

## Dr. Ipsa Tripathy

Assistant Professor

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### Education

Degree	Year
Ph.D. (Metallurgical and Materials Engg.), IIT Kharagpur	2022
M.Tech. (Metallurgical and Materials Engg.), NIT Rourkela	2011
B.Tech. (Metallurgical and Materials Engg.), IGIT Sarang, Odisha	2009
12 <sup>th</sup> (Science), R. D. Women's Junior College, Bhubaneswar, Odisha	2005
10 <sup>th</sup> , Vivekananda Shiksha Kendra, Bhubaneswar, Odisha	2003

### Area of Expertise

Pearlite transformation in steels, Cold deformation, Strain hardening

### Honours and Awards

- Reviewed manuscripts in International Conference on Emerging Materials for Technological Applications (ICEMTA-2022).
- Received scholarship from Ministry of Human Resource Development (MHRD), Government of India for Ph.D.
- Three research papers have been presented at international conferences.
- Received Best Poster Presentation award in International Conference on Frontiers in Energy, Environment, Health, and Materials Research (EEMR – 2013).
- Award for securing second position in Metallurgical & Materials Engineering (M.Tech. - I) in 2009-10.

### Ongoing Project (as PI)

- Project Title: Failure analysis of machine components and semi-finished products in plate mill
- Type of Project: Consultancy
- Funding agency: Jindal Steel and Power Limited, Angul

### Publications

- Tripathy, I., Singh, S.B. Effect of Austenitization Treatment on Texture Inheritance Characteristics of Near Eutectoid Pearlitic Steel. *Trans Indian Inst Met* (2023). <https://doi.org/10.1007/s12666-023-02959-5>.
- Ipsa Tripathy, Shiv Brat Singh. Effect of cold drawn deformation on microstructure and texture evolution of near eutectoid pearlitic steel. Accepted in the journal *Metal Science and Heat Treatment* (March 2023).
- Ipsa Tripathy, Satya Prakash Rout, Manila Mallik. Effect of temperature and pressure on diffusivity of nitinol pellet bonded with steel plate. *Materials Today: Proceedings* **33 (8)**, 5213-5217 (2020). <https://doi.org/10.1016/j.matpr.2020.02.892>.
- J. N. Mohapatra, Sashmita Mohanty, Satish Kumar Dabbiru, Ipsa Tripathy. Correlation of Magnetic Properties with Mechanical Properties of a High Tensile Grade Steel in Various Heat-Treated Conditions. *Trans Indian Inst Met* **71**, 2361–2374 (2018). <https://doi.org/10.1007/s12666-018-1367-z>.

### International Conferences

1. International Conference on Frontiers in Energy, Environment, Health, and Materials Research (EEMR – 2013), held on 12<sup>th</sup> – 13<sup>th</sup> August 2013, at CSIR – IMMT Bhubaneswar, Poster presentation.  
Topic: Pearlite transformation in near eutectoid steel (Best Poster Presentation Award)
2. International Conference on Emerging Materials and Processes (ICEMP 2014), held on 26<sup>th</sup> – 28<sup>th</sup> February 2014, at CSIR – IMMT Bhubaneswar, Poster Presentation.  
Topic: Effect of alloying element concentration on pearlite transformation of near eutectoid steel
3. 2<sup>nd</sup> International Conference on Processing and Characterization of Materials (ICPCM 2019), held on 12<sup>th</sup> – 14<sup>th</sup> December 2019, at NIT Rourkela, Oral Presentation.  
Topic: Effect of temperature and pressure on diffusivity of nitinol pellet bonded with steel plate

### National Conferences

1. 22<sup>nd</sup> Annual General Meeting of Materials Research Society of India, held on February 14-16, 2011, at AMPRI Bhopal, Poster Presentation.  
Topic: Mechanism of corrosion fatigue in structural alloys

2. 67<sup>th</sup> Annual Technical Meeting of The Indian Institute of Metals, held on 12<sup>th</sup> – 13<sup>th</sup> November 2013, at Varanasi, Oral Presentation.

Topic: Pearlite transformation kinetics and microstructural characterization of near eutectoid steel

### **Workshop / Training and Short-Term Course**

- One-week online short-term training program on: Applications of Soft-computing techniques and Numerical Modelling in “Additive Manufacturing and Materials Processing” from 17-21<sup>st</sup> December 2022 organized by the Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat.
- Online Thermo-Calc Training held in January 2022.
- TEQIP – III sponsored online Short-Term Course on “Mechanical Behaviour of Advanced Engineering Materials” from 22<sup>nd</sup> to 26<sup>th</sup> September 2020 organized by the Department of Metallurgical and Materials Engineering, MNIT Jaipur.
- TEQIP – III sponsored Short-Term Course on ‘Advances in Materials and Processing’ from 24<sup>th</sup> to 28<sup>th</sup> February 2020 organized by the department of Metallurgical and Materials Engineering, IGIT Sarang.
- TEQIP – III sponsored national workshop on “Aero-craft Processes and Aero-materials (APAM - 2019)” organized by Department of Metallurgical and Materials Engineering at NIT Rourkela during 23<sup>rd</sup> – 27<sup>th</sup> May 2019.
- TEQIP – III sponsored Short-Term Programme on “Nanomaterials Science and Technology” organized by the department of Metallurgical and Materials Engineering, IGIT Sarang during March 12<sup>th</sup> – 16<sup>th</sup> 2018.
- Workshop in Jamshedpur on “Thermo-Calc software products” between 18-21 November 2014.
- Vocational Training in Rourkela Steel Plant, Rourkela from 14<sup>th</sup> May – 13<sup>th</sup> June 2007.

### **PhD Dissertation**

- Title: Pearlite Transformation in Near-Eutectoid steels
- Supervisor: Prof. Shiv Brat Singh, Professor, Department of Metallurgical and Materials Engineering, IIT Kharagpur.
- Major Research Areas: Kinetics of pearlite transformation, Strain hardening behaviour of pearlite, Effect of cold deformation on transformed pearlite.

### **Post-Graduation thesis**

- Title: Effect of Microstructure on Sliding Wear Behaviour of Modified 9Cr-1Mo steel.

### **Membership in Professional bodies (Life Member)**

1. The Indian Institute of Metals (IIM), Life Member
2. Materials Research Society of India (MRSI), Life Member
3. Electron Microscope Society of India (EMSI), Life Member

## Work Experience

- Four months of teaching experience as Assistant Professor in School of Mechanical Engineering, KIIT University, Bhubaneswar, Odisha. Duration: 25<sup>th</sup> August 2011 – 23<sup>rd</sup> December 2011. [Pre-PhD experience]
- Seven years of teaching experience as Assistant Professor in Department of Metallurgical and Materials Engineering, IGIT Sarang, Dhenkanal, Odisha. Duration: 31<sup>st</sup> July 2017 – till date.

## MTech Dissertations Supervised [Awarded: 6]

Sl. No.	Title of the Dissertations	Year of Completion	Supervisor / Co-Supervisor
1	A dilatometric study of continuous heating transformation in maraging 250 steel and its corrosion behaviour	2023	Supervisor
2	A simulation study of nickel deposition on stainless steel using magnetron sputtering	2022	Supervisor
3	Study of concentration-depth profile of gold ion in GaN using SRIM/TRIM simulation	2022	Supervisor
4	Effect of heat treatment on microstructure and phase formation of equiatomic NiTi alloys	2020	Supervisor
5	Effect of temperature and pressure on diffusivity at the interface of NiTi/Steel	2019	Supervisor
6	Magnetic Evaluation of Microstructure and Mechanical properties of various heat-treated Low and Medium carbon steel	2018	Supervisor

## BTech Thesis Supervised [Completed: 8]

Sl. No.	Title of the thesis	Year of Completion
1	Effect of cold deformation on microstructure and tensile behaviour of spring steel	2024
2	Simulation of Ar <sup>+</sup> and N <sup>+</sup> ions bombardment on stainless steel	2023
3	Study of austenitization kinetics on continuous heating of microalloyed steel	2022
4	Effect of molybdenum on kinetics of austenitization on continuous heating of low carbon microalloyed steel	2022
5	Effect of molybdenum on kinetics of austenitization on continuous heating of low carbon micro alloyed steels	2021
6	Corrosion behaviour of low carbon micro alloyed steels in various acidic media	2021
7	Isothermal pearlite transformation kinetics in eutectoid and hypoeutectoid steels	2020
8	Fully pearlitic microstructure in hypoeutectoid steels	2019

## Collaborations

- Collaborated with research experts from JSW Steel Ltd, Toranagallu, Bellary, Karnataka on a MTech project titled “ Magnetic Evaluation of Microstructure and Mechanical properties of various heat-treated Low and Medium carbon steel”.
- Collaborated with researchers from NIT Rourkela and VSSUT Burla for post graduate dissertations work.

## Courses Undertaken (IGIT Sarang)

Theory / Lab class	UG / PG	Theory / Lab / Project
Mechanical Working and Testing of Materials	UG	Theory
Phase Transformation	UG	Theory
Metallurgical Thermodynamics and Kinetics	UG	Theory
Non-Destructive Testing of Materials	UG	Theory
Physical Metallurgy	UG	Theory
Electrometallurgy	UG	Theory
Materials Science and Engineering	UG	Theory
Science and Engineering of Materials	UG	Theory
Advanced Metallurgical Thermodynamics and Kinetics	PG	Theory
Industrial Heat Treatment	PG	Theory
Advanced Physical Metallurgy	PG	Theory
Solid State Phase Transformations	PG	Theory
Metallurgical Thermodynamics Lab	PG	Lab
Materials Testing Lab	PG	Lab
Heat Treatment Lab	UG	Lab
Skill Project	UG	Project
Minor Project	UG	Project
Major Project	UG	Project
Mini Project	PG	Project
Dissertation Phase - I	PG	Project
Dissertation Phase - II	PG	Project

## Departmental Responsibilities (IGIT Sarang)

- Member, Guest Faculty Recruitment and Member of Board of Studies
- Departmental Diploma Coordinator, Departmental NBA member
- Question Setter (Semester Examination) and Semester answer scripts evaluation
- Faculty-In-Charge Physical Metallurgy Lab and Mineral Processing Lab
- Co-Convener ADMANTIUM 6.0