



# CSIR-NML NEWSLETTER JANUARY- 2021

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FEBRUARY 02, 2021

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CSIR-NML, JAMSHEDPUR  
RESEARCH PLANNING & BUSINESS DIVISION



CSIR-National Metallurgical Laboratory  
(1950-2020)

*70 years of unalloyed excellence*

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(1950-2020)

CSIR-National Metallurgical Laboratory (1950-2020)

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# SUMMARY OF SIGNIFICANT ACTIVITIES

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

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

Nil
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## 2. Agreement(s) Signed

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

S.No.	Title
1.	<b>Ultra-low Si-Al added medium manganese hot rolled steel having strength-ductility product greater than 35GPa%and process for preparation thereof</b>
	Inventors: Avanish Kumar Chandan, Gaurav Kumar Bansal, Biraj Kumar Sahoo, Sandip Ghosh Chowdhury. Notification No: NML/PAT 0597/2020/IN
2.	<b>Evaluation of high-temperature magnetic phase transition by a non-contact magneto-impedance sensing device</b>
	Inventors: Rajat K. Roy, Nimai Halder, Premkumar M, B. Ravi Kumar, Ashis K. Panda Notification No: NML/PAT 0598/2020/IN

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

- **Improvement in the operational life of Mn steel blow bars used in limestone primary crusher**

Manganese steel blow bars are used by the sponsor for crushing application in limestone primary crushers. The capacity of such crushers is 1200 TPH. The feed to such crushers are the limestone run of mines which may extend up to 1 meter diametrically in size and contain hard quartz particles. The quality of limestone produced in the mines of Ras, Shree Cements Ltd, is lean containing a larger fraction of quartz which leads to early wear out of the Manganese Steel Blow Bars. Therefore, a project was undertaken with the sponsor on improving the operational life of Mn steel blow bars either by suitable process change or by suitable alloy modification so that it can sustain the impact and abrasive conditions prevailing in the crusher. In order to improve the operational life of the Blow Bars, an initial phase of damage assessment was carried out where samples from the worn-out Blow Bars were subjected to extensive microstructural and mechanical characterization. This assessment revealed prominent grain boundary cracking in lower parts of the blowbar due to heavy impact loading and prominent micro – cracking along carbides in the upper part due to severe abrasive conditions. In order to improve the wear properties, the target was set to optimize the heat treatment condition so as to dissolve all the carbides and obtain a completely single-phase austenitic microstructure. After a number of lab scale heat treatment studies followed by mechanical property evaluation, an optimized heat treatment schedule in the scaled-up form was recommended for plant trial. After plant trials, the results were shared by the sponsor, which showed that the performance of the fully solutionized blow bars were poor than the original cycle. Henceforth, a new alloy was developed

in the existing grade, for which the scaled up optimized heat treatment was communicated along with the composition. The mechanical properties were found to be superior to those of the existing grade.

- **Evaluation and characterization of band-by-band coal analysis of Asansol Coalfield area.**

The broad activity of the project work started from collection of coal samples from different sources viz. coal core, ROM samples, channel samples etc to analyze various parameters which can be categorized into Band-by-band analysis of coal core samples. The study of borehole coal cores involves visual separation of different bands present in the coal seams and its characterization for qualitative and quantitative estimation of exploitable reserves of the coal block. Band by band analysis of coal core samples collected from Ranigang, Asansol Coalfields has been investigated to understand the quality of coal seams. The coal core samples are lithologically identified according to the depth and weight of the band. Ash and Moisture of each band is determined. Finally, the actual lithology of each band is calculated for each borehole. This is very important to understand quality of coal seam of individual borehole coal core. The collaborator CMPDIL after receiving the result of all the band-by-band coal core samples, Coal seam mapping is conducted using actual latitude and longitude data. This information is very useful for Coal India for price evaluation of each coalfield.

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

- **2nd Scientist-Science Teachers Conclave (29th January 2021)**

Under the Jigyasa initiative CSIR-NML organized this conclave. The concept of building 3D crystallographic structures using Origami was demonstrated to more than 100 science teachers from all over India through online interface.



- **CSIR Integrated Skill Training Initiative: Online Faculty Development Program (11th-15th January 2021)**

A one-week training program was organized through virtual medium for faculty members of diploma and graduate engineering colleges on "Materials Processing and Heat Treatment Processes of Metals and Alloys".

# THE AVENUE MAIL

JAMSHEDPUR • WEDNESDAY, JANUARY 13, 2021 • VOL : 28 NO : 200 • www.avenuemail.in • RS.2/- • PAGES - 12

## NML organises online Faculty Development Program

### Mail News Service

**Jamshedpur, Jan 12 :** Under the CSIR Integrated Skill Initiative program which is a national program on skill development initiated by "Council of Scientific and Industrial Research" a training program was organized by CSIR- National Metallurgical Laboratory, Jamshedpur in the month of January 2021. This program was titled as "Online Faculty Development Program on

Material Processing and Heat Treatment".

This is a 1-week training program and is aimed to give training and exposure to faculty members of diploma and graduate engineering colleges to enhance their knowledge in materials processing and heat treatment processes of metals and alloys. This training is expected to improve the competency level of the participants in designing heat treatment schedules and optimizing metal working process



parameters. The training session to address schedule also includes a professional and core skills

required for teaching.

On January 11, 2021 the inaugural program started at 10 am with the welcome address by Indranil Chatteraj, Director, CSIR-NML.

This was followed by a speech by Dr. Mita Tarafder, Head, KRIT Division of CSIR-NML about the skill development program. She brought out some facts about the skill gap that exist in the youth of India and narrated the skill training programs conducted every year by

NML in an attempt to fill this gap. In his address Dr. S. G. Choudhury, Head, MTE Division of NML said that the goal of material processing and heat treatment should be to develop the right structure in the materials.

The online inaugural event was attended by more than 50 people including participants from institutes and industry as well. At the end of the program vote of thanks was extended by Dr. M. M. Humane, Leader, MP Group of NML. (W-ph)

# THE AVENUE MAIL

Monday, January 18, 2021

Home News Jharkhand Jamshedpur Nation Technology Opinion Business Culture Event Epaper

EVENT JAMSHEDPUR

## Curtains come down up online faculty development programme

By News Desk Friday, 15 January 2021, 19:13:44 IST



**Jamshedpur, Jan 15:** Under the CSIR Integrated Skill Initiative program which is a national program on skill development initiated by "Council of Scientific and Industrial Research" a training program was organized by CSIR- National Metallurgical Laboratory, Jamshedpur in the month of January 2021. This program was titled as "Online Faculty Development Program (FDP) on Material Processing and Heat Treatment".

prabhatkhabar.com

लाइफ जमशेदपुर

जमशेदपुर, शनिवार  
16.01.2021

**एनएमएल : इंजीनियरिंग व डिप्लोमा के शिक्षकों को मिली मटीरियल प्रोसेसिंग एंड हीट ट्रीटमेंट की ट्रेनिंग**

**जमशेदपुर.** एनएमएल में कार्बिसल ऑफ साइंटिफिक एंड इंडस्ट्रियल रिसर्च द्वारा सोमवार से शुरू किये गये स्किल डेवलपमेंट प्रोग्राम का समापन शनिवार को हुआ. इस दौरान एनएमएल के वैज्ञानिकों ने पांच दिनों तक इंजीनियरिंग व डिप्लोमा शिक्षण संस्थानों में गठने जा रहे शिक्षकों को ऑनलाइन डेस्कटॉप को नवीन तकनीक के बारे में विस्तार पूर्वक जानकारी भी दी गयी.

एनएमएल-सीएसआइआर की चीफ साइंटिस्ट डॉ मीता तरफदार ने कहा कि शिक्षकों को खास तौर पर प्रशिक्षित करने के उद्देश्य से ही इसकी शुरुआत की गयी. इसका लाभ वे बच्चों को पढ़ाने में कर

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

Nil

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

- Dr. Raghuvir Singh, Senior Principal Scientist received MASCOT National Award for the outstanding and
- sustained contributions made in corrosion science, engineering and technology by the Electrochemical Society of India (ECSI).



- Dr. Abhilash, Principal Scientist received First Prize in ORAL presentation in the theme of Engineering
- Sciences on the topic "Sustainable Processing of Secondary Resources for Extraction of Strategic Metals" in the young scientists' conference (YSC-2020, New Delhi) at IISF 2020.



- Dr. Sarmishtha Palit Sagar, Senior Principal Scientist & Team received Appreciation letter from the Chief
- of Manufacturing, Tata Steel for their outstanding work in the project entitled "Real Time Breakout Detection using Instrumented Mould at the Billet Caster, LD1 ".

To,  
The Director  
CSIR-NML & CSIR-CGCRI

Kind Attention: Dr Sarmishtha Palit Sagar, Dr Somnath Bandyopadhyay & Team

Sub. Real Time Break out Detection using Instrumented Mould at the Billet Caster, LD1

Breakouts are a major contributor to the loss of productivity at the billet casters. They necessitate laborious cleaning with lancing and gas cutting and change of mold assembly which effects the equipment life. Due to the complex design of the mould assembly, temperature sensors have not been commercially used in billet casting thus far.

In the light of this, the present work done by the cross functional team comprising Tata Steel, CSIR-NML and CSIR-CGCRI to develop a billet casting mould with embedded temperature sensors to monitor the cold-face temperature of the billet mould in real-time, is commendable. The recent plant trials at CC3, LD1, showed promise, as the system detected a breakout event before the breakout had taken place. This is probably the first time in the world that a breakout has been detected apriori in a billet caster. It holds tremendous potential to save costs and improve the productivity of billet casting plants.

Tata Steel congratulates the whole team for this work and we look to the team to take this forward and make it a technology that delivers lasting benefits to our organizations.

  
29/01/2021

Chief of Manufacturing,  
Long Products  
Tata Steel

## 8. Any other items considered to be significant

### ● Republic Day Celebration 2021

The occasion was celebrated at the laboratory and the residential complexes. The national flag was hoisted at all campuses. Director-NML hoisted the flag at the main laboratory campus. A number of events were organized to mark the event viz. Drawing and Essay Competitions for Children, Games for Staff Families.





• **Visit of Secretary, DSIR, Govt. of India & Director General-CSIR (19th January 2021)**

Dr. Shekhar C. Mande, DG-CSIR visited the laboratory and addressed the staff. During his address, Dr. Mande discussed about the efforts of CSIR in fighting with COVID-19 viz. Vaccines, Non-Invasive Ventilators (Swastha Vayu), Testing Kits (Feluda), PPE Kits, Cleaners, Sanitizers, Technology to set-up a 100-bed hospital in just 5 days and others. During his encouraging interaction with the young researchers of the laboratory, he emphasized upon using the science & technology for the development of nation especially for making lives of common people comfortable. Dr. Mande also inaugurated the "On-Grid Rooftop Solar Power System" having capacity of 493K Wp.





**'Jamshedpur lab played key role in developing Covid-19 interventions'**

**Debabrata Sarkar**  
Debabrata@southcoastherald.com  
**JAMSHEDPUR:** About 10% of people covered by a survey conducted in 37 cities by Council of Scientific and Industrial Research (CSIR) had developed Covid-19 antibodies by October last year and 38 laboratories under the council, including National Metallurgical Laboratory (NML) in Jamshedpur, played key role in developing Covid-19 interventions, said CSIR director general (DG) on latest Science and Technology secretary Dr Shekhar C Mande on Tuesday.

We developed a non-invasive ventilator called Swastha Vayu, which can also be used as a mask. A total of 1,200 such ventilators were given to the Delhi govt. **DR SHEKHAR C MANDE,** Council of Scientific and Industrial Research director general

of coronavirus when used in air-conditions. This helps in opening up schools, colleges, cinema halls, multiplexes, auditoriums etc. We also developed non-invasive ventilator called Swastha Vayu, which can be used as a mask. A total of 1,200 such ventilators were given to the Delhi government. We also developed a Covid-19 testing kit named Fitida, which was taken by Tata Group and gives test result in just an hour. CSIR now has the technology to set up a 300-bed hospital in just five days and has built six such hospitals in Himachal Pradesh," said Dr Mande.



Central Science and Technology Secretary on CSIR DG Dr Shekhar C Mande visits CSIR-NML in Jamshedpur on Tuesday.

**दैनिक जागरण**  
आजकल, बुधवार 20 जनवरी 2021  
पृष्ठ संख्या 14  
www.jagran.com

**एसी में कम चलनेर शरीर विकसित कर चुके वैज्ञानिक**  
**एसी से नहीं होगा कोरोना का संक्रमण, खुल सकेंगे सिनेमा हॉल : डा. मांडे**

**जमशेदपुर संवादक, जमशेदपुर:** वैज्ञानिक शीतलक, परा शोथोत्पन्न अम्लोत्सर्जन परीचर (सीएसआइआर) के महाप्रबन्धक डा. एसी मांडे ने मंगलवार को कहा कि अब शरीर, मील व अन्य संक्रमणों में एसी चलने में कोई खतरा नहीं है। सीएसआइआर ने एसी चलने में विकसित की है कि अब हॉल में कोई कोरोना संक्रमित व्यक्ति बैठा है, तो उसके खसस के साथ करीब दूरी रखी से खसस निकलनेगी। इस हवा से अब लोगों को कोई खतरा नहीं होगा। उन्होंने बताया कि एसी के अंदर कम चलनेर नकार गरीबों को विकसित किया गया है। एसी एसी (वास्तुशिल्प) के अंदर चलनेर किंचित कम है। इस कम चलनेर



डा. एसी मांडे ने कहा कि एसी चलने में कोई खतरा नहीं है।

भी प्राप्त है। इस तरह एसी में कम चलनेर एसी जल्दी से अब हॉल, सिनेमा हॉल व मील को खोल सकेंगे। उन्होंने कहा कि वैज्ञानिक मांसमरी कोविड-19 के दौर में एसी से सबसे अधिक खसस निकले का खुतरा था। अब एसीरक संक्रमण के कम चलनेर, एसी शोथोत्पन्न अम्लोत्सर्जन परीचर (सीएसआइआर) ने दूरी निकलने में मदद करेगी। डा. मांडे ने सीएसआइआर की मांसमरी उपकरणों के मांसमरी मंगलवार को जमशेदपुर आए थे। वे जमशेदपुर के एसीरक प्रबन्धक डा. एसी मांडे के साथ प्रबन्धक डा. एसी मांडे के साथ दूरी से बातें कर रहे हैं।

**THE AVENUE MAIL**  
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**DSIR secretary inaugurates Solar Power Plant at NML**

**Mande interacts with young scientists**  
**Mail News Service**  
Jamshedpur, Jan 19: CSIR Director General Dr Shekhar C Mande inaugurated a 100 kW solar power plant at NML, Jamshedpur, on Tuesday. He interacted with young scientists and discussed the role of CSIR in the development of solar power technology.



Dr Shekhar Mande, DG, CSIR, inaugurated the 100 kW solar power plant at NML, Jamshedpur, on Tuesday. He interacted with young scientists and discussed the role of CSIR in the development of solar power technology. He also inaugurated a solar power plant at NML, Jamshedpur, on Tuesday.

**जमशेदपुर**  
आजकल, बुधवार 20 जनवरी 2021  
पृष्ठ संख्या 14  
www.jagran.com

**पांच दिन में अस्पताल खड़ा कर सकता है सीएसआइआर**  
राष्ट्रीय स्वास्थ्य विभाग के अंतर्गत, 19 के दौरान फिर एक **हाथिमार** की दो जगहों में

**अनुसंधान के क्षेत्र में सभी पूरी आभिव्यक्त से कार्य करें - डा. मांडे**

**हिन्दुस्तान**  
तरकी को चाहिए नया नजरिया

**योजना: वैज्ञानिक तरीके से विकसित गांव बनाएगी सीएसआइआर: शेखर**

**जमशेदपुर संवादक, जमशेदपुर:** वैज्ञानिक तरीके से विकसित गांव बनाएगी सीएसआइआर, सीएसआइआर के महाप्रबन्धक डा. एसी मांडे ने मंगलवार को कहा कि अब शरीर, मील व अन्य संक्रमणों में एसी चलने में कोई खतरा नहीं है। सीएसआइआर ने एसी चलने में विकसित की है कि अब हॉल में कोई कोरोना संक्रमित व्यक्ति बैठा है, तो उसके खसस के साथ करीब दूरी रखी से खसस निकलनेगी। इस हवा से अब लोगों को कोई खतरा नहीं होगा। उन्होंने बताया कि एसी के अंदर कम चलनेर नकार गरीबों को विकसित किया गया है। एसी एसी (वास्तुशिल्प) के अंदर चलनेर किंचित कम है। इस कम चलनेर

**देश की 10% आबादी में एंटीबॉडी विकसित**

देश की 10% आबादी में एंटीबॉडी विकसित... वैज्ञानिक तरीके से विकसित गांव बनाएगी सीएसआइआर, सीएसआइआर के महाप्रबन्धक डा. एसी मांडे ने मंगलवार को कहा कि अब शरीर, मील व अन्य संक्रमणों में एसी चलने में कोई खतरा नहीं है। सीएसआइआर ने एसी चलने में विकसित की है कि अब हॉल में कोई कोरोना संक्रमित व्यक्ति बैठा है, तो उसके खसस के साथ करीब दूरी रखी से खसस निकलनेगी। इस हवा से अब लोगों को कोई खतरा नहीं होगा। उन्होंने बताया कि एसी के अंदर कम चलनेर नकार गरीबों को विकसित किया गया है। एसी एसी (वास्तुशिल्प) के अंदर चलनेर किंचित कम है। इस कम चलनेर

**जमशेदपुर-पारंगत**  
आजकल, बुधवार 20 जनवरी 2021  
पृष्ठ संख्या 14  
www.jagran.com

**सीएसआइआर की अग्रिम रणनीति से समय पर बना कोरोना टीका**  
सीएसआइआर के महाप्रबन्धक डा. एसी मांडे ने मंगलवार को कहा कि अब शरीर, मील व अन्य संक्रमणों में एसी चलने में कोई खतरा नहीं है। सीएसआइआर ने एसी चलने में विकसित की है कि अब हॉल में कोई कोरोना संक्रमित व्यक्ति बैठा है, तो उसके खसस के साथ करीब दूरी रखी से खसस निकलनेगी। इस हवा से अब लोगों को कोई खतरा नहीं होगा। उन्होंने बताया कि एसी के अंदर कम चलनेर नकार गरीबों को विकसित किया गया है। एसी एसी (वास्तुशिल्प) के अंदर चलनेर किंचित कम है। इस कम चलनेर

**एनाएमएल ग्लोबल लेब बनने की ओर अग्रसर है: डॉ शेखर सी मांडे**



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• **Transfer of Staff**

Mr. Manas Samanta, Technical Officer was transferred to CSIR-IICB, Kolkata on 1st of January 2021.



Dr. Suman Kumari Mishra, Chief Scientist was transferred to CSIR-CGCRI & Head-HRG on 16th of January 2021.



• **CSIR-NML Staff Picnic (31st January 2021)**

The NML Staff Club organized a picnic at the Wave International Hotel & Resort, Jamshedpur. A number of recreational activities were organized for the staff, during the event.





जमशेदपुर, सोमवार  
01.02.2021

प्रभात खबर

02

### एनएमएल कर्मियों ने मनायी पिकनिक



**जमशेदपुर.** एनएमएल स्टाफ क्लब की ओर से पिकनिक का आयोजन होटल वेव इंटरनेशनल में किया गया, जिसमें एनएमएल परिवार के सदस्य शामिल हुए, इसमें महिलाएं, बच्चों व कर्मचारियों के बीच विभिन्न प्रतियोगिताएं हुईं. इस दौरान सदस्यों ने गीत-संगीत के साथ तरह-तरह के व्यंजन का भी लुत्फ उठाया. इस मौके पर स्टाफ क्लब के सचिव सुब्रमण्यम, सामाजिक सचिव रवि रंजन, महिला सचिव प्रिया टोप्पो, सचिव आदर्श श्रीवास्तव, नीरज कुमार, धनंजय चौधरी, शिवानी, सोनु, नईम अंसारी, रोहित मोदी, पीयूष रंजन, डॉ जयंत कोनार, डॉ अंजनी कुमार साहू, अमोद कुमार ने सक्रिय योगदान दिया.

## 9. Scientific & Technical Services Rendered

During this period the following industrial houses viz. Central Mine Planning & Design Ltd., Asansol , IGCAR, Kalpakam , M/s Heavy Metals Tubes (india) Ltd., Gujarat , M/s Mageba Bridge Products Pvt Ltd Kolkata. , M/s NCC Limited, Sikkim , M/s Nelson Global Products India Pvt. Ltd. , M/s NELSON GLOBAL PRODUCTS India Pvt. Ltd., , M/s NIT, Jamshedpur , M/s PENGG USHA Martin Wires Pvt. Ranchi , M/s RDCIS,

Ranchi , M/s Star Wire (India) Limited, Haryana , M/s Wabco India Ltd., Jamshedpur , M/s. ORGANIC Chemical Industries, Kolkata , M/s. Scientific Infra Geo Investigation Lab , M/s.Aravali Power Company Pvt. Ltd., Jhajjar , M/s.Arya Iron and Steel Company P.Ltd.Odisha , M/s.Bharat Coking Coal Limited, Dhanbad , M/s.Bureau of Indian Standards, Patna , M/s.Eastern Coalfields Ltd., Burdwan , M/s.Eastern Coalfields Ltd., Jamtara , M/s.Fine Chemicals Products, Kolkata , M/s.Gaurav Scientific & Chemicals,Raipur , M/s.Hampi Chemicals, Ballari , M/s.Haryana Power Generation Corporation Ltd , M/s.Hindustan Scientific Company, Delhi , M/s.HITHERM, Hyderabad , M/s.Inspectorate Griffith India Pvt. Ltd. , 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: 2021-01-01 TO 2021-01-31:**

Category	TOTAL (Figures in Rs. Lakh)
Sponsored R&D	217.24188
Grant-in-Aid R&D	0
R&D Consultancy	0
Technical Services	50.25691
Collaborative/ Cooperative R&D	0
Premia/Royalty	0
<b>TOTAL</b>	<b>267.49879</b>



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