

CRITICAL METALS CONGRESS

CSIR-NML
Jamshedpur



6th to 8th
November 2025

Organized Jointly By



खान मंत्रालय
भारत सरकार
Ministry of Mines
Government of India



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Participating Organizations



8:30

Registrations

10:00

Inaugural session

Welcome Addresses

- ❖ Dr. Sandip Ghosh Chowdhury, Conference President
- ❖ Dr. Sanjay Kumar, Chairman Organizing Committee, CRITMET 2025
- ❖ Dr. K Anand Rao, CMD, Uranium Corporation of India Ltd
- ❖ Prof. Sarma V Pisupati, Director, C2M, Penn State University, USA
- ❖ Chief Guest:
Shri. Lekhan Thakkar, Joint Secretary, National Security Council
- ❖ Release of Conference Souvenir
- ❖ Release of Conference Proceedings
- ❖ Vote of Thanks- Dr. Abhilash, Convenor, CRITMET 2025
- ❖ National Anthem

11:00

Inauguration of CRITMET EXPO & HIGH TEA

12:00-13:30 : Keynote & Plenary Presentations

Session Chair: Dr. Sandip Ghosh Chowdhury, Director, CSIR-NML

Session Manager: Dr. Abhilash//Venue: NML Auditorium

Keynote-1 12:00- 12:45	Unlocking Hidden Potential: the role of secondary sources in critical mineral supply chains for sustainable energy	Sarma V Pisupati Penn State, US
Plenary-1 12:50- 13:25	Role of critical metals in clean energy transition	Lekhan Thakkar Joint Secretary, National Security Council Secretariat (NSCS), Government of India

13:30: LUNCH

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Presentation from Industries & Sponsors & Exhibitors

[@10 minutes R&D/Business Outlook on Critical Metals by CEOs, CMDs, Business Heads]

Session Chair: Dr. S.K.Pal, Head, Business Development, CSIR-NML

Moderator: Dr. Abhilash, CSIR-NML//Venue: NML Auditorium

- ❖ Mrs. A. Sumathi, COO, Vedanta Sterlite Copper
- ❖ Shri Akhouri Biswapriya, Deputy Director General, GSI
- ❖ Shri Venkoba Rao, TAKRAF DELKOR
- ❖ Shri. Swagat Ray, GM, GMDC
- ❖ Dr. Maneesh Kumar Srivastava, Head R&D, Vedanta Aluminium
- ❖ Mr. T. Kumaresan Senior Vice President & L&T M&M Head
- ❖ Dr. K. Anand Rao, CMD, UCIL
- ❖ Dr Siddartha Mishra, Chief Process Research, TATA STEEL
- ❖ Dr. Sachchidanand Srivastava, LOHUM
- ❖ Shri. Bhuwan Purohit, Director, RUBAMIN
- ❖ Dr. Kapil Kashiv, GM (Strategy), Excel Industries
- ❖ Dr Rajesh Goyal, CEO, Polyprotic Chemicals
- ❖ Shri. Prasenjit Kar, Agilent Technologies



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1. Quantitative Polarized Energy Dispersive X-Ray Fluorescence (ED-XRF) analysis of critical mineral nickel (Ni) in Ultramafic Rocks : addressing spectral interference using secondary targets, GSI
2. Reclamation of Tungsten from Industrial Scrap, CSIR-NCL
3. Machine Learning-Driven Optimization of Gold and Silver Recovery from Waste Printed Circuit Boards, IITK
4. Techno-Economical Analysis of Materials Recycling from Waste Printed Circuit Boards (WPCBs): Exploring Hydrometallurgical Process, IITK
5. Recent Developments for recovery of Niobium and Tantalum from primary resources: A review, CSIR-NML
6. Metallothermic Process for the Extraction of Tantalum from the Metallic Salts, CSIR-NIIST
7. CALPHAD modeling of KCl-NaCl-PrCl₃-DyCl₃ system for electrochemical recovery of rare-earth elements from magnet scraps, IITK
8. Recovery of Critical Metals from Solid Waste and Secondary Resources Via Bio-Metallurgical Route: A Review, KIIT
9. Development of Ulvan-Based 3D Bioprinted Scaffolds as Tunable Biosorbents for Rare Earth Metal Recovery , PSG Coimbatore
10. Material flow analysis to understand barriers in closed loop life cycle of lithium, IITBHU
11. Recovery of lithium from waste lithium-ion batteries through carbothermal reduction with organic waste, IIT Roorkee
12. Extraction of Lithium from Zinnwaldite ores, Degana, Rajasthan, CSIR-NML
13. Solvent extraction of metal values from simulated Lithium ion battery waste using L-Proline-Carboxylic Acid-Based Hydrophobic DESs, SOA Bhubaneswar
14. Selective separation of lithium from industrial LCO-rich black mass
15. Recovery of Critical Elements from Bauxite Residue via Hydrometallurgy: A Review, JWU
16. Platinum-Based Nano-Intermetallic Catalysts for Sustainable Energy Solutions, CSIR-NEERI

19:30 onwards

Cultural Program followed by Gala Conference Dinner

Venue: Hotel De Hamray, Jamshedpur



9:00 onwards

Keynote & Plenary Presentations [Session Chair: Dr. B.D.Pandey]

Venue: NML Auditorium// Session Manager: Dr Jhumki Hait

Keynote-2 9:00-10:00	Crystallization and Precipitation Challenges and Opportunities in Critical Raw Materials Processing	Kerstin Forsberg, KTH, Sweden
Plenary-2 10:00-10:30	Supported liquid membranes combined with electrodialysis for separation of critical metals	Amilton Barbosa Botelho Junior, MIT, USA

Q&A

1st Tech Session (Critical Mineral Distribution-1) [10:30-12:00]

[Session Chairs: Dr. T. Sreenivas & Dr. Ratnakar Singh]

Venue: NML Auditorium// Session Manager- Abhijeet Mansingh

INVITED LECTURE (30min)	Status and Vision for Exploration and Exploitation of Critical Minerals In Gujarat	Deepak Kumar Sinha (GMDC)
ORAL-1 (12+3min)	Unlocking Cobalt Resources in the Dharwar Craton: A Case Study from the Kalyadi Cu-Co Deposit	Pratyush Kar IITB
ORAL-2 (12+3min)	Critical minerals and Rare Earth Elements enrichment in Laterite-Bauxite deposits in Jharkhand: An approach for Critical Mineral Security	Shreya Shrey GSI, Jharkhand
ORAL-3 (12+3min)	The lithium deposits of India and their proposed concentration methodology	U. Vishwananth, Prasol Chemicals
ORAL-4 (12+3min)	Identifying and sorting spent Lithium-ion battery chemistries using wavelength dispersive X-ray Florescence	Vivek Verma, IIT Kanpur
SHORT ORAL (10+2min)	Alternative Luminescence-based techniques for lanthanide detection in geological samples	Debashish Ghosh GSI, Shillong

2nd Tech Session (Critical Mineral Beneficiation) [10:30-12:00]

[Session Chair: Dr. Pradip & Dr. Ari Vidyadhar]

Venue: NML Lecture Hall//Session Manager- Dr. Rohit B Meshram

INVITED LECTURE (30min)	Artificial Intelligence for Mineral Processing and Extraction of Metals	Venkat Runkana TCS
THEME LECTURE (20min)	Beneficiation of Low-grade Graphite Ores	N. Vasumathy CSIR-NML
ORAL-1 (12+3min)	Process mineralogy and flotation studies for the beneficiation of rare earth minerals from Dantala ore of Siwana ring complex, Rajasthan	Anuj Kumar, BARC
ORAL-2 (12+3min)	Process-mineralogical insights into uranium mineralization in serpentinized peridotite rocks of Kudada, Singhbhum	Ishan Bhattacharya, BARC
ORAL-3 (12+3min)	Flocculant Study for Neutral and Leached Slurries from Ore Processing of Pressurised Alkali Leaching based Plant	Vipin Kumar, UCIL

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3rd Tech Session (Critical Mineral Deposits) [12:00-13:30]**Session Chairs: Dr. Akhouri Biswapriya, GSI****Session Sponsored by: L&T Minerals and Metals****Venue: NML Lecture Hall//Session Manager- Dr Alok Kumar Meher****Promotional VIDEO by L&T M&M- 2minutes**

THEME LECTURE 20min	Unlocking India's Critical Minerals and Rare Earth Riches: A Multidisciplinary Journey Towards Exploring the Un-explored	Rajesh Mukherjee NRD, Tata Steel
ORAL-1 12+3min	Integrated High-Resolution Electrical Tomography and Geochemical Investigations of Critical Mineral (Ni-Cu-PGE) Mineralization in the Betul Fold Belt, Central India	Dewashish Kumar CSIR-NGRI
ORAL-2 12+3min	Geological and Economic evaluation of Mananjary's fluvial and Paleoplacer heavy mineral and gold deposits in the Vatovavy Region, Madagascar	Ashokaditya Dhurandhar BANTHWAL CORPORATION
ORAL-3 12+3min	Geochemical characteristics and modes of occurrence of rare earth elements and yttrium in coals from Barakar Formation, Mand Raigarh coalfield, India	Monica Sahoo CSIR-NML
SHORT ORAL 10+2min	Measurement of Lithium ion in Brine solution and separation technique	Bhagirathi Behera GSI, Shillong

4th Tech Session (Supply Chain and International Policy) [12:00-13:30]**Session Chair: Dr. Sanjay Kumar, CSIR-NML****Session Sponsored by: LOHUM CLEANTECH PVT LTD****Venue: NML Auditorium//Session Manager- Dr Saurabh Shekar****Promotional VIDEO by LOHUM- 2minutes**

THEME LECTURE 20min	Geospatial Mapping and spatial optimization to Identify New recycling facilities to manage India's growing EV battery waste	Nari Soundarajan SP Global
ORAL-1 12+3min	Techno-Econo-Environmental assessment of critical mineral recycling technology using technology assessment framework: The case of India	Amit Kumar ICRIER
ORAL-2 12+3min	Material flows in recycling and its impact on sustainability	Arunabh Meshram IIT Kanpur
ORAL-3 12+3min	Integrating National and International Policies: a holistic approach to future critical minerals' supply chains	Shashi Arya NTNU
ORAL-4 12+3min	Unlocking India's Potential in Processing of Critical Minerals for Clean Energy and Strategic Sectors	Sunil Kumar CEEW
ORAL-5 12+3min	Mapping cerium flow to identify potential recovery hotspots and establish a framework for REE circular economy in Indian Scenario	Apurva IIT BHU
SHORT ORAL 10+2min	Advancing rare earth supply chain for India's indigenous defence manufacturing	Neha Mishra, Centre for Air Power Studies, New Delhi

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NETWORKING LUNCH [13:30-14:15]

POSTER SESSION-II [14:15-15:00]

(Coordinator: Dr. Pratima Meshram)

Venue: CRITMET EXPO

1. Optimization of Oxygen Blowing Parameters to Enhance Cu Recovery from WPCBs, IITH
2. Plastics in Electronic Waste: Categories, Recycling Challenges, and Emerging Solutions, IITK
3. Sustainable Recovery of Rare Earth Elements from End-of-Life NdFeB Magnets via Chlorination Roasting: A DOE Approach, CSIR-NML
4. Recovery of REEs from Iron Depleted Red Mud Processed Residue, CSIR-NML
5. Tapping critical metals (Nb, Ta) from secondary resources, CSIR-NML
6. Optimization of chemical leaching methods for the extraction of rare earth element from Indian Coal Fly Ash, CSIR-NPL
7. Evaluation of processes for the recovery of critical metals from anode slime: A review, CSIR-NML
8. Electrochemical process for recycling Lithium ion batteries, CSIR-NML
9. Classification of Battery Types based on Elemental Chemistry, and Material Characterisation- Insight towards market demand, CSIR-NML
10. Sustainable Synthesis of Alumina and GO from E-Waste for High-Performance Anticorrosion Coatings, CSIR-NPL
11. Synergistic Hydrometallurgical Recovery of Critical Metals from Li-ion Batteries and Waste SmCo Magnets, IITKGP
12. Selective Resource Recovery from Spent Lithium-Ion Batteries for Sustainable Material Management, CSIR-NPL
13. Optimisation of fayalite slag to enhance Copper recovery from WPCBs, IITH
14. Reductive Leaching of Lithium-Ion Battery Cathode Active Material with Copper and Its Recovery, IITKGP
15. Electrochemical detection of ascorbic acid using reduced graphene oxide (rGO) synthesized from recovered graphite of spent lithium-ion batteries, NCL, PUNE
16. Recovery of critical metals from end-of-life lithium-ion batteries, VNIT
17. Utilization of pyrometallurgical methods for the processing of obsolete NdFeB magnets and recovery of rare earth oxides into slag, CMET
18. Recovery of Metals from WPCB using Organic Solvents, CSIR-NEERI



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5th Tech Session (Extraction and Separation of Critical Metals) [15:00-16:30]
Session Chairs: Prof. Kerstin Forsberg, KTH & Dr. Pratima Meshram, CSIR-NML
Session Sponsored by: VEDANTA STERLITE COPPER
Venue: NML Auditorium//Session Manager-Dr. Krishna Kumar

Promotional VIDEO by VEDANTA STERLITE COPPER- 2minutes

INIVTED LECTURE 30min	Rare earth metals extraction and separation from low-value wastes	Sankar Bhattacharya MONASH UNIVERSITY
ORAL-1 12+3min	High-Yield Recovery of PGMs from Spent Catalysts Through Collector Metal Smelting	Anjana CSIR NIIST
ORAL-2 12+3min	Recovery of Gd(III)- critical rare earth element from aqueous solution using a potential lignocellulosic biomass	G. Padhy CSIR-IMMT
ORAL-3 12+3min	Recovery of Rare Earth Elements and Platinum Group Metals from Chromite Ore Beneficiation Tailings,	Assiya Kassymzhanova Satbayev Univ, KAZHAK
ORAL-4 12+3min	Selective Extraction of Ce(IV) from a Light Lanthanoid Nitrate Solution with di- (2-ethylhexyl) phosphoric acid	Raji Mustapha NWU, SOUTH AFRICA
ORAL-5 12+3min	Studies on the recovery of rare earths and other critical metals from carbonatites of Ambadongar, Gujarat, India	Ram Karan AMD-BARC
SHORT ORAL 10+2min	Assessment of a Low-Cost Biosolution for Bioleaching-Based Indium Recovery from LCD Waste: A Preliminary Study	Pooja Sevak Univ of Mumbai

6th Tech Session (Extraction and Separation of Critical Metals) [15:00-16:30]
Session Chairs: Prof. Kwang Soon Moon, KISEI & Dr. D.K.Singh, IIT-ISM
Session Sponsored by: TATA STEEL
Venue: NML Lecture Hall//Session Manager- Dr. N.S.Randhawa

Promotional VIDEO by TATASTEEL- 2minutes

INIVTED LECTURE 30min	POSCO Group's Nickel Strategy and R&D: From Resource Development to Process Advancements	Jingyun Park RIST
ORAL-1 12+3min	Bench-Scale Studies on the Recovery of Lithium from Spodumene Mineral Concentrate (Marlagalla, Karnataka)	Reshu Sinha, BARC Hyderabad
ORAL-2 12+3min	Development of Fe-Co based Alloy from Spent Li-Ion Batteries	Chavan Akash Naik CMET Hyderabad
ORAL-3 12+3min	Sustainable production of titania slag and pig iron from ilmenite concentrates	Sushree Suman Sahoo CSIR-IMMT
ORAL-4 12+3min	Recovery of Pt from spent automotive catalytic converters: pre-concentration and leaching process	Damodar Devarakonda CMET Hyderabad
ORAL-5 12+3min	Water and Thermal Resistant High Performance Red Mud based X-Ray Shielding Polymer Composite Panels	Manoj Gupta CSIR-AMPRI
SHORT ORAL 10+2min	An efficient process for the production of potash fertilizer and ferro-silicon from indigenous K-feldspar	Shabnam Ara CSIR-NML

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7th Tech Session (Recycling of Secondary Resources) [16:45-18:00]
Session Chairs: Prof. Alexander Chagnes, France & Dr. Chenna Rao Borra, IIT KGP
Venue: NML Auditorium//Session Manager: Dr. M Premkumar

Session Sponsored by: RUBAMIN PVT LTD, INDIA

Promotional VIDEO by RUBAMIN- 3minutes

THEME LECTURE 20min	Metallothermic reduction-based technology for efficient recovery and purification of rare earth metals	K. Jayasankar CSIR-NIIST
ORAL-1 12+3min	Synthesis of anhydrous neodymium fluoride by ammonium bi-fluoride route	Sonal Gupta BARC
ORAL-2 12+3min	Green Technology for the Recovery of Strategic Metals Co, No, Cu, and Mn from Ocean Manganese Nodules	Abha Kumari AMITY UNIVERSITY
ORAL-3 12+3min	Obtaining Demetallized Rare Earth Elements and Titanium-Containing Slag Through Joint Reductive Smelting of Red and Waste Bauxite Slurries	Leila Imangaliyeva Kazakhstan
ORAL-4 12+3min	Ligand-assisted co-operative approach for selective lithium extraction from LIB black mass via oxidative delithiation and complexation mechanism	Alok Paital CSIR-CSMCRI
SHORT ORAL 10+2min	Optimization of Organic Acids and Organophosphorus Extractants for Selective leaching and solvent extraction of rare earth elements from waste Permanent Magnets of Wind Turbines,	Prasenjit Das SOA, University

8th Tech Session (Extraction and Separation of Critical Metals) [16:45-18:00]
Session Chairs: Prof. Sankar Bhattacharya, Australia & Dr. T. Mishra, CSIR-NML
Venue: NML Lecture Hall//Session Manager: Dr. Rashmi Singla

INVITED LECTURE 30min	Current Status and Technical Characteristics of POSCO Group's Ore- Based Lithium Business	Hyunsoo Kim POSCO
ORAL-1 12+3min	Electrode–Electrolyte Compatibility and Composition for Electrochemical Lithium Extraction from Brine	V. Mahanata Belgium
ORAL-2 12+3min	Synthesis and Characterization of Molten Salt Mediated Ion sieve Material for the Selective Lithium Ion Recovery	Hitesh CSIR-CSMCRI
ORAL-3 12+3min	Sustainable Lithium Extraction from Brine Resources	Myungwon Jung POSCO
ORAL-4 12+3min	Understanding the Molecular Basis of Metal Sensing Ability of Metallothionein from MD Simulation	Mahima Ganguly IIT Dharwad
ORAL-5 12+3min	Repurposing the porous separator from spent Li-ion batteries towards building quasi-solid-state Na-metal batteries with Na ₂ /3Ni ₁ /3Mn ₂ /3O ₂ cathode	Shaji Jyothilakshmi IISER Tirupati
SHORT ORAL 10+2min	Dissociation of lithium hydride and hydrogen generation: a reactive molecular dynamics simulation and artificial intelligence based study	Sunil Kumar CSIR-NML



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18:00-19:00

Panel Discussion (Industry - R&D - Academia Interface)

Moderator: Dr. Rishabh Jain, CEEW

Theme: Positioning Indian R&D and Industry Engagement with International Trends

Panelists

- Dr. Sachchidanand Srivastava, LOHUM
- Prof. Kerstin Forsberg, KTH, Sweden
- Dr. Ranjit Ghosh, L&T M&M
- Dr. Neha Chauhan, National Security Council, Govt of India
- Dr. Chenna Rao Borra, IIT Kharagpur

19:30 onwards

Cultural Program & Networking Dinner

Venue: CSIR-NML, Jamshedpur



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9:00 onwards

Keynote & Plenary Presentations

Session Chairs: Dr. Atanu Ranjan Pal, TATA STEEL & Dr. Devabrata Mishra, CSIR-NML

Venue: NML Auditorium//Session Manager: Dr. Shivendra Sinha

Keynote-3 9:00-9:45	Next-Generation Recycling: Advanced Processes for LIB Metal Recovery	Alexandre Chagnes Université de Lorraine, GeoRessources, France
Plenary-3 9:45-10:25	Mining the Unmined: Bio-Inspired Strategies for Recovering Critical Metals from Electronics	Eric D. van Hullebusch, IGP-CNRS, France

Q&A

9th Tech Session [10:30-13:00]- Recycling of Secondary Resources

Session Chairs: Dr. Eric D Van Hullebusch, France & Dr. K.K.Sahu, CSIR-NML

Session Sponsored by: VEDANTA ALUMINIUM

Venue: NML Auditorium//Session Manager: Dr. Pratima Meshram

Promotional VIDEO by VEDANTA ALUMINIUM- 2minutes		
THEME LECTURE (20min)	Sustainable Solar PV-waste Management via Waste to Wealth Strategies for Technological Applications	Parveen Saini CSIR-NPL
ORAL-1 (12+3min)	Recovery of Samarium and Cobalt from End-of-Life SmCo Magnets via Sustainable Hydrometallurgical Route by Integration of Membrane-assisted Concentration system	Pushpa Kumari CSIR-NML
ORAL-2 (12+3min)	Green, Fast, and Effective: REEs Extraction from NiMH Batteries and NdFeB Magnet Waste via Subcritical Water Extraction (SWE) and Electrochemical Stripping	Archana Singh CSIR-AMPRI
ORAL-3 (12+3min)	Selective recovery of pure metal sulfates via antisolvent crystallization from spent NMC processed liquor	Mamata Mohapatra CSIR-IMMT
ORAL-4 (12+3min)	Hydrometallurgical recovery of lithium from LFP battery waste: a sustainable approach to battery waste management	Venkateshan CSIR-NIIST
ORAL-5 (12+3min)	Selective removal/recovery of copper from spent lithium-ion battery leachate using ion-specific mechanism	Sipra Ghosh CSIR-NML
ORAL-6 (12+3min)	Bioleaching assisted electrochemical reclamation of titanium from red mud using extremophilic <i>Bacillus subtilis</i> N3	Punniyadharshini PSG, Coimbatore
ORAL-7 (12+3min)	Recovery of metallic values (Ta, Mn, Ag) from discarded tantalum capacitors	Shaila Mir IIT Roorkee
SHORT ORAL-1 (10+2min)	Towards Self-Reliance in Critical Minerals: Case Studies on Extracting Neodymium and Praseodymium from Monazite and from Recycling Routes	Saankho Bardan IIT Gandhinagar



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10th Tech Session [10:30-13:00]- Recycling of Secondary Resources
Session Chairs: Dr. Deepak Sinha, GMDC & Dr. Amit Chatterjee, Excel Industries

Session Sponsored by: Excel Industries Limited

Venue: NML Auditorium//Session Manager: Dr. Satyajit Mukherjee

Promotional VIDEO by EXCEL INDUSTRIES- 2minutes

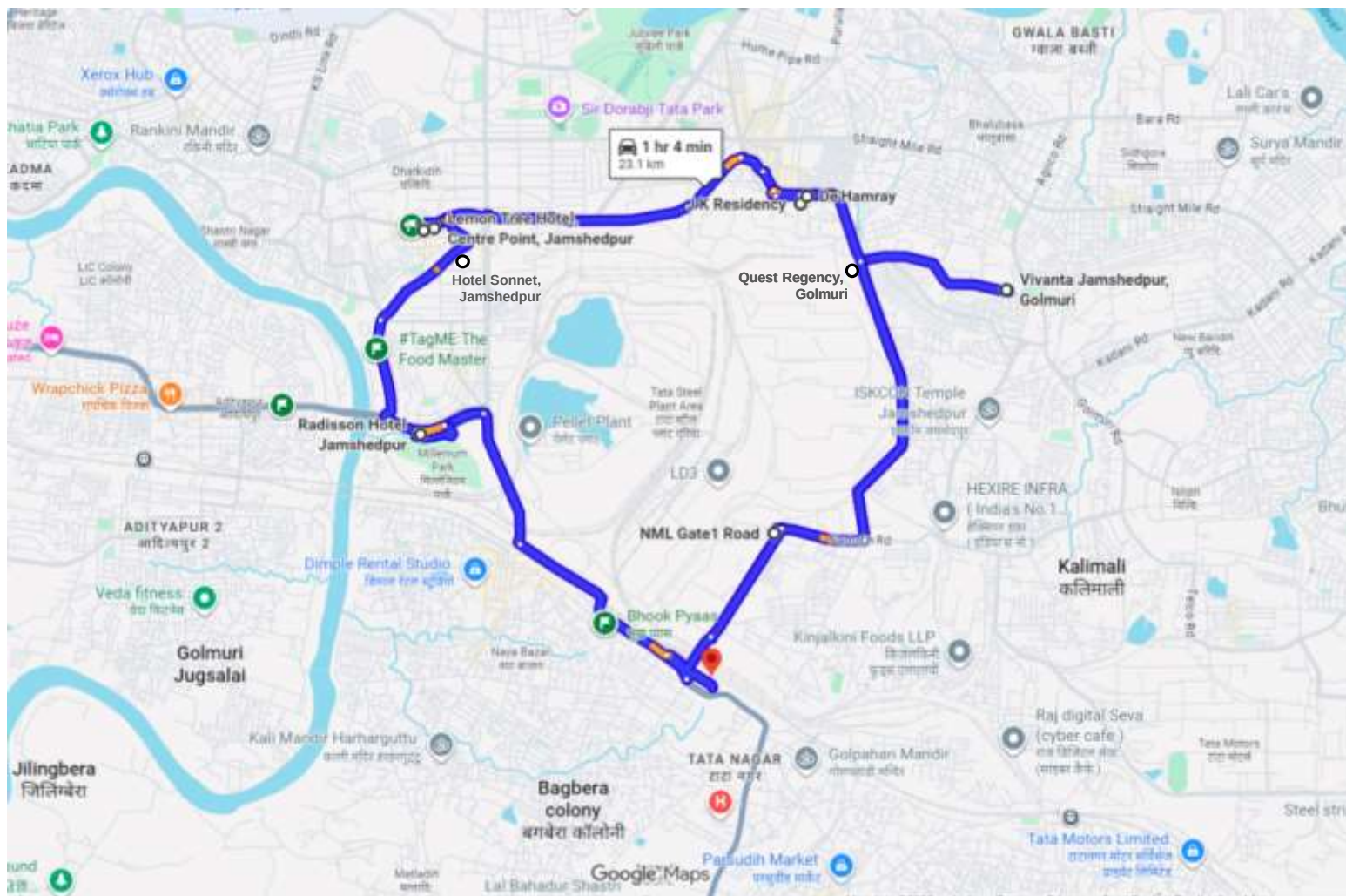
THEME LECTURE (20min)	Mode of occurrence and beneficiation of critical and Rare Earth Elements in Indian Fly Ash	R Ebin Masto CSIR-CIMFR
ORAL-1 12+3min	Beyond Mines: bio-assisted mobilization of rare earth elements from coal fly ash for sustainable resource recovery	Anjali CSIR-NEERI
ORAL-2 12+3min	Thermal transformation of discarded CRT printed circuit boards for recovery of critical Sn values	Rohit Gahlot IIT Roorkee
ORAL-3 12+3min	Sustainable smelting approach for selective extraction of rare earth elements from spent NdFeB magnets	Venkata Lakshmi Borra IIT Kharagpur
ORAL-4 12+3min	Selective Recovery of Graphite from Spent Lithium-Ion Battery Black Mass Using Froth Flotation	Mousumi Gharai CSIR-NML
ORAL-5 12+3min	Sustainable Processing of spent LFPs to recover lithium and high pure FePO_4	Nikita Agarwal CSIR-NML
ORAL-6 12+3min	Reverse Leaching approach for separation of rare earths and transition metals- An application towards REE recovery from NdFeB and SmCo magnets	Shivendra Sinha CSIR-NML
ORAL-7 12+3min	Selective recovery of gallium from pyrometallurgical processing residues via hydrometallurgical approach	Soniya Dhiman HZDR, Germany
SHORT ORAL-1 (10+2min)	Hydrometallurgical Recovery of Critical Metals from Coal Mine Waste: A Sustainable Resource Management Approach	Pranav SRM university

13:00-14:30 LUNCH

14:30 onwards – VALEDICTORY SESSION WITH CONFERENCE AWARDS

16:00 – CONFERENCE CLOSURE

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- Transport: Dr Navneet (9835590339), Shri D.P.Sahoo (9835912569)
- Accommodation: Dr Saurabh (9471529088)
- Registration: Dr Rashmi (7781830640), Dr Vidyadhar (9471309883)
- Exhibition: Dr K Gopalakrishna (9110706571), Dr Prem (8252354057)
- Medical: Dr Priyanka Singh (9801897549)

Venue & Contact Details