

CSIR IN MEDIA



CSIR

NEWS BULLETIN 06 TO 10 JULY 2021



MSME webinar on affordable water-purification technologies

CSIR-CMERI

10th July, 2021

GUWAHATI: A webinar on 'CSIR-CMERI Developed Water Purification Technologies' was organised by MSME-DI, Guwahati in association with CSIR-CMERI on Friday.

Prof. Harish Hirani, Director, CSIR- CMERI, was the 'Chief Speaker' for the virtual event. Prof. Harish Hirani, Director, CSIR-CMERI, Durgapur, informed that the thrust towards the 'Water Purification' initiatives of CSIR-CMERI started in 2016, and the Institute was awarded the CSIR Technology Award in 2017 for this purpose. After that, the CSIR-CMERI is continuously working upon 'Incremental Advancement of Water Technologies'.

Participating in the webinar, Debabrata Mitra, Joint Director & Head MSME DI Guwahati stated that "the Ministry of Drinking Water & Sanitation has been providing financial assistance to the State governments in providing the drinking and potable water. Presenting the statistical data related to Assam State he mentioned that only 43.8% of rural household in Assam has access to safe drinking water and the rest is still using untreated water which is miserable. Hence we should enrich ourselves with the CSIR-CMERI developed water purification technologies so that rural masses with the help of MSMEs are benefited in the North East region."

Other notable speakers of the webinar included Sunil Kumar of MSME TC, Kolkata; Avik Sharma from Taurus; and Dr Arijit Banerjee besides a number of entrepreneurs from Micro and Small enterprises from the Assam region, stated a press release.

Published in:
[Sentinelassam](http://Sentinelassam.com)

Pan-CSIR Sero-survey ends, may help to tackle third wave fears

CSIR-CFTRI,IGIB

09th July, 2021

It helps to estimate vaccination efficacy, immunity status, and sustainability of antibodies

The Phase 3 pan-CSIR (Council of Scientific and Industrial Research) Phenome India sero-survey was concluded at CSIR-Central Food Technological Research Institute (CFTRI) here on Friday.



The three-day sero-survey camp was inaugurated by Sridevi Annapurna Singh, Director, CSIR-CFTRI, Mysuru. The camp was open to all students, staff, retirees and their family members.

The survey had aimed at the estimation of both qualitative and quantitative antibody levels to SARS-CoV2 (coronavirus) in the blood, breakthrough coronavirus infections, vaccination efficacy and its correlation with other lifestyle changes, including smoking, food habits, age and so on.

The survey also looked into the presence of underlying co-morbidities in vaccinated (first or both doses) persons or in those naturally infected individuals, including children from 5-18 years of age, according to the institute.

The study assumes significance as the sero survey is a longitudinal study when compared to the fourth phase of ICMR national sero[1]survey. Thus, antibody levels of the individual are comparable with the previous two surveys, a note from the CSIR-CFTRI said here on Friday.

Further, considering possible threats, particularly from the highly transmissible Delta variant and other circulating mutants and the third wave, which is predicted to occur anywhere between October/November this year, the survey provides details of vaccination efficacy, immunity status, and sustainability of antibodies in vaccinated or naturally infected individuals, including the children.

Additionally, the survey helps to know if the vaccination has assisted in developing herd immunity. Thus, the survey overall provides crucial information about breakthrough coronavirus infections to take adequate measures, formulate guidelines, including targeted vaccination of individual groups, provide nutritional strength to children under 18 years, and other measures to safeguard them from the possible threat of third wave.

The pan-CSIR survey is the initiative of CSIR-IGIB (Institute of Genomics and Integrative Biology), New Delhi with Shantanu Senugupta as the project leader in collaboration with other 38 CSIR sister labs spread across the country.

Prakash M. Halami, Coordinator; members Muthu Kumar, Ravindra P.V., Gopinath; CFTRI Medical Officer Avilash S. Rani, and a group of volunteers were present.

Published in:

[Thehindu](https://www.thehindu.com/)

India's scientific fraternity capable of leading the world: Dr Jitendra

CSIR

08th July, 2021

NEW DELHI: Union Minister Dr Jitendra Singh said today that India's scientific fraternity is capable of leading the world.

Speaking to media after assuming charge of two new Union Ministries, namely Ministry of Science & Technology (Independent Charge) and Ministry of Earth Sciences (Independent Charge), Dr Jitendra Singh who is also MoS PMO, Personnel/DoPT,



Public Grievances, Pensions, Atomic Energy and Space said, Prime Minister Narendra Modi accords highest priority to scientific pursuits, takes personal interest in all the new scientific initiatives and at the same time, is also keen that new scientific breakthroughs should be applicable in bringing about “Ease of Living” for the common man. He said that with the support of India's eminent scientific fraternity, It shall be his earnest endeavour to realise Modi's goal of raising India's scientific capabilities to new heights.

Dr Jitendra Singh recalled that nearly seven years ago, he had the opportunity of briefly heading the same Ministry and, therefore, he shall try to carry forward various projects in the pipeline and also plan new ones which could be best suited to the requirements of contemporary Indian society.

The Minister was given a Powerpoint Presentation and briefed about the key initiatives and policy issues of the Ministry by the Union Secretary Science & Technology, Professor Ashutosh Sharma and Director General CSIR, Dr Shekhar Manda. A presentation on the COVID19 Mitigation Initiatives was also made on the occasion.

DG, CSIR informed that since the early days of pandemic, CSIR has worked with focused strategy to deliver various interventions and products towards mitigation of Covid-19 in the country which falls broadly into five verticals: Diagnostics; Surveillance; Drugs and Vaccines; Devices and PPEs and Supply Chain and Logistics. In the area of diagnostics. CSIR has developed a novel diagnostic called FELUDA which is CRISPR-Cas based method and is licensed to TATA Sons and currently marketed as TATA-MD CHECK and is widely deployed. Dry Swab based direct RT-PCR diagnostic without RNA isolation has been developed and technology transferred to several industries. In addition, thirteen laboratories of CSIR have carried out more than 14,50,000 COVID-19 tests so far. CSIR is supporting testing at Leh by providing instruments and training for testing.

CSIR is actively involved in genomic surveillance as an active partner of INSACOG consortium and till date more than 20,000 sequences have been done by CSIR alone as part of INSACOG. Further CSIR is also partnering with states such as Kerala and Maharashtra for genomic surveillance. Sewage surveillance has also been optimized by CSIR and carried out in several cities. CSIR is carrying out a large scale serological survey of its staff, scientists, researchers etc in all 37 labs across the country.

Towards developing drugs for treatment of Covid-19 CSIR is carrying out clinical trials of repurposed drugs in partnership with Industry. It also licensed process technology of Favipiravir to Cipla which led to launch of Ciplenza. CSIR is working on 5 clinical trials of AYUSH formulations for treatment of Covid-19 with Ministry of AYUSH.

On the devices front, CSIR has developed indigenous Medical Grade Oxygen Concentrator based on advanced PVSA technology which is suitable for 24/7 operations in hospitals and has a scalable design of 100-500 Liters Per Minute (LPM). Along with DRDO, which is setting 500 Oxygen plants, CSIR- IIP technology licensed industry partners will set up 120 plants by July 2021 and will be funded through PM-CARES.

Non-invasive ventilation device, SwasthVayu has been developed which is cost effective, easy to use in makeshift hospitals, wards and dispensary. The technology has been licensed to seven industry partners and more than 1300 pieces have been manufactured and supplied with 1200 pieces to Delhi Government alone.

Modular UV disinfection technology has been developed for rooms, HVAC systems in malls, offices etc has been developed which is useful for disinfection of SARS-CoV-2.

To cater to the increased demand for hospitals, CSIR is working on building, makeshift hospital/expand facilities and so far 11 hospitals have been set up at different places in the country including Himachal Pradesh, Tamil Nadu, Uttar Pradesh, etc. Recently, makeshift hospitals have been set up at Safdarjung Hospital and at Lady Harding (total of 300 beds) in New Delhi.

To address the various supply chain challenges CSIR has developed a one stop platform called “Arogyapath” for health care supplies which is currently hosted on National Health portal.

Published in:

[Dailyexcelsior](https://www.dailyexcelsior.com/)

Trial Blasts Around KRS Dam Soon To Study Impact

CSIR-CIMFR

08th July, 2021

CSIR-CIMFR to conduct blasts at three places to gauge vibration impact

Rs. 22 lakh paid as fee; explosives worth Rs. 8 lakh to be used

Mandya/Mysuru: The heat and dust raised over illegal stone and granite mining activity's threat to Krishna Raja Sagar (KRS) Dam is showing no signs of thawing anytime soon as the Mandya District Administration is preparing to conduct trial blasts soon to study the impact of mining activities on the famed Dam.



At the same time, the farmers of the region have threatened to launch an agitation if at all the trial blasts are conducted. The trial blasts are scheduled to be conducted in and around Baby Betta, the epicentre of the mining activity in Pandavapura Taluk. The team will study the vibrations caused due to blasting.

Confirming this to Star of Mysore this morning, Shankaregowda, Chief Engineer of Cauvery Neeravari Nigam Limited (CNNL) that manages the Dam, said that the CNNL has already paid Rs. 22 lakh to Council of Scientific and Industrial Research – Central Institute of Mining and Fuel Research (CSIR-CIMFR) as a fee for blasts.

Mandya District Administration (Mines and Geology Department) will bear the cost of Rs. 8 lakh that will be used to purchase explosives to blast rocks at three places around the Dam, he

said. The CSIR-CIMFR Office is located at Dhanbad in Jharkhand and routinely takes up multi-disciplinary research on mechanisation and automation of mining activities with the state-of-the-art technologies in the mining industry.

“We have written two reminders to CSIR-CIMFR asking them to conduct the trial blasts and the process is delayed due to COVID. Moreover, it is a Central Government Enterprise and we cannot direct them on dates, venue of blasts, etc. The team will arrive mostly by the end of this month,” Shankaregowda said.

It may be recalled here that in March this year, the CSIR-CIMFR team comprising Dr. C. Sawmliana, Senior Principal Scientist and Rakesh Kumar Singh, Senior Technical Officer inspected the crushing units at a radial distance of 20 kilometres from the KRS Dam to ascertain the mining impact. They had even identified three places to conduct trial blasts.

The team had visited the Dam after the Karnataka State Natural Disasters Monitoring Committee (KSNDMC) had recommended Mandya District Administration to check damages and fractures in the Dam structures in the wake of high-intensity blasts in the mining areas around the Dam. Following the recommendation, mining was banned in the 20-km radius of the Dam in 2018.

In the wake of mounting pressure from the mining and quarrying industries to resume blasting operations, the State Government had decided to seek CSIR-CIMFR's opinion before permitting the blasts as any damage to the 90-year-old Dam will bear serious consequences.

Farmers up in arms

Meanwhile, conducting trial blasts depends on how the Government convinces the farmers. In January 2019, a team of scientists from Central Water and Power Research Station (CWPRS), Pune, was scheduled to conduct the trial blast for five days but had to cancel it as the farmers led by Karnataka Rajya Raitha Sangha (KRRS) protested and launched a 'Go Back' campaign.

Even the CWPRS wanted to examine the ground vibrations during the trial blasts.

At that time, the CNNL had paid Rs.19.25 lakh and the farmers objected and said that if at all the trial blasts have to be conducted, it has to be done under the supervision of the Union Ministry of Environment, Forest and Climate Change.

This time too, farmers are opposing the blasts and are alleging that the District Administration has bowed to the pressure from illegal stone miners and has colluded with them.

IICT, PI Industries join hands to manufacture Covid drug

CSIR-IICT

08th July, 2021

Hyderabad: City-based Indian Institute of Chemical Technology (IICT), a constituent laboratory of Council of Scientific and Industrial Research (CSIR), is collaborating with PI Industries Limited and signed an agreement for technology transfer and manufacture of the anti-Covid drug 2-DG.

In the last few months, especially after Drugs Controller General of India (DCGI) granted emergency use authorisation for the anti-Covid drug, the institute has entered into similar collaborations with Anthem Biosciences, a Bengaluru-based integrated biopharmaceutical company, and Lee Pharma for synthesis of 2-DG. Under the terms of the license agreement, PI Industries Limited gets license for the process knowhow for synthesis of 2-DG (2-Deoxy-D-Glucose).

Dr Chandrasekhar, Director CSIR-IICT, said: “The agreement is in line with CSIR’s efforts to help people access various therapeutic options to combat Covid-19. CSIR labs have undertaken clinical trials of various repurposed drugs for the treatment of Covid-19.”

PI Industries Limited is in the process of filing the application for getting the approval from DCGI and will subsequently manufacture and commercialise 2-DG from their facilities.

Published in:

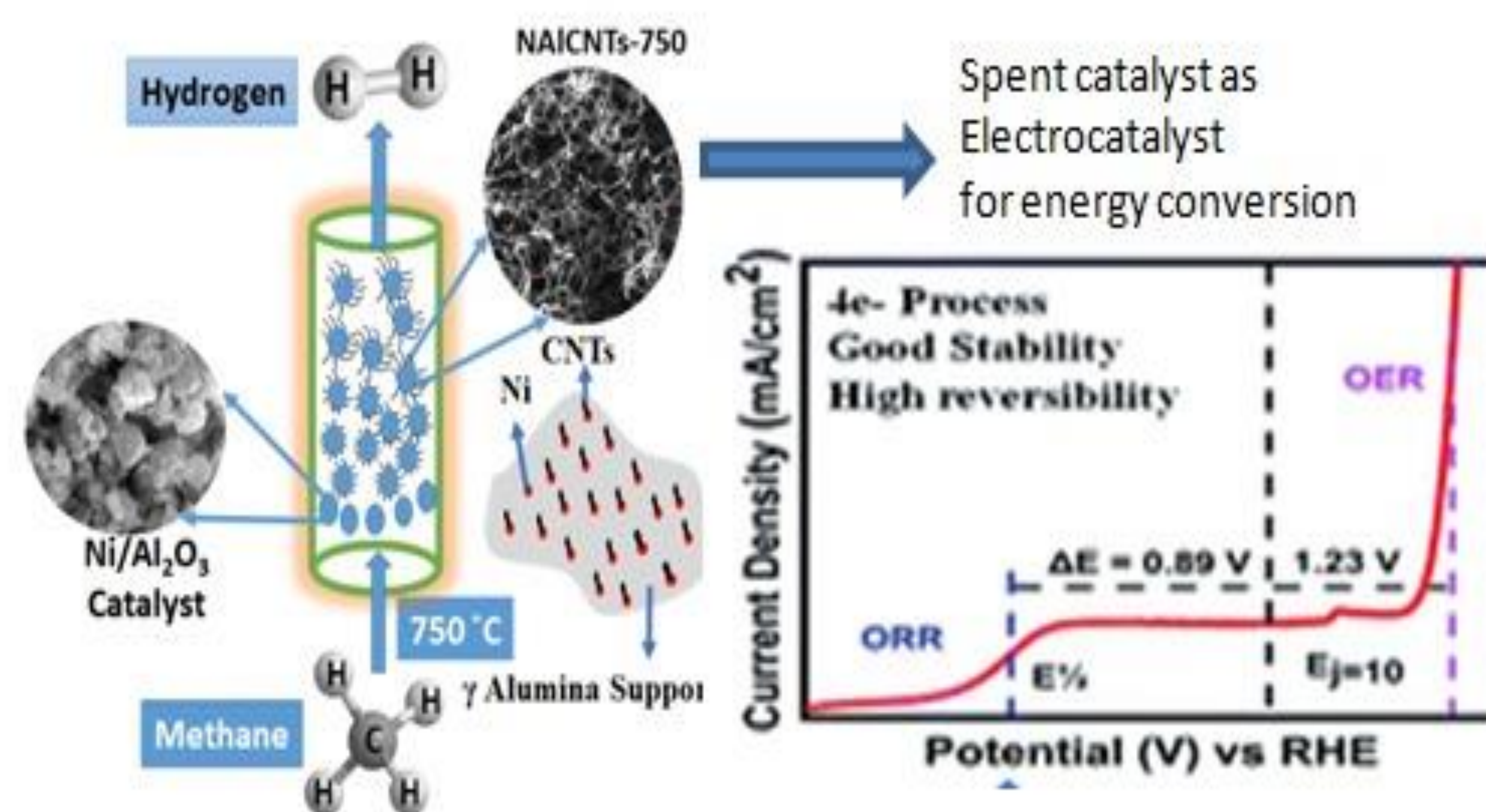
Telanganatoday

Wealth from Waste: Spent catalyst from industry can be an efficient catalyst for batteries

CSIR-CMERI

07th July, 2021

In a major development, Scientists have demonstrated that spent catalysts from the energy industry, as well as the raw material for recycling operations that deliver fresh catalysts and valuable metals, can function as an efficient bifunctional oxygen electrocatalyst and can catalyse the core reactions that facilitate the operation of metal-air batteries. It can assist in the development of innovative ways for effectively utilizing industrial waste for energy storage in batteries, opening the way to realize the dream of achieving today's wastage is tomorrow's energy.



About Hydrogen energy

Hydrogen energy, with its high energy density and clean output, is a promising power generation method for the industry and transportation sectors.

How to produce hydrogen by catalytic decomposition

One of the methods to produce hydrogen is by catalytic decomposition of methane that uses nickel catalyst embedded on alumina or zeolite. After numerous runs, the catalysts get spent owing to carbon choking and lose their activity. Wasted catalysts are treated in energy-intensive operations such as high-temperature combustion for recycling, which releases a significant amount of CO_x into the atmosphere, or chemical treatment for metal constituent reclamation. These protocols are neither commercially viable nor environmentally sustainable, thus demanding the development of new methods for effectively utilizing the spent catalyst.

Converting waste to wealth

One of the most suitable routes is to use the retrieved spent catalyst for energy generation and storage applications. The composition of the given spent catalyst, Carbon nanotubes with Ni nanoparticles and porous alumina, are appropriate for direct use as electrocatalyst in electrochemical energy applications, opening up a viable strategy for converting waste to wealth. It can catalyze both electrochemical oxygen evolution (OER) and oxygen reduction reactions (ORR), the core reactions that facilitate the operation of metal-air batteries. This research was recently published in the journal 'Sustainable Energy Fuels'.

Dr C. Sathiskumar, Dr H.S.S. Ramakrishna Matte and Dr. Neena S. John from the Centre for Nano and Soft Matter Sciences (CeNS), an autonomous institute under the Department of Science & Technology (DST), in collaboration with Hindustan Petroleum Corporation Ltd (HPCL) R&D Green Centre, Bengaluru, have demonstrated that these spent catalysts worked as an efficient bifunctional oxygen electrocatalyst.

For 20 hours and 8 hours, respectively, the spent catalyst shows consistent current density towards OER and ORR. The potential difference for total oxygen electrocatalyst (ΔE) demonstrates that the spent catalyst has a higher bifunctional activity. Furthermore, the spent catalyst used in Zn-air batteries demonstrated excellent charge-discharge performance with great reversibility for up to 45 hours.

This work is supported by the Centre for High Technology (CHT)-Oil and Industry Development Board (OIDB), Hydrogen Corpus Fund that helped in efficient utilization of industrial waste for energy storage applications resulting in the production of green energy in a sustainable manner.

Other Developments

Earlier, the CSIR-CMERI developed a Municipal Solid Waste Processing Facility that helped in achieving the decentralized decimation of solid wastes and also helped in creating value-

added end-products from abundantly available redundant material such as dry leaves and dry grass, etc.

About waste to wealth mission project

The waste to wealth mission project was approved under the Prime Minister's Science Technology and Innovation Advisory Council (PM-STIAC), which is an overarching body for assessment, creation, and implementation of major scientific, technology, and innovation interventions in the country. The aim of the partnership formed is to provide an effective platform for stakeholders to bring together some integrated approaches for effective recycling and reusing waste.

Published in:

[Newsonair](#)

Nagpur: Six of same family positive, shifted to MLA Hostel Covid care centre

CSIR-NEERI, CCMB

07th July, 2021

NAGPUR: The Nagpur Municipal Corporation (NMC) has shifted another six members of a family to MLA Hostel Covid care centre (CCC) after all of them tested positive in the last couple of days. Top civic health officials said three of the family members from Dhantoli zone tested positive on July 3. This mandated the testing of three immediate high risk close contacts who too tested positive a day later. As per officials, they don't have travel history though it was being said the family had travelled to one of the districts in Maharashtra still reporting high positivity.

All are asymptomatic and doing well, officials said. The NMC zone officials traced and tested around 70 more high risk close contact but they tested negative in RTPCR. Like the two samples of another family from the same zone, the civic officials have sent these six samples to NEERI.

On June 4, TOI had reported that the NMC has also decided to study the samples of patients if they belong to same chain of infection and test positive at the same time. The trend of entire family testing was seen during the peak of second wave between March and early May.

Last week, the Dhantoli zone medical team had shifted six persons to MLA Hostel CCC. They had tested positive following their return from Kolhapur, which is among the seven districts in the state where the delta plus variant has been detected.

The NMC then requested the CSIR-NEERI lab led by Dr Krishna Khairnar to examine the six cases too.

The saline gargle RTPCR samples of only five were collected and handed over to NEERI

team. Of these, only two tested positive whose sequencing quality RNA extracts were prepared by NEERI and forwarded to CCMB Hyderabad. The results are awaited.

The genome sequencing is part of active surveillance and containment measure in the wake of Delta Plus variant spread.

NCRTC ropes in experts to study impact of underground rail corridor on Delhi zoo

CSIR-CRRI

07th July, 2021

The National Capital Region Transport Corporation (NCRTC) has roped in experts to study the impact of an underground rapid rail transit corridor that is proposed to pass through the Delhi zoo on the vibration levels in the park, to ensure that animals are not disturbed during the construction of the line and operation of trains. Close to 800 metres of the 107km-long Delhi-SNB Urban



complex (Shahjahanpur-Neemrana-Behror) Regional Rapid Transit System (RRTS) corridor, which is part of the Delhi-Alwar RRTS line, will pass through the Delhi Zoological Park at a depth of 80 feet, as per the alignment proposed in the detailed project report. The alignment is yet to be approved by the central government.

The NCRTC has asked experts from the Central Road Research Institute (CSIR-CRRI) to do an assessment to gauge the impact of the vibration caused by the trains running underground as well as the construction work. “The stretch below the Delhi zoo will be constructed at a depth of around 80 feet. CRRI will carry out the vibration study in zoo premises after minimisation of Covid impact to establish the current baseline data for vibrations,” a spokesperson for NCRTC said

The Delhi-SNB corridor, along with the Delhi-Ghaziabad-Meerut line will provide seamless connectivity in the national capital region by linking cities in the Capital’s east -- Ghazibad and Meerut, to those in south -- Gurugram and Alwar. In Delhi, both corridors will originate from Sarai Kale Khan in south east Delhi. These corridors will also connect all these cities to

All India Institute of Medical Sciences and Safdarjung, one of country's biggest hospitals. Of the total 107 kilometres, 83kms of the Delhi-SNB corridor will be constructed in Haryana, 22 kms in Delhi and 2 kms in Rajasthan. While the corridor in Haryana and Rajasthan will be mostly elevated, it will be completely underground in Delhi. Except for Sarai Kale Khan station, the remaining three stations at INA, Munirka and Aerocity will be underground.

Nasim Akhtar, senior principal scientist at transportation planning and environment division, CSIR-CRRI, said, "We will study the current ambient vibration levels in the zoo, both during day and night, and will ensure that they do not exceed the present levels during the construction and operation of the RRTS line."

Akhtar said the first part of the study was done last year before the lockdown to record the day time ambient vibration levels. But the study had to be stopped after a lockdown was imposed again in April this year in view of an unprecedented rise in Covid-19 cases. Even though a gradual unlock process has begun, the government is yet to reopen the zoological park.

"The day time ambient vibration levels in the zoo is around 75-76 VdB. The vibrations are caused by a railway track nearby, and the movement of vehicles inside the premises. But we couldn't do the study at night due to the lockdown. We will do the remaining part of the study once the zoo reopens," he said.

When contacted, a senior Delhi zoo official said, "The matter was discussed last year. As of now, no permission has been given to carry out the study, as the zoo is closed due to the pandemic."

Stressing on the need for night time study, Akhtar said, "The train operations will continue till late at night. The ambient vibration levels at night are much less than day time; we don't want animals and birds' sleep patterns to get disturbed because of train movement. Our

recommendation regarding vibration control to NCRTC will be based on the vibration levels at night time.”

The NCRTC spokesperson said that it will be ensured that there is minimal impact of the train movement on the ground level. “The proposed tunnel is very deep in this zone and NCRTC is going to use special track structure to mitigate vibration,” he said.

Akhtar said there are a several technologies which can be incorporated during construction to minimise vibration. “According to the soil report from the area, there is sand filling till 17-20 metres depth. This is a good thing, as the vibration will get absorbed. If the night time level is less than 70 VdB, then we might recommend NCRTC to use technology such as a floating chamber to kill vibration at source.”

Anish Andheria, CEO of Wildlife Conservation Trust, said animals are far more sensitive to vibrations than humans, and if an alternate alignment of the corridor is possible, then it should be considered. He said if the current alignment is allowed, it should be ensured that there is minimal disturbance to the animals, especially during construction. “The executing agency should put in the public domain the technology they plan to use to minimise vibration impact from the perspective of animals. They should also look at similar projects carried out in other parts of the world to ensure that the most effective technology is deployed,” Andheria said.

While the Centre’s approval is awaited, NCRTC has started pre-construction work. “We are working on preparing the detailed designing of structures, geo-technical investigation work, initial pile load test, topographic survey work, shifting of utilities such as electric high-tension lines, water and sewer pipelines etc,” the NCRTC spokesperson said.

Published in:

[Hindustantimes](https://www.hindustantimes.com/)

Another wave of COVID eminent if people lower their guard: CSIR-IGIB director

CSIR-IGIB

06th July, 2021

The Delta variant of Novel Coronavirus is worrying healthcare officials around the world. The Delta variant, also known as lineage B.1.617.2, is a version of SARS-CoV-2, the virus that causes COVID-19. Experts said that the Delta variant of the virus was mainly responsible for the second wave of the pandemic in India which was far more 'intensive' than the first wave of 2020.

Dr Anurag Agrawal, director at Institute of Genomics and Integrative Biology (CSIR), New Delhi explains about the Delta variant and whether India may witness a third wave of the pandemic. The Q&A has been produced by National Media Rapid Response Cell (NMRRC) and Union Ministry of Health and Family Welfare (MoHFW).

Q. What is Delta variant? Why has it become a global concern?

A mutant variant of SARS-CoV-2, B.1.617.2 is now named Delta variant. It has mutations in its spike protein, which makes it more transmissible and able to evade immunity. It has already spread to 80 countries across the world. After India, now it is spreading fast in the UK, in some states in the US, in Singapore and Southern China.

Q. What is Delta plus variant?

When Delta variant develops additional mutations of possible importance, it is called Delta plus. As of now, the K417N mutation, which was previously seen in Beta variant is what people usually mean when they say Delta plus.

This is not a Delta / Beta hybrid, but a case on convergent evolution where mutations develop independently. The more correct name is AY.1 or AY.2.

In my opinion, regions that have already suffered from Delta outbreaks should not have a

major problem with Delta plus, since I expect there to be reasonable cross-neutralization of Delta plus by antibodies raised against Delta. Thus, I do not see an immediate threat or any reason to panic.

Delta plus is not rising faster than Delta in the previous month, so that is somewhat confirmatory. However, the Indian SARS-CoV-2 Consortium on Genomics (INSACOG) is keeping a close watch since any Delta sub-lineage is a variant of concern meriting further investigation.

Q. Are we going to see a third wave soon as some are predicting?

A viral outbreak begins by infecting the most exposed or vulnerable population in an area and then spreads by infecting more and more people who are susceptible. People who get the infection and recover develop some natural immunity against the virus. Then, there are people who acquire immunity post-vaccination. When enough number of people becomes immune resistance, the virus cannot propagate easily and cases diminish. After some time, when the immunity fades or the virus evolves to evade it, it strikes back and starts spreading again. You may call this cycle a wave.

If we look at the entire country, we cannot say that the recent wave was just a second wave. For example, in Delhi it was the fourth wave—the first in June last year, and then in September, followed by one in November, and then now.

Many people want to know when there will be the next surge of COVID-19. I don't think it will come anytime soon as the Delta variant caused this surge across the country. A majority of people will have immunity against it right now. So, while I expect localized outbreaks, I don't expect a big national wave anytime soon.

Of course, if the virus mutates drastically to evade this immunity, and more importantly if people lower their guard as they did a few months back, there could certainly be another wave.

Right now, vaccination is going fast, viral evolution takes time, and we are tracking the mutations at INSACOG, so I am hopeful that the size of future waves can be kept small. Do remember that the virus is still there and while we have some time, we must use it well. So, we need to take reasonable precautions, promote vaccination, but not panic.

Q. How does mutation impact the efficacy of the vaccines?

Some mutations on the virus's spike protein may not allow the antibodies developed after immunization to bind to it. In such cases, the mutant can escape the immunity and cause disease. So far, currently available vaccines are efficient to prevent severe disease by mutants, but have reduced effectiveness in preventing infection.

Q. What leads to a mutation in a virus?

When a virus multiplies in a host's body, it makes millions of copies. But some copies are not perfect replicas; they develop some differences, which are termed as mutations. The ability to escape human immunity makes some mutations advantageous. These may then propagate better than parent lineages and appear as mutant variants, such as Delta.

Q. What are double mutations or triple mutations in a virus?

These are wrong choices of words used to oversimplify things. All current lineages carry many mutations. But only a few mutations, which lead to more infections or increase the severity of the disease, matter.

Q. Does India track mutations through genome sequencing? Why is it important?

Yes, India does track mutations in the virus. Tracking helps in determining the risk of outbreaks from existing variants and also helps determine new ones of concern.

Q. What is the difference between a strain and a variant of a virus?

Technically it is one strain until there is a very major change in the virus, which is not yet the case. Variant or lineage is a better word to describe mutations in a virus that are leading to the changes being seen.

Q. Does it mean scientists will have to invent new vaccines for each mutation happening?

We don't need to redesign the vaccine for every mutation. Some, for example, E484K mutants, may need tweaks to the vaccine. We are already seeing such versions for mRNA vaccines.

Q. Do vaccines that are currently available in India give protection against mutant COVID virus?

Yes, all available vaccines are protecting against severe COVID-19.

Q. Why does 'mutation' or 'strain' create a sense of panic?

Mutations in a virus are inevitable. There is no need to panic. People need to take precautions and follow Covid-Appropriate Behaviour (CAB). CAB is effective against all mutations. Also, as said earlier, vaccines are protecting against severe disease.

Q. Why is vaccine so important?

While COVID Appropriate Behaviour can protect us from catching the infection, vaccines also reduce infection and transmission rates. Most importantly, they reduce the chances of developing the severe disease by over 90%.

Published in:

[Thenewsmill](https://www.thenewsmill.com)

CSIR set to seek emergency use approval for sepsis drug Sepsivac repurposed for treating Covid

CSIR-IIIM

06th July, 2021

New Delhi: The Council of Scientific and Industrial Research (CSIR) is all set to apply for emergency use authorisation for its repurposed Covid-19 drug Sepsivac. The drug, which was originally licensed for use in 2012 in sepsis patients, is being tried as a drug against Covid-19 in moderate and serious patients and has so far given good results.



Speaking to ThePrint, Dr Ram Vishwakarma, honorary advisor to DG-CSIR and former Director, CSIR-IIIM (Indian Institute of Integrative Medicine), said, “The drug was already licensed for use in sepsis ... so about a year back, in partnership with the manufacturer Cadila Pharmaceuticals, we started three trials. The first was a phase 2 trial in serious patients, that was completed successfully and went on to a phase 3 trial in 300 patients in PGI Chandigarh, AIIMS Delhi, AIIMS Bhopal and several other sites. That is now about to be completed. We are analysing the data and hope to apply for emergency use authorisation soon.”

He added that the phase 2 trial on moderate patients had also been completed last week. “The third trial is as a prophylactic immunomodulator in 4,000 healthcare workers that is ongoing,” he said.

A prophylactic immuno modulator is an agent that prevents infection by activating the immune system of the body. The idea of the drug, Dr Vishwakarma said, came from the fact that sepsis, which is a state of response of the body to an infection and often affects all organs, is similar to what happens to the body during a cytokine storm.

A cytokine storm caused by a hyperactive immune response is among the most common reasons for death in Covid-19 patients. The phase 3 trial happened in hospitalised patients on oxygen support and gave good results. According to the US's national health agency, sepsis is “the body's extreme response to an infection. It is a life-threatening medical emergency. Sepsis happens when an infection you already have triggers a chain reaction throughout your body. Without timely treatment, sepsis can rapidly lead to tissue damage, organ failure, and death.”

A possible vaccine candidate?

The drug is also being tested as a vaccine in 4,000 healthcare workers in an ongoing phase 2 trial, Dr Vishwakarma said.

“This is what is known as an immunotherapeutic drug/immunomodulator that is made from the killed bacteria *Mycobacterium w*, which, you can say, is a cousin of BCG [vaccine for tuberculosis]. In the body, it triggers the innate or non-specific immunity — that is where the protective or vaccine-like function kicks in. Its second action, when it enters the body, is that it inhibits certain specialised cytokines, like interleukin-6 that can cause problems for Covid patients. It calms the cytokine storm,” Dr Vishwakarma explained.

As a preventive agent, Sepsivac works by activating T-cells, macrophages, natural killer cells and dendritic cells that attack an invading pathogen irrespective of its identity. These cells attack a wide range of disease-causing agents, and most often successfully thwart it even before a pathogen-specific immune response kicks off. If the trial among healthcare workers is successful, this may be the first vaccine of its kind that does not trigger an immune response specific to the SARS-CoV-2 virus but causes a general activation of the immune system that can help the body fight not just that virus but any virus. Which is why there is also an ongoing discussion about the possibility of teaming it with some existing Covid-19 vaccines to see the results.

Published in:

[Theprint](#)

CSIR-IMMT

06th July, 2021

'6-layer mask becomes less efficient than N95 after wash'

Sandip Mishra | TNN

Bhubaneswar: A study conducted by researchers from the Institute of Minerals and Materials Technology (CSIR), Bhubaneswar, has found that the efficiency of the six-layered N95 mask reduced more than the simple N95 mask after being washed with detergents.

Surgical masks saw the most reduction in filtration capacity after a wash.

The findings of the study-called 'Evaluating filtration efficiency of commercial face mask materials against respiratory aerosol droplets' was published in the 'Journal of the

Air and Waste Management Association'. It revealed that the efficiency of the six-layered N95 mask reduced by three per cent after washing, while that of the surgical masks dropped by 11%.

According to the study, the filtration efficiency of the N95 mask without valve reduced by two per cent after a detergent wash, while it reduced by four per cent in a KN95 mask, three per cent in an N95 mask with valve and 4% in a heavily-knitted cotton mask. It came down by 11% in a two-layered cotton mask, by six per cent in a double-layered nylon fabric mask, a double-layered T-shirt fabric each by eight per cent in a sing-



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le-layered T-shirt fabric mask.

"We conducted the experiments in an acrylic chamber and observed the filtration capacities of the masks at different levels under different conditions," Trupti Das, principal

scientist at IMMT Bhubaneswar, said. Das was part of the five-member research team, which was led by senior scientist Dr Ramaswamy Boopathy.

She said a variety of masks in different shapes, forms, designs and materials are available in the market nowadays. Face masks have become a clothing accessory as well as a fashion trend. It is primarily due to the prevailing pandemic situation now but face mask are also very useful to be saved from air pollution, she said.

In this context, the researchers have made an attempt to study the filtration efficiency of the commonly available com-

mercial masks. The study also revealed that 6-Layer N95 mask has the maximum filtration efficiency followed by N95 mask without valve, KN95 mask, N95 mask with valve, heavy knitted cotton mask, surgical mask and cotton mask-2 layers.

It is observed that increasing the knitting stitches in cotton masks tends to improve its filtration efficiency through the material. However, after washing the results were different. So we recommend the usage of multi-layered N95 masks followed by N95 masks without valve, KN95 or N95 with valve masks and others based on their efficiency, the scientist added.

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