systems (CDAMIES), 18-20th January, 2018, National Institute of Technology, Tiruchirappalli, India.

8. **Gaurab Kumar Ghosh**, Ankit Kotia, Subrata Kumar Ghosh, Wear modelling and simulation in Pin-on-Disc Tribometer with gear oil based nanolubricants, 19th ISME conference on Advances in Mechanical Engineering, 20-22nd December 2018, National Institute of Technology, Jalandhar, India.
9. Ritesh Kumar Patel, **Gaurab Kumar Ghosh**, and Soumya Ranjan Pradhan, Fatigue and Modal analysis of Crankshaft using ANSYS software, 19th ISME conference on Advances in Mechanical Engineering, 20-22nd December 2018, National Institute of Technology, Jalandhar, India.
10. **Gaurab Kumar Ghosh**, Ankit Kotia, Subrata Kumar Ghosh, Mathematical modeling for density of nanofluid considering the effect of interfacial layer, National conference on advances in thermal engineering, 19-20th December, 2014, Indian School of Mines, Dhanbad. (ISBN: 978-81-924744-21-9)

Book Chapters

1. Sikta Panda, **Gaurab Kumar Ghosh**, *Fouling and Corrosion Mechanisms and Monitoring Techniques*, Advanced Applications in Heat Exchanger Technologies: AI, Machine Learning, and Additive Manufacturing, Taylor & Francis, 272-288, CRC Press, 10.1201/9781003509837-10 ISBN 9781003509837
2. **Gaurab Kumar Ghosh**, Ankit Kotia, Niranjana Kumar, and Subrata Kumar Ghosh. "Performance Evaluation of Graphene-Gear Oil Nanolubricants in Rayleigh Step Bearing." In *Advances in Metrology and Measurement of Engineering Surfaces: Select Proceedings of ICFMMP 2019*, pp. 109-118. Springer Singapore, 2021.

Conferences Attended

1. 2nd **National Conference on Multi-Dimensional Advancement in Mechanical Engineering**, 27-28th December 2017, Government College of Engineering, **Kalahandi, (India)**.
2. 19th **ISME conference on Advances in Mechanical Engineering**, 20-22nd December 2018, National Institute of Technology, **Jalandhar, (India)**.
3. **International Conference on Processing and Characterization of Materials**, ICPCM, 12th-14th December 2019, National Institute of Technology, **Rourkela (India)**.
4. **4th International Conference on Friction - Based Processes**, 6th -8th September 2025, **Tirupati, (India)**
5. **1st International Conference on Thermofluids Engineering**, 10th -12th October 2025, IIT (ISM) Dhanbad **(India)**
6. **International Conference on Innovations in Fluid Power (IFP'26)**, 24^h -25th January 2026, IIT (ISM) Dhanbad **(India)**
7. **2nd International Conference on Advances in Chemical and Materials Sciences**, 12th-14th April 2026, CEIE, Jadavpur University Campus, **Kolkata (India)**

Equipment Handled

- | | |
|----------------------------------------------|-------------------------------|
| 1. Tribometer | |
| 2. Stabinger Viscometer | 4. Thermal conductivity probe |
| 3. Flash and Fire point apparatus Tribometer | 5. Sonicator |

Software Skills

- | | |
|-----------------|------------|
| 1. Solid Works | 3. MATLAB |
| 2. DesignExpert | 4. Minitab |

Training and Project Details

- 1-month Industrial Training for faculty at NTPC, Sipat, Bilaspur 10th June-10th July 2023
- 2-weeks Industrial Training on “Reverse Engineering and its Applications” organized by NIELIT, Calicut, 10th-21st April 2023.
- 2-weeks Professional training on “Allied Tools and Techniques under Interdisciplinary Engineering Fields for Learning Sustainability” June 2023.
- Completed 8 modules of AICTE Mandatory teachers training with 82%.

Achievements

1. Successfully conducted a 1-week Faculty Development Programme on “Concepts and Applications of Composite Materials (**CACM-2021**)” as Coordinator held at IGIT Sarang during 23rd-27th Feb 2021.
2. Successfully conducted a 2-weeks Short Term Course on “Recent Trends in Mechanical Engineering (**RTME-2021**)” as Coordinator held at IGIT Sarang during 1st-12th Feb 2021.
3. Successfully conducted a 2-day National conference (**ETESM-2018**) as Co-coordinator held at IGIT, Sarang March 28-29th 2018.
4. Completed 9 numbers of NPTEL-FDP Courses during 2019-2023. Recognized as ‘**Discipline Star**’.
5. Bestowed with “**Best Presentation**” award at ACMS conference (12th-14th April 2026) organized by CEIE held in Jadavpur University, Kolkata
6. Successfully completed a **RSG TEQIP-III** Project on “Optimization of Tribological Characteristics of Industrial Engine oil based Nanolubricants using Taguchi Method” worth Rs. 1,85,000 in June 2019-April 2023.
7. Bestowed with “**Best PG student Award**” by ISMAA and **Gold medalist** in M.Tech at ISM Convocation-2016.
8. Delivered an invited lecture on “Meeting Global Needs with Solar Innovations” in Faculty Development Program titled “Emerging Trends in Mechanical Engineering Design Practices” conducted by Govt. polytechnic, Rengali, Sambalpur on 04th February 2026.
9. Delivered an invited lecture on “**Nanolubricants: future of mechanical and mining machineries**” in Faculty Development Program titled “Advanced Materials for Sustainable Mechanical and Mining Applications” conducted by Adarsha College of Engineering, Angul on 27th and 28th March 2024.
10. Delivered an invited lecture on “**Nanolubricants: Future of Mechanical System Lubrication**” in Faculty Development Program titled “Emerging Technologies in Mechanical Engineering” conducted by S.K.D.A.V govt. polytechnic, Rourkela on 05th October 2021.
11. Served as Reviewer for Journals such as Journal of Tribology, ASME; Journal of Thermal Analysis and Calorimetry, Springer; Scientific Reports, Springer Nature; Results in Engineering, Elsevier; Journal of Bio- and Tribo-Corrosion, Springer.

12. Qualified GATE-2013 (97 percentile)

Professional Ids

- **ORCID ID:** 0000-0002-7909-9175
- **Scopus ID:** 0572-0328-6533
- **Web of Science ID:** AAC-3034-2020
- **IEI Associate ID:** AM3033581
- **TSI Life Member:** LM#6062

Guidance

1. M.Tech

Name of the Student	Admn No.	Title of Dissertation	Passing Year	Guide
Subhakanta Nayak	1707105106	Mechanical Properties of Luffa Fibre and Jute Reinforced Epoxy Polymer with Graphene nanoparticles hybrid Composites.	2019	Solo-Guide
Shuvendu Kumar Panda	1907105045	Graphene Nano-Additives for energy efficiency in Gear Oil (SAE EP-90)	2021	Solo-Guide
Sonalin Behera	1807105102	Experimental Investigation of Tribological Characteristics of two different gear materials	2023	Solo-Guide
Surekha Sahoo	2307105015	Evaluation of Mechanical Behaviour of Pineapple/Basalt Fiber Composite	2025	Co-Guide

2. B.Tech

1. Fabrication of a Centralized Lubrication System-2017-2018
2. Numerical Analysis of Fixed Slider Bearing under Thin Film Lubrication. 2018-19
3. Numerical Analysis of Helical Gear Mesh and Modeling. 2019-20
4. Analysis of Carbon Steel in Dry Turning Process for Product Sustainability Optimization using Taguchi technique. 2020-21
5. Solid modeling and numerical simulation of an industrial gearbox using nanolubricants. 2021-22
6. Study of the tribological properties of Grade-5 Ti-6Al-4V alloy. 2022-23
7. Analysis of rheological properties of Al₂O₃ gear oil nanolubricants using artificial neural network. 2023-2024
8. Performance and efficacy evaluation with MoS₂ as nanoadditives in industry grade lubricating oils. 2023-2024
9. Thermal Behaviour of Automotive cooling system containing Nanofluid Coolants using CFD analysis. 2024-25
10. Heat Transfer Characteristics in a cavity filled with Nanolubricants with sinusoidal wavy walls and study of Nanolubricants in solar collector. 2024-25

Administrative Responsibility

1. Faculty in Charge, CAD Centre, Mechanical Dept. (Sep 2017-present)
2. Coordinator of Diploma-2nd Year, IGIT Sarang. (Sep 2017-present)
3. Co-coordinator of Departmental Environmental and Site protection, IGIT Sarang. (Sep 2017-present)
4. Coordinator, Diploma E-evaluation at IGIT Sarang (Dec 2017 – present)
5. Co-coordinator, Departmental Time Table (Jan 2018-Present)
6. ERP Convenor Member at IGIT Sarang (May 2018 – present)
7. External Member of MODROBS Project, Electrical Dept. at IGIT Sarang (July 2018-Present)
8. Departmental NAAC and NBA team member (Oct 2018-present)
9. BAS Committee Member (May 2019- Present)
10. Professor In-charge, Institute Website IGIT Sarang (June 2019-present)
11. Appointed as Presiding officer in PRI Election Odisha held in February 2022.
12. As Jury in throw events in Annual Athletic Meet 2018, 2019 and Jury in recreational events in Annual Athletic Meet 2022
13. Faculty coordinator of Skill Exhibition held at IGIT sarang during 14th-15th September 2022.
14. Faculty coordinator of Badminton tournament (Smash it up!) held at IGIT sarang during 15th-22nd September 2022.
15. Coordinator, IIEC at IGIT Sarang.
16. Nodal Officer, Social Media Outreach
17. Nodal Officer, IEC Campaign
18. Appointed as Presiding officer in SGE 2024 held in May 2024

References

1. **Prof. Subrata Kumar Ghosh**, Professor, Department of Mechanical Engineering, Tribology Laboratory, IIT (ISM) Dhanbad, Jharkhand, India- 826004, Phone: +91-9264436805, E-mail: subrata@iitism.ac.in
2. Dr. Niranjana Kumar, Associate Professor, Department of Mechanical Engineering, IIT (ISM) Dhanbad, Jharkhand, India- 826004, Phone: +91-9471191827, E-mail: nk2011.ism@gmail.com

I hereby declare that all the above information given is true to the best of my knowledge.

