

Gaurav Jha, PhD

Researcher, Tata Steel Ltd., Jamshedpur

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Current Affiliation

Researcher (Manager) in Tata Steel Limited (R&D - Ferro Alloys and Minerals Research Group)
from 02/08/2021 – 03/09/2021

Research area – Leveraging low quality raw materials, hydrometallurgy, briquetting (extrusion, roller press, hydraulic press method), iron oxide purification for value added applications, battery materials, ore sorting

Assistant Professor in IIT (ISM) Dhanbad – Department of Fuel Minerals and Metallurgical Engineering (from 04/09/2024 till today)

Education

2015-2021	PhD in Studies on sintering behavior of iron ore using biomass Dept. of Fuel, Minerals and Metallurgical Engineering, IIT (ISM) Dhanbad
2013-2015	M. Tech in Mineral Engineering Dept. of Fuel, Minerals and Metallurgical Engineering, IIT (ISM) Dhanbad
2009-2013	B. Tech in Material Science & Metallurgical Engineering UIET, CSJM University, Kanpur

Teaching and Research Interests

- Ferrous and Non-ferrous Extractive Metallurgy
- Iron and Steel Making
- Mineral Processing (Mineral and Coal Beneficiation)
- Agglomeration Technology – Sintering/Pelletization/Briquetting
- Life Cycle Assessment
- Biomass and Bioenergy, Carbon footprint assessment and mitigation
- Artificial Neural Network (ANN)

- Waste utilization and management
- Battery materials

Key projects

- Studies on sintering behavior of iron ore using biomass (**PhD project**)
- Briquetting of chromite overburden of Sukinda region (**Laboratory scale**)
- Purification of Synthetic Ferric Oxide (SFO) (**Laboratory scale**)
- Reduction in energy footprint upon meticulous selection of energy-efficient comminution mills (**Pilot scale**)
- Development of briquettes and pellets from chromite Over Burden and characterization studies for smelt reduction in Submerged Arc Furnace/Mini Blast Furnace – (**Conversion scale**)
- Value added products from low grade and subgrade Mn ore – Phase – I MnSO₄ pilot plant trials (**Pilot scale**)
- Value added products from low grade and subgrade Mn ore – Phase – II EMM/EMD pilot plant trials (**Pilot scale**)
- Value added products (Iron oxalate/sulphates/phosphates derivatives) from iron oxide sludge (**Laboratory scale**)
- Extraction of Ni/Co derivatives from Nickel Pig Iron (NPI) (**Laboratory scale**)

Externally Funded R&D Projects

Development of low cost hydrometallurgical process for beneficiation and extraction of Indium (In) and Germanium (Ge) values from Sphalerite ores/Zn concentrates, **Ministry of Mines, 2025 (Project amount – 35.29 Lakhs)**

Peer Reviewed Journal Publications

- **Gaurav Jha**, S. Soren, “Study on applicability of biomass in iron ore sintering process”, Renewable & Sustainable Energy Reviews, Vol. 80 (2017): 399–407, DOI:10.1016/j.rser.2017.05.246. (**Elsevier, IF - 15.9**)
- **Gaurav Jha**, Shatrughan Soren, Kapil Deo Mehta, “Life cycle assessment of sintering process for carbon footprint and cost reduction: A comparative study for coke and biomass-derived sintering process”, Journal of Cleaner Production, Vol. 259 (2020): 120889, DOI: 10.1016/j.jclepro.2020.120889. (**Elsevier, IF - 11.1**)
- **Gaurav Jha**, Shatrughan Soren, Kapil Deo Mehta, “Partial Substitution of coke breeze with biomass and charcoal in metallurgical Sintering”, Fuel, Vol. 278 (2020): 118350, DOI:10.1016/j.fuel.2020.118350. (**Elsevier, IF - 7.4**)

- **Gaurav Jha**, S. Soren and, Kapil Deo Mehta, Assessment of the internal chemistry nexus of coke and biomass-based sinters, SADHANA – Indian Academy of Sciences, Vol. 48, Issue 217 (2023). DOI:10.1007/s12046-023-02286-x. (**Springer IF - 1.6**)
- Neha Pandey, Sunil Kumar Tripathy, Sovan Kumar Patra, **Gaurav Jha**, Recent progress in Hydrometallurgical Processing of Nickel Lateritic Ore, Trans Indian Inst Met Vol. 76 (2023):11–30, DOI: 10.1007/s12666-022-02706-2. (**Springer, IF - 1.6**).
- Raj Kumar Jaiswal, **Gaurav Jha**, Shatrughan Soren, A novel approach of utilizing the waste biomass in the magnetizing roasting for recovery of iron from goethetic iron ore, Environmental Technology & Innovation, Vol. 31 (2023):103184, DOI: 10.1016/j.eti.2023.103184. (**Elsevier, IF - 7.1**)
- **Gaurav Jha**, S. Soren and, Kapil Deo Mehta, A pilot-scale beneficiation study for removal of alumina and silica prior to metallurgical sintering, SADHANA – Indian Academy of Sciences (**Accepted**).
- **Gaurav Jha**, Sunil Kumar Tripathy, Y. Rama Murthy, Gajanan U. Kapure, A review on sustainable agglomeration process in mining and metallurgical industry, Mineral Processing and Extractive Metallurgy Review (**Under Revision**).

Patents

- **A method to produce high-strength lumpy material from fine Indian laterites for shaft and non-shaft furnaces Application No.** – Application No. 202431077870 (As Main Inventor)
- **A method for production of low nickel containing pig iron from nickel bearing chromite overburden ore of chromite mines.** Filed Date- 13/02/2024. (As Co-inventor)

Book Chapters

- **Gaurav Jha**, Shatrughan Soren, Kapil Deo Mehta, Carbon footprint Assessment with LCA methodology, LCA based Carbon Footprint Assessment (Book), Environmental Footprints and Eco-design of Products and Processes (Book Series), Springer Nature, DOI: 10.1007/978-981-33-4373-3_1
- **Gaurav Jha**, Shatrughan Soren, Iron Ore, Treatise on Process Metallurgy (Book), Elsevier (Status – With Production Manager)

Conferences

- **Gaurav Jha**, S. Soren, “Effect on Environment by the pollutants generated from iron ore mines and its management”, National Conference on Recent Advancement in Manufacturing and its Management, Feb 2014, BIT Sindri, Jharkhand, India.

- **Gaurav Jha**, Rakesh Kumar, Alok Vardhan, Ayush Pratap Singh, “Indian Water Scenario and Wastewater Treatment in India”, National Conference on Water Sustainability and its management, March 2014, ISM Dhanbad, Jharkhand, India.
- **Gaurav Jha**, S. Soren, “Studies on effective replacement of coke-breeze using Biomass”, National Seminar on Environmental Issues: Protection, Conservation and Management (EIPCM), Feb 2016, pp 255-259, ISBN: 978-93-85777-28-8, BIT Sindri, Jharkhand, India.
- **Gaurav Jha**, S. Soren, Kapil Deo Mehta, Metallurgical Sintering using Biomass as Fuel Replacement, Conference on Advances in Process Metallurgy, July 2019, Indian Institute of Sciences, Bengaluru.
- S. Soren, Vivek R., **Gaurav Jha**, S. Gautam, “Effect of Thermomechanical Controlled Processing Parameters on Microstructures and Mechanical Properties of Micro alloyed Steel”, International conference on Structural and Physical Properties of Solids, ISM Dhanbad, Jharkhand, Nov 2013, India.
- **Gaurav Jha**, S. Soren, “Advantages of Biomass over Fossil Fuels: Indian Scenario”, 68th Annual session of Institute of Chemical Engineers (CHEMCON), Dec 2015, IIT Guwahati, India.
- **Gaurav Jha**, S. Soren, “Studies on Effective Replacement of Coke using Biomass in Sintering operations using Thermo-gravimetric Analysis”, National Metallurgical Day-Annual Technical Meeting, Nov 2016, IIT Kanpur, India.
- **Gaurav Jha**, S. Soren, K.D. Mehta, “Studies on sintering behavior of iron ore using biomass”, International Conference on Mineral Processing Technology (MPT), January 2017, Mahabalipuram, India.
- **Gaurav Jha**, S. Soren, K.D. Mehta, Studies on sintering behavior of iron ore using biomass, International Conference on Mineral Processing Technology, October 2018, IIT Dhanbad, India.
- S. Soren, **Gaurav Jha**, K.D. Mehta, “Characteristics based applications of biomass in metallurgical sintering operation as a fuel replacement”, Euro-Biomass, October 2017, London, UK. J. Fundam. Renewable Energy Appl. 2017, 7:9 (Suppl.) DOI: 10.4172/20904541-C1-044.

Awards and recognition

- Inder Mohan Thapar Research Award, 2022 for publication in high impact journal
- Publication in high impact journals (Renewable and sustainable energy reviews – 15.9, Journal of cleaner production – 11.1, Fuel – 7.4)
- Submitted 02 Patents (01 as main inventor & 01 as co-inventor)

Workshops attended

- Experimental Techniques in Extractive Metallurgy (ETEM-2019), 8-10th July 2016 IIT-BHU, Varanasi
- Micro symposium on Recent developments in mineral processing and mechanical activation of solids, Feb 2019, CSIR-NML, Jamshedpur

- CII 23rd India Design Summit & Technology Conclave 2023, scheduled on 14th and 15th December 2023 in New Delhi

Volunteered

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- **No. of Short-Term Courses: 3** (5 days STC on Agglomeration Techniques at IIT(ISM) Dhanbad
 - **International Conference:** Mineral Processing Technology (10-12th Oct 2018) at IIT(ISM) Dhanbad

Member of Professional Bodies

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- Life Student Member: Indian Institute of Mineral Engineers (IIME-Dhanbad Chapter)

Positions of Administrative Responsibility

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- Project leader and circle administrator of 2 hydrometallurgical pilot plants of scale 1 TPD & 25 kg/day, respectively
 - Lab In charge – Group Beneficiation Lab
 - Internal Auditor for Quality Management System (ISO 9001:2015 & ISO 19011:2018)
 - DPGC Member, Department of Fuel Minerals and Metallurgical Engineering Department, IIT (ISM) Dhanbad.

Journal's Reviewer

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- Journal of Cleaner Production
 - Scientific Reports
 - Separation Science and Technology
 - Biomass conversion and bio refinery
 - Metallurgical and Materials Transactions B