

# SUMMARY OF SIGNIFICANT ACTIVITIES

Newsletter – November 2021



**CSIR-NATIONAL METALLURGICAL LABORATORY**

December 8, 2021  
Research Planning & Business Division

## SUMMARY OF SIGNIFICANT ACTIVITIES

*For the period November,2021, CSIR-National Metallurgical Laboratory*

### 1. Technology Development (New Product/Process Technologies)

Nil

### 2. Agreement(s) Signed

S.No.	Title	Client/Sponsor
1.	Process to clear ball jam in ball pen tips (Secrecy)	M/s CRI Limited, Kolkata
2.	Process to clear ball jam in ball pen tips (Know-How)	M/s CRI Limited, Kolkata
3.	Feasibility Study and development of a process for optimization of reductant blend to partially replace met coke for production of ferro chrome(Sponsored)	M/s Ferro Alloys Corporation Ltd, Odisha
4.	Development of rust converter composition for treatment of rusted steel (Sponsored)	M/s OMKARA UDYOG, Jamshedpur



### 3. Patent(s)/Copyright(s) Filed

Nil

#### 4. S&T services that have created a national/visible impact

- **FAILURE INVESTIGATION OF WASTE HEAT RECOVERY BOILER TUBES OF A ZINC PLANT**

The main objective of the present investigation was to identify the cause of the failure of waste heat recovery boiler tubes from zinc plant. The following metallurgical characterisation techniques were found to be important for establishing the failure. 1. Visual examination of the failed Waste Heat Recovery Boiler (WHRB) tubes. 2. Chemical analysis of the WHRB tubes by Optical Emission spectroscopy (OES) to check their standard material specification . 3. Mechanical Property Evaluation by Hardness. 4. Optical microstructural characterization of failed (WHRB) tubes. 5. Chemical phase identification by X-Ray Diffraction method. 6. Chemical analysis of the surface corrosion deposits by Atomic absorption Spectroscopy (AAS). 7. Fractography of the failed tubes by using Scanning Electron Microscopy (SEM) - EDS microanalysis of corrosion products on the failed surface. 8. Surface corrosion deposits analysis by SEM- Energy dispersive spectroscopy (EDS) method. 9. Compilation and analysis of the results to find the root cause of the failure of the WHRB tubes. "

#### 5. Details of important Workshop(s)/Symposia(s)/Conference(s)/Training Course(s)/ Meeting(s) Organized

- **Industry Meet on Lithium Battery Recycling (25th November 2021)**

One day industry meet on Lithium battery recycling was organized at CSIR-NML under the aegis of CSIR Bulk Chemicals Mission project and CSIR 4M theme on strategic metals. The dignitaries present in the inaugural function included Dr. I. Chattoraj, Director, NML; Dr. R.P. Singh, CSIR HQ, New Delhi and Dr. Sanjay Kumar. Dr. Singh deliberated on the need of LIB recycling in India to produce the metals like lithium, nickel, cobalt and manganese. The event was organized to align with the vision of CSIR for strategic metals to bring in more startups to take NML technology for LIB recycling. The event was attended by 27 organisations outside CSIR domain for the event. Some of them are Renault-Nissan, Star Exports, SD Auto, Auto Fibre Craft, Reamp technologies, Hira Ferro Alloys, E-Reclaim, Li-Circle to name a few. The lectures were given by Rishab Chopra (Li-Cycle), N. Kaalaselvi (CECRI), Pratima Meshram (NML), Sushma Mothraina (SME forum), Arpita De(ICEA), Manish Dua (Benchmark), Will Talbot (Argus), Debi Dash (IESA) and Dr. Subramani from Renault Nissan. The event had an exclusive lab scale demonstration of CSIR NML holistic process for lithium battery recycling which can extract all metals Li, Ni, Co, Mn, Al, Cu and graphite from spent batteries of mixed chemistries. Post visit to recycling lab, there was an exclusive industry pitch session (chaired by Director, NML, Dr. R.P. Singh, Dr. S.K.Pal and Dr. T.C. Alex) which was highly appreciated by industries, who pitched their problems, scenario analysis, and mode of collaboration, issues in dismantling, availability of batteries, purity issues etc. It was a very interesting session which paved way for long time collaboration among NML and attendees. The event ended with signing of agreements with two start ups, Reamp Technologies, and Star Exports who are also keen to become technology licensee on lithium battery recycling with CSIR-NML.





- Online outreach program of IISF 2021 (29th Nov. 2021) on Celebrating Creativity in Science, Technology and Innovation for Prosperous India (29th November 2021)**



INDIA INTERNATIONAL SCIENCE FESTIVAL



75 Azadi Ka Amrit Mahotsav



Ministry of Science and Technology  
Ministry of Earth Sciences  
Government of India



Lioha  
विज्ञान भारती



CSIR

**Outreach Program of IISF 221 by CSIR-National Metallurgical Laboratory, Jamshedpur on Celebrating Creativity in Science, Technology and Innovation for Prosperous India**

01	<b>Freedom Struggle</b> Events to remember the role of scientific community in freedom movement
02	<b>Ideas @ 75</b> New Science and Technology ideas for New India
03	<b>Achievements @ 75</b> Showcasing the S & T Achievements of our country in last 75 years
04	<b>Actions @ 75</b> S & T Action plan for New India
05	<b>Resolves @ 75</b> Resolves to make Atmanirbhar and prosperous India



Prof. Rajesh Prasad, IIT, Delhi  
Learning Science with Fun by Prof. Rajesh Prasad, IIT Delhi



Sreeprasad M Kuttan  
Organising Secretary Vijnana Bharati West Bengal & Jharkhand



Dr. Sridevi Jade  
Outstanding Scientist & Head, CSIR-4PI



About IISF 2021 by Vijnana Bharati



Mrs. Pavithra N R  
Scientist, CSIR-4PI

A Preview to the Festival of games & Toys at IISF 2021 by CSIR Fourth Paradigm institute ( CSIR-4PI)





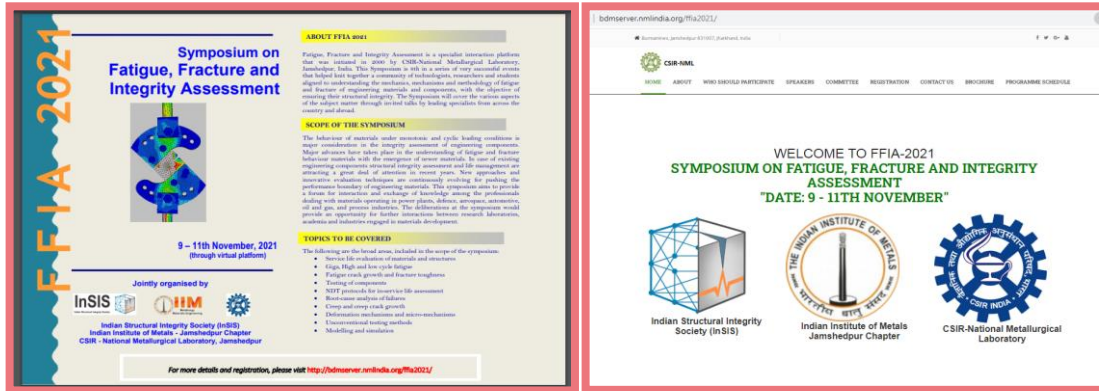
<https://tinyurl.com/y3z9bacp>  
<https://tinyurl.com/y5vzcdhe>

**Date: 29<sup>th</sup> November 2021**  
**Time: 2PM to 4PM (online)**

**Click here to join the meeting**  
<https://tinyurl.com/NML-IISF2021>

- **Symposium on Fatigue, Fracture and Integrity Assessment (FFIA 2021) (9-11th November 2021)**

CSIR-NML, in association with Indian Structural Integrity Society (InSIS) and Indian Institute of Metals (IIM) organised 3 day Symposium on Fatigue, Fracture and Integrity Assessment (FFIA 2021). Mr. Debashish Bhattacharjee, VP:Technology & New Materials, Tata Steel Ltd graced the inaugural ceremony as the chief guest. Dr. Soumitro Tarafder, Former-Chief Scientist, CSIR-NML was also felicitated in the ceremony, for his outstanding contributions in the field.





- **Societal Skill Development Training Program (s)**

1. Industrial Training for diploma students (Electrical) ( 7th October to 6th November 2021) for 30 participants.
2. Industrial Training for diploma students (Mechanical) (11th October to 10th November 2021) for 40 participants.
3. In- Plant Training on Upcycling E-waste (11th October to 10th November 2021) for 65 participants.
4. Webinar on Design, Develop and Distinguish: Innovation on Industrial Designs and Protection (29th Oct 2021) for 55 participants.

## 6. Details of any New Facilitie(s)

Nil

## 7. Details of any outstanding Honor(s)/Award(s) received by the staff

- Dr. Pallab Bhattacharya, Sr. Scientist received the Certificate of Merit for standing as Winner in Metallography session of “Scanning Electron Microscopy” titled “Aqua Anemone” in the Indian Institute of Metals 75th Annual Technical Meeting (IIM-ATM 2021), held Online on 13th to 15th November 2021.



- Dr. Sudeshna Das Chakraborty, Research Associate received the Best Paper Award at the International Conference (Online) on "Covid Challenges of Energy and Environment Management for Sustainable Growth of Process Industries ( CCEEMSGPI- 2021)" organized by AICTE on 10th-11th September 2021.

- Dr. Raghuvir Singh, Scientist received prestigious NACE: Corrosion Awareness Award for his outstanding contributions through Research and Publications in the field of Corrosion Science & Technology.



#### 8. Any other items considered to be significant

- Ammasi A, Senior Scientist; Bhupendra Kumhare, AcSIR(PhD); K E Vijay Amruth, PROJECT ASSOCIATE-I; and Dr. Sanjay Agarwal, Principal Scientist were deputed to Jamshedpur to participate as Speaker in NMD ATM 2021-75th Annual Technical Meeting of IIM organized by IIM and TSL Jamshedpur during 13-11-2021 to 15-11-2021.

- Vaibhav Gaur, AcSIR(PhD); Mr. Santanu Pahari, Project Assistant; Dr. Pankaj Kumar Choubey, Research Associate-I; Rekha Panda, SRF; Nityanand Singh, Project Assistant; and Saurabh Shekhar, Scientist; Rajan were deputed to Jamshedpur to participate as Speaker in NMD ATM 2021-75th Annual Technical Meeting of IIM organized by IIM and TSL Jamshedpur during 13-11-2021 to 15-11-2021.

- C. Soupramanian, Senior Technical Officer (2) was deputed to attending International Mechanical for Engineering Congress & Exposition organized by The American Society of Mechanical Engineers - ASME during 01-11-2021 to 04-11-2021.



- Y. USHA, Scientist was deputed to Mussorie for participating as delegate in the training on "Role of technology in community level disaster mitigation for scientist and technologies" organized by Center for Disaster Management, LBSNAA, Mussorie during 08-11-2021 to 12-11-2021.

- Subhada Kar, GATE-SRF; C.V.Singh, Scientist; Vikash Kumar Sahu, GATE-JRF; Dr. H.N.Bar, Pr. Scientist and Dr. Naveena, Sr. Scientist were deputed to Jamshedpur for attending Symposium on "Fatigue, Fracture and Integrity Assessment-2021" Jointly organised by InSIS, IIM-Jamshedpur Chapter and CSIR-NML during 09-11-2021 to 11-11-2021.

- Sumanta Bagui, Pr. Scientist; Dr. Avijit Metya, Pr. Scientist; Mr. Krishna Guguloth, Pr. Scientist, Monalisha Mandal, SERB-NPDF and Rahul Chauhan, PA-III were deputed to Jamshedpur for attending Symposium on "Fatigue, Fracture and Integrity Assessment-2021" Jointly organised by InSIS, IIM-Jamshedpur Chapter and CSIR-NML during 09-11-2021 to 11-11-2021.

- Dr. S. K. Pandey, Sc, 'F' , Addl. Director, Member Secy (ARP, M&M, SSE, GTMAP), Aero R&D Board (AR&DB) delivered a talk on "Research opportunities with AR&DB" at CSIR-NML on 18-11-2021.



Shri. P.K. Dhawan, Chief Scientist superannuated from CSIR-NML on 30-11-2021



Shri. H.D. Banerjee, MTS superannuated from CSIR-NML on 30-11-2021.

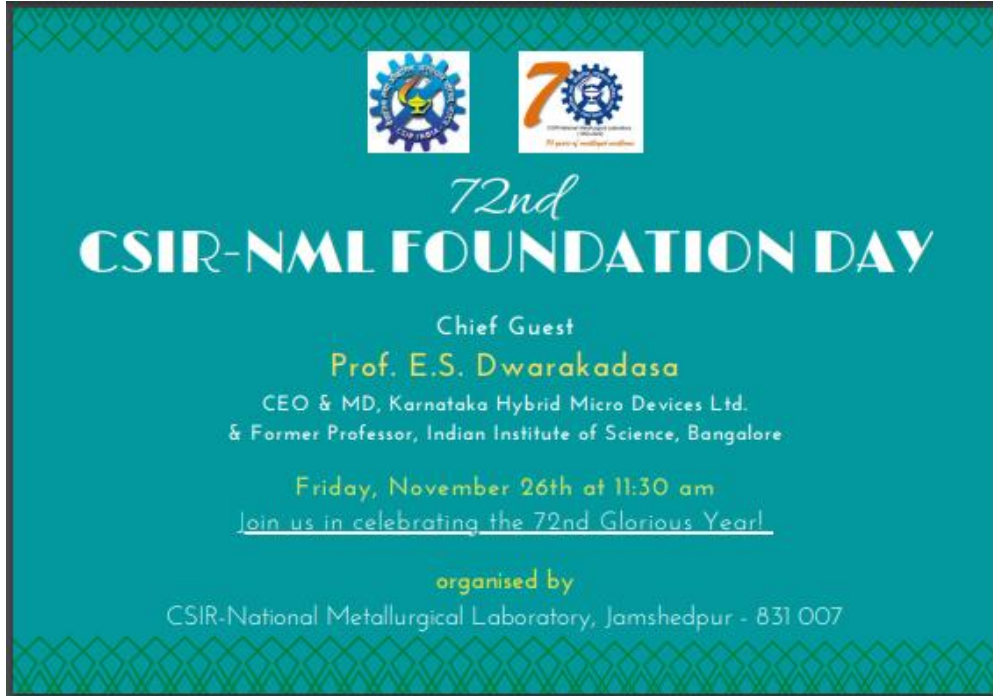




Dr. Soumitra Tarafder, Chief Scientist superannuated from CSIR-NML on 31-10-2021.



• **CSIR-NML Foundation Day-2021 (26th November 2021)**

CSIR-National Metallurgical Laboratory celebrated its 72nd Foundation Day through virtual platform. Prof E.S.Dwarkadasa, Former Professor, Indian Institute of Science, Bangalore and CEO & MD, Karnataka Hybrid Micro Devices Ltd. graced the occasion as the Chief Guest of the function. The foundation day lecture was delivered by the chief guest on the topic "*The Beginning of Metals and the Growth of civilization*". Customarily, a number of awards were also conferred by the chief guest to the NML staff and staff children, in various categories viz. *Nijhawan Award for the Best Paper published in 2020, Altekhar Award for the Best technology that had been Transferred/Commercialized during 2020, Best Employee Awards and Awards for the Children who either scored high or got admissions in educational institutions of national repute*. The day was also celebrated as the Constitution Day and the Constitution Day Pledge was taken by the dignitaries and the staff during the function.



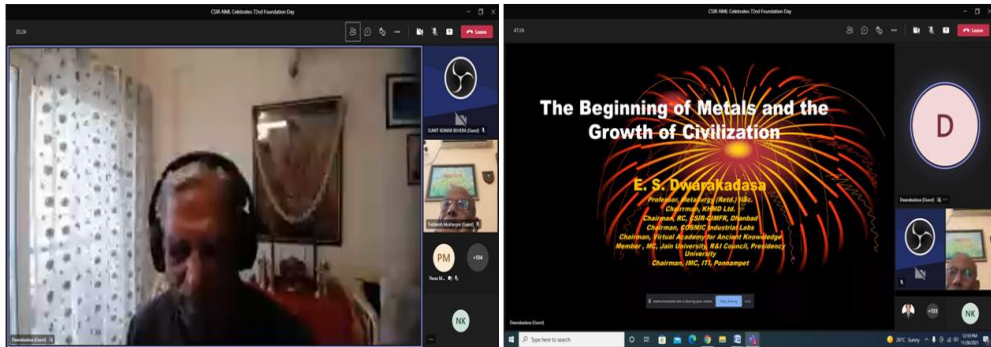



## 72nd CSIR-NML FOUNDATION DAY

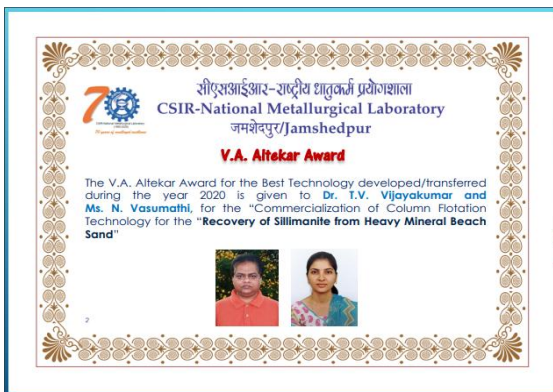
Chief Guest  
**Prof. E.S. Dwarakadasa**  
 CEO & MD, Karnataka Hybrid Micro Devices Ltd.  
 & Former Professor, Indian Institute of Science, Bangalore

Friday, November 26th at 11:30 am  
Join us in celebrating the 72nd Glorious Year!

organised by  
 CSIR-National Metallurgical Laboratory, Jamshedpur - 831 007





The screenshot shows a Zoom meeting in progress. The main window displays a presentation slide titled "The Beginning of Metals and the Growth of Civilization" by E. S. Dwarakadasa. The slide lists his credentials: Prof. Emeritus, IISc, Bangalore; Chairman, KHMCL; Chairman, FSIIC; Chairman, IIL; Chairman, IITM; Member, IITB; Member, IITK; Member, IITR; Member, IITD; Member, IITG; Member, IITJ; Member, IITKGP; Member, IITKGN; Member, IITKGP; Member, IITKGN; Member, IITKGP; Member, IITKGN. The Zoom interface shows a participant's video feed on the left and a chat window on the right.




 सीएसआइआर-राष्ट्रीय धातुकर्म प्रयोगशाला  
 CSIR-National Metallurgical Laboratory  
 जमशेदपुर/Jamshedpur  
**V.A. Altekar Award**

The V.A. Altekar Award for the Best Technology developed/transferred during the year 2020 is given to **Dr. I.V. Vijayakumar** and **Ms. N. Vasumathi**, for the "Commercialization of Column Flotation Technology for the "Recovery of Sillimanite from Heavy Mineral Beach Sand"



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**Prof. P. Ramachandra Rao Award**  
 (Non-Technical Category)

The Prof. P. Ramachandra Rao Award for the Best Employee in Non-Technical Category during the year 2020 is given to **Shri Anil Kumar**, Senior Secretarial Assistant, Administration and **Shri C.R. Chaturvedi**, Multi-Tasking Staff, Engineering Division.




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**Prof. P. Ramachandra Rao Award**  
(Technical Category)

The Prof. P. Ramachandra Rao Award for the Best Employee in Technical Category during the year 2020 is given to **Shri Dilip Kumar Sumbul**, Senior Technician (1), Engineering Division and **Shri Saroj Kumar**, Technician (2), Engineering Division.




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**Prof. S.P. Mehrotra Award**

The Prof. S.P. Mehrotra Award for the Best colloquium Speaker during the year 2020 jointly shared to **Dr. Gopi Kishore Mandal**, MTE Division and **Dr. Tarun Kumar Das**, AMP Division.




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**Prof. Shilowhadra Banerjee Award**

The Prof. Shilowhadra Banerjee Award for the Best in-house Project completed during the year 2020 is given to **Dr. Ganesh Chhalavadi (PI)**, **Mr. Abhishek Kumar (Co-PI)**, **Mr. Kalicharan Hembrom**, **Dr. B.K. Rath**, **Dr. Rajnesh Kumar**, **Mr. M. Udaya Bhaskar Rao**, **Ms. Monica Sahoo** and **Mr. Pankaj Kumar** for the project entitled, "Development of indigenous Air Stratifier for dry beneficiation (OLP-0337)".











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**B.R. Nijhawan Award**

The B.R. Nijhawan Award for the Best Paper published from Laboratory during the year 2020 is given to **Shri G.K. Bansal**, **Dr. V. Rajnikanth**, **Dr. Chirandeep Ghosh**, **Dr. V.C. Srivastava**, **Dr. Monojit Dutta**, **Dr. S. Ghosh Chowdhury** for the paper entitled, "Effect of cooling rate on the evolution of microstructure and Mechanical properties of non isothermally partitioned steels" published in Materials Science and Engineering, A, Vol. 788 (2020).








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**Meritorious Award**

This Award is given to **Shri Saurabh Hansda**, S/o Dr. K.L. Hansda for securing Admission in The Indian Institute of Management (IIM), Calcutta after qualifying the All India Competition (CAT) 2021.



Shri Saurabh Hansda  
S/o Dr. K.L. Hansda

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**Meritorious Award**

This Award is given for securing 85% marks or above in Best Four Subjects in the Senior Secondary Examination, (12th Class) held in 2021, conducted by the Council for the Indian School Certificate Examination (ICSE), New Delhi.





Ms. Dishaanvita Ghosh Chowdhury  
D/o Dr. Sandip Ghosh Chowdhury  
93.50% Marks

Shri S.P. Ruchir  
S/o Dr. S. Sivaiprasad  
91.5000% Marks

Shri Abhishek Kumar  
S/o Mr. Manoj Kumar  
91.0% Marks

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This Award is given for securing 85% marks or above in Best Four Subjects in the Secondary Examination, (10th Class) held in 2021, conducted by the Council for the Indian School Certificate Examination (ICSE), New Delhi.






Shri Dibjit Ghosh  
S/o Dr. Racht Ghosh  
94.75% Marks

Ms. Sneha Shaw  
D/o Mr. A.K. Shaw  
93.50% Marks

Ms. Sapindhepa Pal  
D/o Mr. P.P. Pal  
92.25% Marks

Shri Bandhu Sumbul  
S/o Mr. Dilip K. Sumbul  
88.0% Marks

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Shri Abhishek Sahu  
S/o Dr. J.K. Sahu  
97.0% Marks

Ms. Samiksha Sahoo  
D/o Mr. D.P. Sahoo  
96.5% Marks

Ms. Chyanti Chakraborty  
D/o Mr. C.R. Chakraborty  
96.25% Marks

Shri Soumyajit Ghosh  
S/o Dr. Racht Ghosh  
95.5% Marks



- **Celebration of Constitution Day**

The Constitution day was celebrated by the entire staff of the laboratory. The preamble of the Constitution was read by the staff on the occasion.

- **Vigilance Awareness Week (26th October to 1st November 2021)**





- **Branch Level Welder Competition (16th-17th November 2021)**





## 9. Scientific & Technical Services rendered

During this period the following industrial houses viz. **Tata steel Limited, Jamshedpur , M/s.CESC Ltd., West Bengal, M/s.Aravali Power Company P Ltd., Haryana , M/s. Aakash India Project & Builder Pvt Ltd , ISRO , Bangalore , M/s.Essel Minning & Industries Ltd.,Gujarat , M/s.Rungta Mines Ltd., Chaibasa , M/s.Nayar Traders, Jammu & Kashmir , M/s.TELFORD TEST House, Lucknow , M/s.Adani Power Ltd., Ahmedabad , M/s.NTPC Limited, Shaktinagaur UP , M/s.Santoshi Maa Chemicals, GOA , M/s.National Soil Testing Lab, Haryana , M/s.NTPC Limited, Singrauli UP , M/s.NTPC Limited, Narsinghpur MP , M/s.U P Rajya Vidyut Utpadan Nigam Ltd , M/s.Narayan Indus. & Tec. Services.Kanpur , M/s.Hindustan Traders, Odisha , M/s.Naveen Jain Metal Udyog, Haryana , M/s.Birasini Test House, Ghaziabad , Central Mine Planning and Design inst. ltd , M/s.NTPC Ltd., Bihar , M/s.ACC Ltd.,Maharashtra , M/s.VEDANTA Limited, Odisha , M/s.Mahanadi Coalfields Ltd., Odisha , M/s.DB Power Limited, Chhatisgarh , M/s.Singareni Collieries Comp. Ltd.Telangana , M/s.Kanti Bijlee Utpadan Nigam Ltd., Bihar , M/s.Jindal Power Ltd., Chhatisgarh , RDSO Lucknow , Central Mine Planning and Design inst. ltd , M/s.Uttar Pradesh Rajya Vidyut Nigam Ltd , M/s.Hindalco Industries limited, Ranchi M/s. Dhariwal Infrastructure limited, Kolkata, Tata steel Limited, Jamshedpur, M/s.Jhajjar Power Limited, Haryana, , SAIL, Dhanbad, M/s.CESC Ltd., West Bengal, Tata Steel Limited, Jamshedpur , ( M/s.Aravali Power Company P Ltd., Haryana, M/s.SGS India Private Ltd.,Odisha , Central Mine Planning and Design inst. Ltd, M/s. Aakash India Project & Builder Pvt Ltd, Central Mine Planning and Design inst. ltd ,, M/s.Jamipol Limited, Jamshedpur, ISRO , Bangalore, M/s.Jamipol Limited, Jamshedpur, , M/s.Orissa Metaliks Private Ltd.,W.B, M/s.Essel Minning & Industries Ltd.,Gujarat , received technical and scientific support from NML in the area of chemical analysis and physical test of their raw materials and finished products.**

## 10. ECF Details

### **External Cash Flow (ECF) Status During: 2021-11-1 TO 2021-11-30**

Category	TOTAL (Figures in Rs. Lakh)
Sponsored R&D	96.01658
Grant-in-Aid R&D	6.375
R&D Consultancy	0
Technical Services	14.82062
<b>TOTAL</b>	<b>117.2122</b>





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END OF NEWSLETTER

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