



**OPJU**

**UNIVERSITY OF STEEL TECHNOLOGY  
AND MANAGEMENT**

# AYAS

## NEWSLETTER- 2023

Vol-1, No.1



**Department of  
Metallurgical Engineering  
Centre of Excellence in Steel Technology**

**OP Jindal University, Punjipathra, Raigarh- 496109 (C.G)  
[www.opju.ac.in](http://www.opju.ac.in)**



## Message by the VICE CHANCELLOR

**“Department of Metallurgical Engineering”** is a prestigious department of OP Jindal University, Raigarh. The department is providing ample opportunities to the students and help them to acquire appropriate skills and rightful attitude to become a valuable employee. The department is grooming students by catering appropriate platform to establish highly meaningful relations with industry professionals through Long Term Internship as a part of their curriculum. The department has good infrastructure with well-equipped research facilities with highly sophisticated instruments like Scanning Electron Microscope and X-Ray Diffraction Unit.

The department has International collaborations with Ajou University, South Korea; Changwon National University, South Korea; and Colorado School of Mines, USA and National collaborations with institutes like IITs, NITs, R&D Labs, and CSIR Labs (AMPRI Bhopal, NML Jamshedpur, IMMT Bhubaneswar). Recently department has interacted with TATA Motors for collaborations and research projects for the development of autograde steels and other metals/alloys/composites. Placement cell of the department is doing excellent work by giving 100% placement to the students in reputed iron and steel industries and various renowned metallurgical core companies.

I believe that these consistent efforts of the department will create inspiring history of success and help students in building a bright future.



**Dr. R. D. PATIDAR**  
Vice Chancellor

## Message by the HEAD OF THE DEPARTMENT

It gives me immense pleasure to express my views on the release of Departmental Newsletter. It will enlighten you with the important milestones that department has achieved in the year (2022). The department offers courses at B.Tech, M.Tech and Ph.D programmes by providing students a conducive atmosphere in their learning journey. The curriculum is designed with emphasis on industry-linked, which helps students to strengthen their theoretical knowledge with practical understanding. The department has interdisciplinary teaching and research activities in various advanced fields such as Computational Metallurgy, Structural Materials, Advanced Materials, Artificial Intelligence and Machine Learning.

The academic activity is continuously geared up and monitored to cope-up with emerging trends in technological development and innovations. This newsletter should be a good source of guidance for faculty and coming batches of students in choosing Metallurgical and Materials Engineering branch as a future for building a career.



**Dr. S. DAS**  
Professor and Head



## Programmes Offered

B.Tech in Metallurgical and Materials Engineering

M.Tech in Materials Science and Technology

Ph.D in Metallurgical and Materials Engineering

## Major Facilities of the Department

Scanning Electron Microscope	Digital Vickers Micro Hardness Tester
X-Ray Diffractometer	Digital Rockwell Hardness Tester
High Resolution Upright Metallurgical Microscope	Brinell Hardness Tester
Hydraulic Mounting Machine	Single Drum Magnetic Separator (500 X 500mm)
Double Disc Polishing Machine	Tumbler Drum Test Apparatus (500X1000 mm)
Electronic Tensometer	Vibratory Cup Mill
Induction Melting Furnace	Micum Drum
Muffle Furnace 1800°C	Pellet Mill Unit (450 mm dia)
Tubular Sintering Furnace 1400°C	Mega 3D Printer (500X500X500mm)
Industrial Furnace (Grooved Type)	Pin on Disk wear tester
Jominy Hardenability Tester	Potentiostat & Galvanostat Corrosion Tester

## Publications

### Research Papers

- J. Baral, **S. Das** and R. Sarvesha, "An Innovative Process for Synthesizing Mg-Al Alloy-Based Composites" in the SCI Indexed Journal Metallography, Microstructure, and Analysis, 11 (2022) 245-254.
- A. Mishra and **S. Kayal** "Evaluation of optimum condition to improve the microstructure in hot-rolled medium carbon steel by elimination of coarse pearlite patches" Journal of Process Mechanical Engineering, 236 (2022) 207-213.
- A. Singh and **S. Kayal** "Investigation of methane adsorption onto metal-organic frameworks under sub-critical condition employing adsorption isotherm models" Bulletin of Materials Science 45 (2022), 96.



- ▶ A. Singh and **S. Kayal** "Benign Synthesis of Metal-Organic Framework (MIL-101-Cr) and Evaluation of Carbon-dioxide Adsorption Behaviour Employing Adsorption Isotherm Models" published in SCI Indexed Journal Current Organic Synthesis, (2022).
- ▶ **S. Kayal** and A. Chakraborty "Evaluation of defect induced surface heterogeneity in Metal-Organic Framework materials with alkali dopants employing adsorption isotherm modelling" Journal of the Indian Chemical Society, 99 (2022) 100493.
- ▶ A. Singh and **S. Kayal** "Analysis of CH<sub>4</sub> Adsorption Isotherms onto MIL-101 (Cr) Metal-Organic Framework and Its Derivatives with Alkali Ion Dopants" Protection of Metals and Physical Chemistry of Surfaces, 58 (2022) 478-485.
- ▶ K.V. Kumar and **M. K. Phani** "Microstructural and mechanical characterization of parallel layered WC-NiCr weld overlay on 080 M40 steel substrate prepared using additive manufacturing", in SCOPUS Indexed Journal Materials Today Proceedings, (2022).
- ▶ **M. Phani** "Towards Sustainable Solid Wastes Management by Indian Integrated Steel Plants: A comprehensive review", in Indian Journal of Environment Protection, 2022 (ISSN: 0253 - 7141), (2022).
- ▶ A. K Srivastava, P. K. Patra and **R. Jha** "AHSS applications in Industry 4.0: Determination of optimum processing parameters during coiling process through unsupervised machine learning approach", in the SCI Indexed Journal Materials Today Communication, 31 (2022) 103625.
- ▶ **R. Jha**, P. K. Patra and A. K. Srivastava "AI-guided optimization of manufacturing protocols for AHSS coils", Materials and Manufacturing Processes, (2022) 1-8.
- ▶ **R. Jha** "Artificial Intelligence – Aided Materials Design: AI-Algorithms and Case studies on Alloys and Metallurgical Processes", CRC Press (2022).
- ▶ **T. Talapaneni** and **V. Chaturvedi** "Proposing a suitable slag composition by estimating the fusion behavior, viscosity and desulphurization ability for blast furnaces running with high alumina" in SCPOUS Indexed Journal Materials Today Proceedings, (2022).
- ▶ **V. Chaturvedi** and **T. Talapaneni** "An Overview on the Microstructure and Mechanical Properties of Vibrated Magnesium Alloy During Solidification" Book cover in Smart Technologies for Energy, Environment and Sustainable Development, 2 (2022) 423-431.
- ▶ **N. K. Verma**, A. K. Srivastava and M. K. Manoj "Influence of Inhibitors on the Corrosion of Al and Al-composites in Chloride Containing Solutions – A Review" in Korean Journal of Materials Research, 32 (2022) 280-286.
- ▶ **N. K. Verma**, P. Chamoli, M. Misra, M. K. Manoj and A. Sharma "Advanced metal and carbon nanostructures for medical, drug delivery and bio-imaging applications", Nanoscale, 14 (2022) 3987- 4017.



- ▶ **N. K. Verma** and A. Sharma, published a research article entitled "Surface Coatings and Functionalization Strategies for Corrosion Mitigation" published in Functionalized Nanomaterials for Corrosion Mitigation: Synthesis, Characterization, and Applications (2022).
- ▶ A. N. Kadam, S. Roy Chowdhury, C. Bathula, **N. K. Verma**, V. Kumar, M. K. Jha, S. W. Lee, M. Misra, "A novel reduction approach for fabrication of transparent conducting fluorine and tin doped indium oxide thin film with low sheet resistance", Ceramics International, 48 (2022) 29307-29313.
- ▶ Arjun Kundu, **Prasenjit Biswas**, Archana Mallik & Sanjeev Das "Electromagnetic Twin-Roll Casting of Aluminium Alloy Sheets: An Overview" in SCI Indexed Journal 'Journal of The Minerals, Metals & Materials Society (TMS)' (Springer) (2022).
- ▶ A. Kumari, A. Kumar, R. Dawn, J. Roy, S. Jena, R. Vinjamuri, **D. Panda**, S. K. Sahoo, V. K. Verma, S. Mahapatra, A. Rahaman, A. Ahlawat, M. Gupta, K. Kumar, Asokan Kandasami, V. R. Singh "Effect of annealing temperature on the structural, electronic and magnetic properties of Co doped TiO<sub>2</sub> nanoparticles: An investigation by synchrotron-based experimental techniques", in Journal of Alloys and Compounds 933 (2023) 167739.
- ▶ Jayashree Baral, **S. Das**, Prudhvi Sukowsh 'Effect of heat treatment on the precipitation of Mg<sub>17</sub>Al<sub>12</sub> in Mg-7 Al alloy' in SCI Indexed 'Materials today: Proceedings (ELSEVIR) <https://doi.org/10.1016/j.matpr.2022.12.187>.

## Patents

- ▶ **N.K. Verma** and M. Mishra received a patent for "Method of Reducing Resistance of transparent conducting thin films using Navel Chemical Reducing" Patent Application.2022/03893 (Republic of South Africa).
- ▶ **N. K. Verma**, M. Mishra, A. Sharma, received a patent for "A System for Manufacturing Transparent Conductive Film" Patent Application".202021.105684.3, Das Deutsche Patent- und Markenamt (German Patent).
- ▶ **N.K. Verma**, M. K. Manoj, A. Sharma received a patent for "A process for fabricating aluminium, boron carbide-based aluminium matrix composites using powder metallurgy route" Patent Application 2021101683 (Australian Patent).
- ▶ **N. K. Verma**, M. K. Manoj, A. Sharma "A tin silver-plating bath using methane sulfonate for low alpha solder bumping" Patent Application no. 2021104459 (Australian Patent).
- ▶ S. Kanhed, **T. Talapaneni**, Siddharth S. Chakrabarti, granted patent for "A Device for Utilization of Microwave for Agglomeration of Fines by Sintering Route in Steel Plants" Patent Application No. 201921038156 (Republic of South Africa).



## Research Projects

- ▶ Dr. M.K. Phani & Dr. S Das - Controlled In - Line heat treatment of rail steels - Rail Research Centre, Delhi & RUBM, JSP, Raigarh
- ▶ Dr. Sibnath Kayal - Cancer Therapy by Stimuli-Responsive Metal-Organic Framework (MOF) Based Drug Delivery Systems to Africa India Mobility Fund - DBT/Wellcome Trust India Alliance
- ▶ Dr. Sibnath Kayal - Development of a prototype device for oxygen separation from air, a strategic technological solution to control the food spoilage- International Cooperation Bilateral scheme (DST- India and MSTR - Sri Lanka)
- ▶ Dr. S. Das & Dr. T. Talapaneni- Preparation of a high-temperature non-sticky refractory-based coating material with a low wear rate for use in a rotary kiln to avoid accretion formation and to improve its refractory lining life- DRI, JSP, Raigarh
- ▶ Dr. S. Kayal, Dr. Mahashakti Mahamaya, Dr. S. Das & Dr. T. Talapaneni- Value added utilization of Fly Ash for sustainable solution- JPL, Tamnar

## Visitors in the Department

- ▶ Dr. Ashokan (Senior Principal Scientist) and Dr. Rathore (Senior Principal Scientist) of CSIR- AMPRI Bhopal, M.P visited Department of Metallurgical Engineering, OP Jindal University, Raigarh, CG. They interacted with Vice Chancellor and HOD of the Metallurgical Engineering Department. A team of AMPRI Bhopal, visited the departmental laboratories and discussed the research areas and the ongoing projects of the department.



- ▶ Mr. Bimlendra Jha, Managing Director JSP Raigarh visited department of Metallurgical Engineering on October 11, 2022. He visited departmental laboratories and discussed ongoing projects with HOD Dr. S. Das and other senior faculty members.





Mr. Greg Pawley, Chief Executive Officer Wolongong Coal Pty Ltd. visited department of Metallurgical Engineering on December 11, 2022.



Dr. Vishwanathan N, AVP & Head R&D JSP and Mr. Sujeet visited department of Metallurgical Engineering on December 05, 2022.



## Events: Technical Talks

The Technical Talks are organized by Department of Metallurgical Engineering and ASM International Eastern India Raigarh Chapter.



### Speaker

**Dr Ch. Sambasiva Rao**  
Ferroalloys expert Consultant  
(BCG,BDG ,Ghaisasi groups etc.,)  
Former Technical advisor,Vedanta Facor  
R&D Consultant, Jindal stainless

Dr. Ch. Sambasiva Rao delivered a technical talk on “Ferroalloys – Its important role in steel making”. He is currently working as Technical Advisor for many ferro alloys industries in India. He has a rich 37 years of experience in ferro alloys industries and served in reputed groups of India and Georgia. Dr. Rao has given the insights of ferroalloys in steel manufacturing. He talked about the role of ferro alloys as deoxidant and for alloying addition in stainless steel. Dr. Rao also discussed the different types of ferroalloys and their composition. He briefed the production methods of ferro alloys and their vital role in industrial sectors



### Speaker

**Mr. R K Ajmeria**  
Executive Vice President & Head Mills  
Jindal Steel & power, Raigarh, C.G.  
Vice Chairman, ASM Int. Eastern India Raigarh Chapter.

Mr. Ajmeria delivered a technical talk on “Green Steel Production – Prospects & Challenges”. He has given insights on Green-steel Production. He discussed about key policies for low carbon foot prints. He proposed the action plan for green steel production and addressed the challenges encountering by steel industry decarburization and necessary strategies to be followed. Mr. Ajmeria has also given an overview on hydrogen-based steel making process.



**Dr. Sathya Prasad M**  
Vice President (Vehicle Systems & CAE)  
Ashok Leyland, Chennai



**Dr. Dhanasekaran S**  
Vehicle Systems & PD,  
Ashok Leyland, Chennai

### Speakers

Dr. Dhanasekaran delivered a talk on “Light Weighing – Opportunities & Challenges in Commercial Vehicles”. He discussed the global mega trends of commercial vehicles and their technologies. He talks about the future design and modelling opportunities for commercial vehicles which includes manufacturing, assembly, recyclability and their reusability.





**Speaker**

**Dr. Sourav Ganguly**

Scientist, Advanced Materials Technology (AMT) Department CSIR-Institute of Minerals & Materials Technology (CSIR-IMMT), Bhubaneswar-751013, Odisha, India

Dr. Ganguly delivered a talk on “Creep and corrosion behavior of magnesium alloys and nanocomposites for automotive applications”. He discussed different Mg alloys, their applications, and limitations. Dr. Ganguly has given the overview in production technologies of Mg and its significance in automobile industries. He briefed about creep performance of Mg alloys and nanocomposites for automobile sectors.



**Speaker**

**Dr. Sanjeev Kumar Rana**

Deputy Manager, QA  
Nalwa Steel & Power, Taraimal, C.G.

Dr. Sanjeev Kumar Rana delivered a talk on “Effect of Ultrasonic Shot Peening on the Low Cycle Fatigue Behaviour of the Ti-6Al-4V” alloy. He described the microstructural modification and fatigue life of Ti-6Al-4V at room temperature. He concluded that the fatigue life is improved due to combined effect of residual stresses, work hardening and grain refinement in the surface region of the alloy.



**Speaker**

**Dr. Swapan Kumar Karak**

Assistant Professor (Grade-1)  
National Institute of Technology, Rourkela

Dr. Karak delivered a talk on “Metallurgical Aspects on Advance Welding and Applications in Industries”. He briefed the different advanced welding techniques, components, and its applications. He discussed the effect of welding parameters in gas metal arc welding process and their industrial applications.

## Events: Convocation Ceremony

- In M.Tech Mr. Madhuru Uma Mahesh of batch 2021 received gold medal, Ms. Ayushi Singh received silver medal and Mr. Ardhendu Sing received bronze medal. In batch 2022 M.Tech student Mr. Sambit Tripathy received gold medal, Mr. Subrat Ku. Bindhani received silver medal and Mr. Bethu Akhil Kumar received bronze medal.
- B.Tech students of batch 2021 Mr. Triparna Narayana Kaushik received gold medal, Mr. Jammara Basha received silver medal and Mr. Bittu Babu received bronze medal. In batch 2022 Mr. Krushna Doma Patle received gold medal, Mr. Nikhil Nivedan Vatsa received silver medal and Md Alquma Sarfaraj received bronze medal. In Diploma students of batch 2022, Mr. Avnish Jha received gold medal, Mr. Sandeep Ku. Patel received silver medal and Mr. Diwakar Singh Yadav received bronze medal.





## Events: Faculty Development Programme

► Department of Metallurgical Engineering has organised Five Days Online Faculty Development Programme (FDP) on “Advanced Material Characterization Techniques (AMCT-2022)” during November 7-11, 2022. The Chairman of the FDP, Dr. R. D. Patidar (VC-OPJU), Convener, Dr. Satyabrata Das (Steel Chair Professor and Head Metallurgical Engineering Department); Faculty Coordinators (Dr. Sibnath Kayal & Dr. Vatsala Chaturvedi) organized 10 expert talks by speakers from various IITs, NIT's and R&D units dealing with Advanced Material Characterization Techniques. The FDP programme received an overwhelming response with more than 150 participants.



► The FDP was aimed to provide opportunities to faculty members and research scholars to enrich their knowledge in different advanced characterization techniques. The FDP was attended by participants from all over India.

## Events: National Metallurgist Day

► A “National Metallurgist Day” was celebrated in the department on November 14, 2022. The various events were organised in this day such as Metallurgical Quiz, Technical Presentation and Logo Competition. The event was chaired by the Vice Chancellor Dr. R. D. Patidar. The winners were awarded by Cash Prize.





## Internship

- We are glad to announce that our B. Tech (2019-2023) 7th semester students got their long-term internship (6 & 3 months) in various reputed R&D organizations and in renowned iron and steel industries. They are listed as IMMT Bhubaneswar, NML Jamshedpur, DMRL Hyderabad and industries JSW Dolvi, JSP Angul, JSP Raigarh, Bhilai Steel Plant, Bokaro Steel Plant, Jayaswal Neco, Sunflag Steels, Nalwa Steels, Parth Metallurgical Services, Technook and Jing Software.



## Placements

- We are delighted to announce that our total 12 B.Tech (Batch 2018-2022) students got placed in Jindal Steel and Power Limited. Jindal Steel and Power Limited is one of the leading companies in Indian Steel Industry with a significant global presence. The company's product portfolio spans across the steel value from widest flat products to different angles & channels, wire rods, round bars and rails.



- We are delighted to announce that our B.Tech (Batch 2018-2022) students got placed in Sunflag Iron and Steel Company Limited. The company has high quality special steel (Carbon Steels, Alloy Steels, Micro-Alloyed Steels, Stainless Steels, Spring Steels, Valve Steels, Bearing Steels, Cold Heading Quality Steels and Tool Steels).



- We are delighted to announce that our B.Tech (Batch 2018-2022) students got placed in MSP Steel and Power Limited. MSP Group is a leading steel manufacturer in Eastern India. The company is engaged in the production of sponge iron, steel power generation rolling mills and ferro alloys.



- We are delighted to announce that Mr. Avnish Jha (Diploma 2020-2022) got placed as Research And Development Officer at D&H Sécheron Electrodes Private Limited. D&H Sécheron is one of the leading welding manufacturers in India. The company is prominent in welding material, welding products and welding rods and ARC welding wires suppliers.



- We are delighted to announce that Mr. Abhishek Dongre (B.Tech Batch 2018-2022) got placed in ITC Enduring Value. ITC is the leading FMCG marketer in India. Its business comprises Branded Packaged Foods, Cigarettes, Personal Care Products, Education and Stationery Products, Lifestyle Retailing, Incense Sticks (Agarbattis) and Safety Matches. ITC is rated among the World's Most Reputable Companies by Forbes magazine and among India's Most Valuable Companies by Business Today.

- We are delighted to announce that our B.Tech (Batch 2018-2022) students got placed in Square Yards. Square Yards is one of the India's largest integrated platform for Real Estate & Mortgages. It is also one of the fastest growing PropTech platform in UAE, Rest of Middle East, Australia &



- We are delighted to announce that our B.Tech (Batch 2018-2022) students got placed in Jindal Stainless. Jindal Stainless is one of the market leaders in manufacturing of stainless steel and their products which include stainless steel slab, bloom, coils, plates, sheets, precision strips, blade steel and coin blanks.

- We are delighted to announce that our B.Tech 7th semester (Batch 2019-2023) students got placed in UNO MINDA. UNO MINDA is engaged in the business of manufacturing, development, and sale of auto components for domestic and global market.



- We are delighted to announce that our B.Tech (2018-2022) student Mr. Vishal Pathade got selected in Subhodh Technologists and Mr. Patrana Lokesh B. Tech (2017-2021) got selected as an Apprentice-Metallurgy in Jayaswal Neco, Raipur, Blast furnace department. Mr. Durgesh Sahu and Mr. Chaatram Sahu and M. Tech Mr. Saubhagya kamal and Mr. Mukesh Yadav of 2022 Batch got selected in Ind-Synergy Ltd.

## Advanced Instrumentation Facility

The X-Ray Diffractometer (Rigaku Smart Lab-Japan) is a rapid analytical instrument primarily used for phase identification of a crystalline material and can provide information on the crystal structure. The instrument is capable to find out the actual stoichiometric composition. XRD is also used to determine the crystallite size of the material, and the degree of texture (preferred orientation of grains) in the material. It is also used to determine the percentage crystallinity preferably in a polymeric material. Both powder and solid samples can be studied through X-Ray diffraction. The qualitative phase analysis of the sample can be done using ICDD data card available in the software. A dedicated software module is interfaced for quantitative analysis of the phases present in the sample.



X-Ray Diffractometer





Scanning Electron Microscope

Scanning Electron Microscope (ZEISS EVO 18-Germany) is one of the most powerful instruments to study the surface topography of a material. This instrument can be used to observe the microstructure of materials. The microscope is operated under vacuum to a level of  $10^{-6}$  torr. The instrument is capable of observing a microstructure at a magnifying power of 10 lakhs and also has a resolving power of 3-8 nm at an accelerating voltage of 30 kV. Because of the higher depth of focus, the microscope is able to characterize the fracture surface easily. The SEM is interfaced with the EDX system which is able to find out the chemical composition of the microconstitution qualitatively and quantitatively by spot analysis.

## Training Imparted



- Dr. S. Das (Head of the Department) and Dr. Rajesh Jha (Associate Professor) visited JSW Monnet Raigarh, CG on 6th July 2022 and interacted with executives and industrial professionals. Dr. S. Das has delivered an expert lecture in "The challenges on increasing rural consumption of steel". Dr. Jha has delivered a talk in "Green steel/hydrogen steel making and application of Artificial Intelligence algorithms in different units of an integrated steel plant". Dr. Jha also conducted Workshop on Artificial Intelligence at MSP Steel and Power Limited Raigarh, CG.



- Prof. Nandalal Acharjee (Sr. Assistant Professor) delivered expert lecture on "Introduction to clay as a material and its manufacturing processes" for five days (May 4-5, 2022) at National Institute of Design (NID), Bhopal, Madhya Pradesh.



## Achievements



Mr. Deepak Patel (Scientific Officer) has successfully completed his “Doctor of Philosophy” in Discipline of Metallurgical Engineering from National Institute of Technology, Raipur.



Mr. Y. Santhosh Kumar has participated in the Training Program on “Fitness & Nutrition” at JSP Raigarh.

## Staff



### **Dr. S. Das (HOD and Steel Chair Professor)**

Dr. Das earned his Ph.D and M.Tech degree in Metallurgical Engineering from Indian Institute of Technology, Kanpur. He did his BE in Metallurgical Engineering from Bihar Institute of Technology (BIT) Sindri, Dhanbad. He joined as Steel Chair Professor in the department of Metallurgical Engineering in January 2022. Formally, He worked as a Director, CSIR-AMPRI Bhopal, visiting professor in IIT Kanpur and adjunct faculty in MANIT Bhopal. His areas of research are Solidification sciences of metals, alloys, and composites, Deformation behaviour of metals and alloys and Phase transformation in metals and alloys. He has published more than 180 research papers in the peer-reviewed international journals. He was awarded ‘Metallurgist of the Year’ award by Government of India.



### **Dr. Sibnath Kayal (Professor)**

Dr. Kayal did his Ph.D in Materials Science and Engineering from Nanyang Technological University (NTU), Singapore. M.Tech in Materials Science and Engineering from Indian Institute of Technology (IIT), Kharagpur and B.Tech in Chemical Technology from University of Calcutta, Kolkata. He worked as a Research Fellow in Nanyang Technological University (NTU), Singapore and as a Senior Product Development Engineer in Advanced Micro Devices (AMD) Pte Ltd, Singapore. His areas of research are Advanced Porous Materials for Sustainable Clean Energy Technology, Carbon Capture, Natural Gas Storage, Adsorption Cooling System, Nano-materials for Biomedical Applications, Hybrid Composite Materials and Ceramic Materials. He has published more than 25 research papers in the peer-reviewed international journals.





## **Dr. Rajesh Jha (Associate Professor)**

Dr. Jha earned his Ph.D in Material Science and Engineering from Florida International University, Miami, FL, USA. He completed his M.Tech in Metallurgical and Materials Engineering from Indian Institute of Technology, Kharagpur. BE in Metallurgical Engineering from BIT, Sindri, Dhanbad, Jharkhand, India. He worked as a Postdoctoral Research Fellow at Florida International University, College of Engineering and Computing, FIU, Miami, Florida, USA (2018-2021). He also worked as a Postdoctoral Research Fellow at Department of Mechanical Engineering, Colorado School of Mines, Golden Colorado, USA and Visiting Researcher, Thermal and Flow Engineering Laboratory, Department of Chemical Engineering, Abo Akademi University, Finland. His areas of research are in Materials/alloy Design: Soft Magnetic (FINEMET) and Hard Magnetic (AlNiCo) alloys, Nickel based superalloys and Titanium alloys. In Thermodynamic Modeling: CALPHAD, Physical metallurgy, Heat treatment of alloys, Thermodynamics and kinetics of materials. He has published 28 research papers in the peer-reviewed journals.



## **Dr. Makkuva Kalyan Phani (Associate Professor)**

Dr. Phani earned his Ph.D in Engineering from Homi Bhabha National Institute, IGCAR Campus - Kalpakkam. He did two-year Advanced Course work – as a part of PhD programme at IGCAR Training School in Materials Science. He completed his B.Tech from Jawaharlal Nehru Technological University – Hyderabad in Metallurgical and Materials Technology. His areas of expertise are in the field of Material Characterization with SEM, EBSD, SPM (AFM, advanced AFM) techniques, Steel Technology, Structure property correlations in materials, Welding of alloys, Casting and Solidification of alloys and Internal friction in alloys. He has published 14 research papers in the peer-reviewed international journals.



## **Prof. Neeraj Kumar Verma (Sr. Assistant Professor)**

Prof. Neeraj Verma is pursuing Ph. D in Metallurgical Engineering from National Institute of Technology (NIT), Raipur. He completed his M.Tech in Metallurgical & Materials Engineering from Thapar Institute of Engineering & Technology (TIET), Punjab and M.Sc.in Material Science from Chaudhary Charan Singh University (CCS University), Meerut. He worked as an Assistant Professor at JTT, Faculty of Engineering, Jhunjhunu (Rajasthan), Shridhar University, Faculty of Engineering, Pilani (Rajasthan). His areas of research are in the field of Corrosion Engineering, Aluminum alloys and Synthesis and characterization of Nanomaterials. He has published 9 research papers in the peer-reviewed international journals.





### **Prof. Nandalal Acharjee (Sr. Assistant Professor)**

Prof. Acharjee is pursuing his Ph. D in Metallurgical and Materials Engineering from BPUT, Odisha. He received his M.Tech. in Materials Engineering from BESU, Shibpur (Now IIST, Shibpur), PG Diploma in Material Characterization from Jadavpur University, Kolkata and B.Tech. from AMIE in Ceramic Engineering. He worked as a Assistant Professor at National Institute of Design (Centre of Excellence, Govt. of India), Ahmedabad, Gujarat, Indus University (UGC Recognized University), Ahmedabad, Gujarat and Visva Bharati University (Central University), Santiniketan, West Bengal. He has expertise in the area of Ceramic Composite Materials (CMC), Ceramic Pigments synthesis and characterizations, Nano-refractory and Refractory Castables, Powder Metallurgy and Materials Design and Product Development. He has published research papers in the reputed peer international journals.



### **Dr. Trinath Talapaneni (Sr. Assistant Professor)**

Dr. Talapaneni received his Ph.D in Process Metallurgy from National Institute of Technology, Rourkela and M.Tech in Process Metallurgy from National Institute of Technology, Surathkal and B. Tech in Metallurgical and Materials Technology from Mahatma Gandhi Institute of Technology, Hyderabad. He worked as an Assistant Professor in Maulana Azad National Institute of Technology, Bhopal. He has expertise in the areas of Process Metallurgy, Metallurgical Waste Management and Modeling and Simulation. He has published 6 research papers in the peer-reviewed international journals.



### **Dr. Vatsala Chaturvedi (Sr. Assistant Professor)**

Dr. Vatsala Chaturvedi has completed Ph.D. in Foundry Technology and M.Tech in Physical Metallurgy from MNIT Jaipur. She received B.Tech. in Material Science and Metallurgical Engineering from UIET Kanpur. She worked as an Assistant Professor in Maulana Azad National Institute of Technology, Bhopal and as a Teaching assistant in Malaviya National Institute of Technology Jaipur. Her research areas are Metal Casting and Mechanical Metallurgy. She has published 5 research papers in the peer-reviewed international journals.



### **Dr. Nidhi Khobragade (Assistant Professor)**

Dr. Khobragade earned Ph. D in Materials and Metallurgical Engineering from National Institute of Foundry and Forge Technology, Ranchi, M.Tech in Nanoscience and Technology from Birla Institute of Technology, Mesra, Ranchi and B.Tech in Metallurgical Engineering from National Institute of Technology, Raipur (C.G). She worked as an Assistant Professor in National Institute of Technology, Hamirpur (H.P) Maulana Azad National Institute of Technology, Bhopal (M.P). She also worked as Visiting Researcher in Laboratory of Nanostructures, Polish Academy of Sciences, Institute of High-Pressure Physics (UNIPRESS), Sokolowska, Warsaw, Poland. Her research areas are Composite Materials and Alloy Development by Powder Metallurgy route and Advanced Materials (Nanostructured materials). She has published 7 research papers in the peer-reviewed international journals.





### **Dr. Deepankar Panda (Assistant Professor)**

Dr. Panda earned his Ph.D and M.Tech in Metallurgical and Materials Engineering from National Institute of Technology, Rourkela, India and B.Tech in Metallurgical and Materials Engineering from Indira Gandhi Institute of Technology, Sarang, Odisha. His research concentrated in the area of Grain Growth Behavior, Magnesium Alloys, Crystallography Texture, Structure-Property Correlation, Mechanical Alloying and Powder Metallurgy. He has published 21 research papers in the peer-reviewed international journals.



### **Dr. Prasenjit Biswas (Assistant Professor)**

Dr. Biswas completed his Ph. D in Metallurgical Engineering from National Institute of Technology Raipur. M. Tech in Metallurgical and Materials Technology from National Institute of Technology, Durgapur and B. Tech in Production Engineering from National Institute of Technology Agartala. His area of expertise is in Advanced Metal Casting and Solidification Technology, Materials Processing, Physical Metallurgy, Materials Characterization, Testing of Materials, Tribology, Metal Matrix Composites, Aluminium and Magnesium alloys and Simulation and Optimization (Ansys-CFD Based). He has published 10 research papers in the peer-reviewed international journals.



### **Dr. Deepak Patel (Scientific Officer)**

Dr. Patel earned his Ph.D in Metallurgical Engineering from National Institute of Technology, Raipur. M.Tech and B.Tech in Metallurgical Engineering from Chhattisgarh Swami Vivekanand Technical University, Bhilai and OP Jindal Institute of Technology (Currently OP Jindal University) respectively. His area of expertise is in the Aluminium alloys and composites; Direct chill (DC) casting; Al-Sn self-lubricating bearings, Tribology (Friction and Wear), Lubrication- self-lubricants/solid lubricants, Prototype designing and simulation of Lab-Scale/Micro-scale and sustainable casting equipment. He has published 7 research papers in the peer-reviewed international journals.



### **Mr. Hrishikesh Shastri (Scientific Officer)**

Mr. Shastri earned his M.Tech in Metallurgical Engineering from National Institute of Technology, Rourkela and B.Tech in Metallurgical Engineering from OP Jindal Institute of Technology (Currently OP Jindal University). His areas of expertise are in Structure-Property Correlation of Steel, Mg alloys and Deformation behaviour of metals. He has published 4 research papers in the peer-reviewed international journals.





### Mr. Vikash Mahato (Scientific Officer)

Mr. Mahato has done B.E in Metallurgical Engineering from National Institute of Technology Raipur and M.C.A from Sikkim Manipal University. He is well experienced in operating highly sophisticated instruments such as Scanning Electron Microscope, X-Ray diffractometer and EBSD.



### Mr. Nishit Agrawal (Lab Assistant)

Mr. Agrawal has done his B.E in Metallurgical Engineering from National Institute of Technology Raipur. He worked as an Engineer in JSP Raigarh. He is working as a lab assistant in OPJU for last 12 years.



### Mr. Naren Mahato (Lab Assistant)

Mr. Mahato completed his ITI in Mechanical Engineering from Government ITI College Chaibasa. He is working as a lab assistant in OPJU for last 13 years.



### Mr. Y. Santhosh Kumar (Lab Instructor)

Mr. Santhosh has completed Diploma in Metallurgical Engineering from Government Polytechnic Vishakhapatnam. He is working as a lab instructor for about 10 years in OPJU.



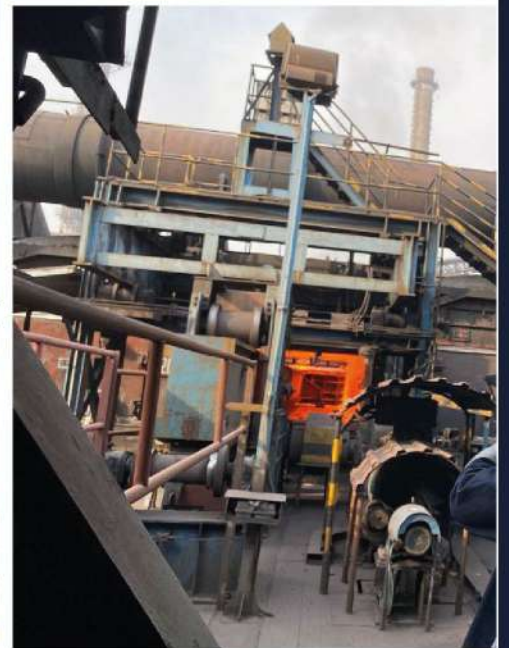
### Mr. Raju Bara (Office Boy)

Mr. Raju Bara is working in department of Metallurgical Engineering, OP Jindal University Raigarh for last 7 years.

## Students in Lab









## Students

**1800+**  
Students



35%



65%



UNDERGRADUATE  
80%



POSTGRADUATE  
20%



35%

Students from  
other state



20

Other state  
representation of  
students



**1:15**  
Faculty-Student  
ratio



**35**  
Average  
age of faculty  
members



**3000+**  
Alumni

## Collaborations



**31**

National



**07**

International

## Infrastructure



**50**

Acres  
Land area



**5,00,000**  
Sqft.  
Built up area



**1000+**  
Capacity



**350+**  
Capacity



**1000 Mbps (1:1)**  
Connectivity  
Fully Wi-Fi Campus



**750+**  
Networked  
Computer Systems



**50+** Well equipped laboratories

## Faculty and Staff



**100**  
Faculty



PhD **80%**



**20%** PG



**70%**  
Faculty qualification  
from IIT, IIT, NIT & IIM



**20%**

Faculty with global  
experience



**100+**

Non-teaching staff



**28%**



**72%**

## Placements Statistics

### Year 2019-20



**36**

Campus  
Drives



**82.5%**  
Students  
Placed



**5.75** Lakh  
Average  
Package

### Year 2020-21



**46**

Campus  
Drives



**71.8%**  
Students  
Placed



**5.50** Lakh  
Average  
Package

### Year 2021-22



**70+**

Campus  
Drives



**88%**  
Students  
Placed



**6.5** Lakh  
Average  
Package

## Centres for Excellence



Innovation &  
Entrepreneurship



Research



Corporate  
Education &  
Training



Industry 4.0



Industry -  
Academia  
Collaboration



Social  
Empower-  
ment



CSTPD

## Library



**42000 +**  
Books



**5000 +**  
Titles



**10000 +**  
E-journals

## Awards



Best Emerging Industry Linked Institute by AICTE-CII  
Industry Linked Survey 2022



Best Industrial Interface University of 2021 by ISIEINDIA



Best Private University in Chhattisgarh by the progress  
Global Award 2020



Best Industry -Linked Institute by AICTE -CII Award 2020



6<sup>th</sup> Rank in Swachh Campus Ranking 2019 of the MHRD  
& UGC





OPJU

UNIVERSITY OF STEEL TECHNOLOGY  
AND MANAGEMENT

# AYAS



**Coordinator :** Dr. Nidhi Khobragade (Assistant Professor)  
Department of Metallurgical Engineering

**Design :** Mr. Arjun Gupta (B.Tech 4<sup>th</sup> Year)  
Department of Metallurgical Engineering

**OP JINDAL UNIVERSITY, RAIGARH**