Personal Information

Dr. Raj Kumar Dishwar
Extractive Metallurgy (Ph.D.)
(Assistant Professor)

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Date of birth: 01 July 1990

Education,

S.No	***Degree***	***Year***	***Subject***	***University/Institution***	***% of marks***
1.	*B.Tech*	*2013*	*Material Science & Metallurgical Engineering*	*UIET, CSJMU Kanpur*	*8.22/10*
2.	*M.Tech*	*2016*	*Metallurgical Engineering*	*IIT (BHU)*	*8.69/10*
3.	*PhD*	*2020*	*Metallurgical Engineering*	*IIT (BHU)*	*9.40/10*
***PhD Thesis Title**: "Preparation and characterization of weather-resistant fluxed DRI for Steelmaking."*					

Professional / research experience,

S.No	*Positions held*	*Name of the Institute*	*From*	*To*
1.	*Research Fellow*	*Indian Institute of Technology (BHU)*	*August 2020*	*Jan 2021*
2.	*Postdoctoral Researcher*	*Indian Institute of Technology Madras*	*Feb 2021*	*June 2021*
3.	*Postdoctoral Researcher*	*Process Metallurgy Research Group, University of Oulu*	*Sep 2023*	*March 2024*
4.	*Assistant Professor*	*Indian Institute of Technology (ISM) Dhanbad*	*15 June 2021*	*--till now--*

Area of Research: ***Industrial waste utilization and recovery of value-added metals from its lean ore or waste by Smelting Technology Plasma smelting Pyrometallurgy and Hydrometallurgy, Extraction of critical metals from their ores or residue, Net zero waste policy, Green steel Making Technologies.***

Teaching

Courses (UG/PG) taught

1. ***Extractive Metallurgy (UG)***
2. ***Mineral Beneficiation (UG)***
3. ***Size Enlargement Processes (UG/PG)***

New courses introduced

1. ***Advanced Technologies of Iron Making (UG/PG)***
2. ***Introduction to Metallurgical Engineering (UG)***

Supervision of Bachelor/Master thesis

M.Tech-02,

1. ***Sunil Kumar****: "Recovery of high-grade cobalt oxide from Zinc Plant Residue generated at Zinc Processing Plants."*

2. ***Burada Shravani:*** *"Novel Dual Beneficiation Method to Enrich the Carbon Content End-Value of Coal Washery Tailings"*

02- Students' ongoing

B.Tech-05

PhD Supervision

02 (Ongoing)

02-Students left the campus due to personal reasons after spending two years.

Publications: ***(Published-16, under process-02)***

S.No.	Author(s)	Title	Name of Journal	Vol.	Pag	Year

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1. Peer-Reviewed journal						
01	Sunil Kumar, Shavi Agrawal, Kiran Kumar Rokkam, Sudhakar Yadav, ***Raj Kumar Dishwar****	Recovery of high-grade cobalt oxide from zinc plant residue (ZPR) generated at zinc processing plants	**Hydrometallurgy**	226	1-10	2024
02	***Raj Kumar Dishwar,*** O.P. Sinha	Effect of Partially reduced highlyfluxed DRI pellets on impurities removal during steelmaking using a laboratory-scale EAF	***Journal of Mining andMetallurgy Section B : Metallurgy***	58	63-73	2022
03	***Raj Kumar Dishwar***, Shavi Agrawal, Amit Kumar Singh, O.P.Sinha,	Effect of bath environment and charge chemistry on the removal of impurities from the pig iron melt using laboratory scale (2kg)EAF	***Transaction of IndianInstitute of Metals***	75	783-787	2022
04	Amit Kumar Singh, Sharvan Kumar, Biswajit Mishra, ***Raj Kumar Dishwar***, Arup Kumar Mandal, Lakkoju Sankara Rao, Om Prakash Sinha	Direct reduction of fluxed ironore pellets made from coarse iron ore particles	***Canadian Metallurgic Quarterly***	61	475-482	2022
05	***Raj Kumar Dishwar,*** O.P. Sinha	Effect of basicity on the activation energy during reduction of highly flux iron ore pellets	***Fuel***	296	1-7	2021
06	***Raj Kumar Dishwar***, Shavi Agrawal, O.P. Sinha	Weathering behaviour of newly Developed highly fluxed DRI.	***Journal of Sustainable Metallurgy***	7	358-363	2021
07	Ramji Omar, ***Raj Kumar Dishwar***, Biswajit Mishra, A. K. Mandal, G.S. Mahobia, OP Sinha,	Characterization of Multi-Metallic Magnetite Iron ore ofNagaland region in North-East India- A new Ore,	***Mining, Metallurgy and Exploration***	38	1681-1688	2021
08	Biswajit Mishra, ***Raj KumarDishwar,*** Ramji Omar, Girija Shankar Mahobia,	Hardening behaviour of pellets prepared from novel combination of rare Multimetallic magnetite ore and binder	***Transaction of Indian Institute of Metals***	74	2049-2055	2021
09	***Raj Kumar Dishwar***, Shavi Agrawal, Arup Kumar Mandal, Om Prakash Sinha,	Smelting Process of ChromiteOre Fines to Produce Crude Fe–Cr–Ni–N Alloy,	***Transaction of IndianInstitute of Metals***	73	537-542	2020

10	Pilla Ganesh, ***Raj Kumar Dishwar*,*** Shavi Agrawal,Arup Kumar Mandal, N. Sahu, O.P.Sinha, **,**	Feasibility of Nickel Extractionfrom Indian Chromite Overburden by Solid State Reduction and Smelting Route,	***Journal of Mining andMetallurgy Section B : Metallurgy***	56	229-235	2020
11	***R.K. Dishwar***, A.K. Mandal, O.P. Sinha,	Studies on highly fluxed iron ore pellets hardened at 1100 Cto 1200 C	***Metallurgical and Materials TransactionsB: Process Metallurgy and Materials Processing Science***	50	617-621	2019
12	***Raj Kumar Dishwar,*** Shavi Agrawal, A.K. Mandal, G.S.Mahobia, O.P.Sinha,	Effect of reduced flux iron ore pellets on removal of impuritiesfrom pig iron during induction melting: a new phenomenon	***Journal of the Minerals,Metals, and Materials Society (JOM)***,	70	977-981	2018
13	A. K. Mandal, ***Raj Kumar Dishwar***, O.P. Sinha	Design, fabrication, and characterization of an indigenously fabricated prototype transferred arc plasma furnace for smelting reduction study of industrialsolid waste	***IEEE Transactions on Plasma Science***	46	1793-1799	2018
14	A.K. Mandal, ***Raj Kumar Dishwar***, O.P.Sinha	Behavior of an indigenouslyfabricated transferred arc plasma furnace for smelting studies,	***Plasma Science and Technology,***	20	1-10	2018
2. Refereed conference papers						
01	***Raj Kumar Dishwar***, Arup Kumar Mandal, O.P. Sinha,	Studies on reduction behaviour of highly fluxed iron ore pelletsfor application in steelmaking	***Materials Today Proceeding***	46	1471-1475	2021
02	Ramesh Kumar, Arup Kumar Mandal, ***Raj Kumar Dishwar***, O.P. Sinha,	Utilization of iron ore slime and bottom ash: An overview	***Materials Today Proceeding***	46	1505-1514	2021
3. Communicated						
01	***Raj Kumar Dishwar*,*** *Ville Valtteri, Timo Fabritius*	Technological Evolutions in the Processes of Sustainable Steelmaking: A Critical Review				
02	Burada Shravani, Raj ***Kumar Dishwar****	Novel Dual Beneficiation Method to Enrich the Carbon Content and End-Value of Coal Washery Tailings				
*** Corresponding author**						

Development: technologies, products, patents

02- Patents submitted

Synthesis of Carbon Nanomaterials from Coal Washery Rejects through Microwave heating,

Novel Dual Beneficiation Method to Enrich the Carbon Content and End-Value of Coal Washery Tailings.

Funding: R&D projects

01- Recovery of cobalt from ZPR (Submitted)

Consultancy

No

Peer Recognition

S.No.	*Name of the Award*	*Awarding agency*	*Year*
01	*Best oral presentation award on the theme Process waste in MetWatse-2020*	Met-Waste 2020 *IIT (BHU) Varanasi*	*2020*
02	*Reviewer Appreciation Certificate*	Met-Waste 2020 IIT (BHU) Varanasi	2020
03	*Reviewer Appreciation Certificate*	Trans IIM	2022

Contributions to the institute

1. *Developed the Extractive Metallurgy Lab & Course for UG students*
2. *Developed the Ferrous Metallurgy Lab & Course for PG students*
3. *In charge of the Excursion Program for UG/PG students*
4. *Active Member of DUGC*
5. *FIC Students Committee of the Department*

Contributions outside the institute

1. Members of Technical Committee, 35th National Convention of Metallurgical and Materials Engineers & National Conference on Low-grade Ore and Waste: Challenges and Remedies (VLOW: CR - 2023)

Others

Workshops/Conferences/ Seminars/ Awards

- Seminar on Iron Making organized by IIT KANPUR-2012
- National workshop on experimental techniques in Extractive Metallurgy (ETEM), Department of Metallurgical Engineering IIT(BHU), Varanasi, July 8-10 2016
- International Conference on Recent Advances in Metallurgy For Sustainable Development (IC-RAMSD 2018) M.S. University of Baroda, February 1-3, 2018
- International Symposium on Advanced Materials for Industrial and Societal Applications (NMD 2019), Thiruvananthapuram, November 13-16, 2019
- International Conference on Management and Recycling of Metallurgical wastes (MetWaste-2020) IIT(BHU), February 22-23, 2020
- Reviewer of International Conference on Management and Recycling of Metallurgical Waste "MetWaste-2020".
- Participate in the five-day online faculty development program (FDP) on recent advances in process metallurgy organized by OP Jindal University in association with ASM and IIM from July 13-17, 2020.
- *International Webinar on Global Steel Industry Sustainability (GSIS 2020) organized by NIT Durgapur in association with IIM Chapter on 02nd August 2020.*
- International Symposium on Advanced Materials for Industrial and Societal Applications (NMD 2024), Bengaluru.

Extracurricular Activities

- Participated in **National School Games (Kabaddi)** -2003, 04, 06,07
- Represented IIT-BHU & awarded as **BEST KABADDI PLAYER** in **SPARDHA 2014**.
- Participated in **Regional Science Congress** organized by N.V.S. in Lucknow-2006
- Worked as Sports Captain in School-2004-05 & as School Caption in 2006-07
- Participated in Inter-IIT Fest 2024 at IIT Kanpur.