



Department of Fuel Minerals and Metallurgical Engineering, IIT (ISM) Dhanbad.

NEWSLETTER SEPTEMBER 2024 (VOLUME -1)

Editor in chief

Prof. Shravan Kumar
(Head of the Department)

Editor - Dr. Kasturi Sala

From HoD's Desk

It gives me immense pleasure to share with you the very first edition of our department's monthly newsletter. It is very exciting to share with you that the department is growing in three verticals namely Fuel, Minerals and Metallurgical Engineering. Our department research focus is in line with the country's demand and mainly related to processing of critical minerals, technology development for better utilization of alternate energy resources, processing and application of iron and steel, processing of non-ferrous metals, application of AI ML, equipment design, etc. We are closely working with related industries to understand the technological challenges faced and extend our research to address it. Our collaboration with industries and research organizations is showcasing our strength.

We are always excited to hear from you and your feedback so that we can move ahead and better contribute to the industry and research.

Best Wishes.

Dr. Shravan Kumar

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International Conference

Prof. Aarti Kumari attended and presented her research work in the 'First International Conference on Circular Hydrometallurgy – ICHS 2024', held at Mechelen, Belgium during 9th -11th September.

Topic of presentation: Hydrometallurgy for sustainable recovery of rare earths from waste NdFeB magnets.



Prof. Aarti Kumari

New members in the Department

Dr. Kasturi Sala has joined the department as an Assistant Professor in September 2024. Before this, she was a Ramanujan Fellow at IIT Ropar. He also worked in the Department of Advanced Materials and Components at the SCNU, South Korea & Materials Engineering IISc Bangalore as a Postdoctoral Research Fellow.

She obtained her BTech and MTech degree in the department of Metallurgical and Materials Engineering from IGIT Sarang, Odisha and NIT Durgapur, respectively, followed by Ph.D. from the Department of Metallurgical and Materials Engineering at the Indian Institute of Technology Kharagpur, India. She is a Member of IIM and his research interests include Developemnt of Structural Materials and Metal Membranes.



Dr. Gaurav Jha has joined the department as an Assistant Professor in September 2024. Before this, he was a researcher in R&D Ferroaaloys and Minerals research group, TATA steel, Jamsedhpur.

He obtained his BTech in UIET, Kanpur, followed by Mtech and Ph.D. from the Department of Fuel, Minerals and Metallurgical Engineering at IIT(ISM) Dhanbad, India. His research interests include Agglomeration of minerals and Minerals processing.



Research Project Awarded to the Department:

Title: Design and development of high entropy shape memory alloys for actuators application in the defence sector

Funding organisation - DRDO (No: ARDB/M&M/4119/2144)

Amount: 29.6214 Lakhs Rupees

Principal Investigator: Dr. Rahul M R

Co-PI: Dr. Kesavan Ravi

DRDO Collaborator: DRDO Young Scientists Laboratory for Smart Materials (DYSL-SM) & Defence Research & Development Laboratory (DRDL)



Prof. Rahul M R



Prof. Kesavan Ravi

Title: Development of single-phase BCC refractory high entropy alloys for high-temperature applications using machine learning (ML) and experimental approaches

Funding organisation - DRDO (No: ARDB/MM/4095/2145)

Amount: 88.996 Lakhs Rupees

Co-PI: Dr. Rahul M R

PI: Dr. Sumanta Samal, IIT Indore

DRDO Collaborator: Defence Metallurgical Research Laboratory (DMRL)

INVITED TALK

Invited talk on “Microwave based coal pyrolysis and its current challenges and opportunities” to coal and coke making group of Tata Steel on September 27, 2024.



Prof. Rajasekhar Reddy Busigari

Awards to the Department:

2nd Runner Up and won Rs. 2 Lakh Cash Prize in Coal gasification Hackathon-2024 (In July 2024) jointly with CSIR – NCL and IIT (ISM) Dhanbad for providing conceptual solution on Technology Advancement for Efficiency Enhancement in Coal Gasification.

.....Prof. Rajasekhar Reddy Busigari



Important Publications

Manish Kumar Singh, B. Nithin, Kesavan Ravi, M.R. Rahul, Simulation-guided design of novel precipitation-strengthened eutectic high entropy alloy, *Intermetallics* 175 (2024), 108501, <https://doi.org/10.1016/j.intermet.2024.108501>.

Dhibar, N.C., Busigari, R.R. & Patel, M. Investigation of kinetics, reaction mechanisms, thermodynamics, and synergetic effects in co-pyrolysis of wood sawdust and linear low-density polyethylene using the thermogravimetric approach. *Environ Sci Pollut Res* 31, 56091–56113 (2024). <https://doi.org/10.1007/s11356-024-34886-3>

PHOTO GALARY

Industrial Visit (6th September)



Freshers Welcome (4th September)



Vishwakarma Puja, 17th September



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