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NIIST offers tech for titanium industry

CSIR-NIIST

In a move aimed at equipping the domestic titanium industry with better technology, the CSIR-National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram, has joined hands with the Tamil Nadu-based V.V. Minerals for demonstration of an environment- friendly process for upgradation of ilmenite, a natural mineral present in the beach sands of Kerala and Tamil Nadu.

The technology developed by the CSIR-NIIST involves the conversion of ilmenite to beneficiated titanium feedstock, which is the base material for production of titanium metal and titanium dioxide, two critical products used in the aerospace, automotive, medical, sports, cosmetics and paint industries.

Eco-friendly process termed as game changer for industry

The conventional process of conversion involves the use of concentrated hydrochloric or sulphuric acid to remove the iron values present in ilmenite as ferrous chloride. Disposal of the acidic effluents however has been a major issue for industry. Kerala Minerals and Metals Limited (KMML), a public sector unit located at Chavara, Kollam, has often faced public ire for polluting water resources and posing a public health hazard.

Titanium feedstock

"We have developed an environment-friendly process for conversion of ilmenite to titanium feedstock with a 70 per cent reduction in acid consumption. The bulk of the iron values are removed in the form of oxides free of excess acidity and chloride contamination," says A. Ajayaghosh, Director, CSIR- NIIST. He feels that this could be a game changer for the titanium industry as a whole.

"During the laboratory scale demonstration, we could produce titanium feedstock with more than 90 per cent titanium do oxide," Harikrishna Bhat, Chief Scientist, Material Science and Technology division, NIIST, told The Hindu . He said the institute would assist V.V. Minerals in demonstrating the process at a pilot plant to be established at Gummidipoondy, near Chennai.

The plant would produce 100 tonnes of beneficiated ilmenite per day for test marketing, consumer feedback and generation of sufficient engineering and process data for the design of a commercial production unit.

A leading manufacturer and exporter of heavy minerals, V.V. Minerals has plans to adopt state-of-the-art technology for upgradation of ilmenite to a beneficiated product with better market value.

The partnership agreement was signed in Thiruvananthapuram on Thursday in the presence of Dr. Ajayaghosh and Director, V.V. Minerals, V. Subramanian.

Pilot plant to be set up under technology partnership at Gummidipoondy, near Chennai

http://www.thehindu.com/todays-paper/tp-national/tp-kerala/niist-offers-tech-for-titanium-industry/article8842075.ece

T. NANDAKUMAR| Jul 13, 2016

Plastic washing ashore is major challenge to coastal environment: NIO study

CSIR-NIO

Goa's coast is now facing a bigger threat and marine organisms are at risk as large quantities of plastic debris wash ashore during the southwest monsoon period. The plastic dropped accidentally from vessels during transportation by ship, is posing a big challenge to the coastal environment.

Institute says plastic pellets could have been dropped accidentally during transportation; rules out possibility of terrestrial discharge of plastic through rivers

A study by National Institute of Oceanography (NIO) scientists along six beaches of Goa concluded that plastic debris moved in during the monsoon season from the ocean and may lead to a major threat to marine organisms. It has ruled out the possibility of terrestrial discharge of plastic through the rivers of Goa into the Arabian Sea.
The study called 'Characteristics, seasonal distribution and surface degradation features of microplastic pellets along the Goa coast' was conducted by group of NIO scientists including S Veerasingam, Mahua Saha, V Suneel, P Vethamony, Andrea Carmelita Rodrigues, Sourav Bhattacharyya and B G Naik.

Microplastic pellets (MPPs) are ubiquitous contaminants, recognised as a serious threat to the biotain coastal, estuarine and marine environment. The distribution, abundance, weathering and chemical characteristics of MPPs on Goa's beaches, and their transport to the coast during the southwest (SW) monsoon has been studied.
MPPs were collected from six beaches along the Goa coast during the northeast (January 2015) and southwest (June 2015) monsoon seasons. The beaches include Keri, Vagator and Calangute in North Goa and Colva, Mobor and Galgibag in South Goa. Around 100 MPPs were collected from the high tide line of the sandy surface of each beach.

"A total number of 3000 MPPs were collected from six beaches along the Goa coast during January-June 2015. Overall, the occurrence of total MPPs on beaches along the Goa coast was found to be higher in June (1655 pellets) than January (1345 pellets). Significant variations were observed in abundance of MPPs on beches during that period," the study reveals. "The strong ocean currents during SW monsoon could be playing a major role in pushing the micro plastic residue floating on the sea due to accidental spillage from ships during its transportation onto Goa beaches," the study explains.

The study claims that though it observed many secondary microplastics (plastic films, fibres and fragments), could not find any MPPs in estuarine waters. As there are no MPP manufacturing industries in Goa or nearby coastal regions, the distribution of MPPs along the Goa coast is likely to be marine based sources (unintentional spillage in international and national shipping routes and/or neighbouring countries) than land based sources. "Therefore, ruled out the possibilities of terrestrial discharges of MPPs through the rivers of Goa into the Arabian Sea," NIO said.

http://www.heraldgoa.in/Goa/Plastic-washing-ashore-is-major-challenge-to-coastal-environment-NIO-study/103988.html

Goa | July 14, 2016

REDUCING ENERGY STORAGE COST BY 50 PER CENT A POSSIBILITY

CSIR- CECRI

Indian government owned Central Electro Chemical Research Institute (CECRI) could reduce energy storage costs by upto half in the country with it's latest research.

CECRI, a subsidiary of Council of scientific and Industrial Research (CSIR), promises to reduce the cost of storing energy from power grids by 50 per cent with their ongoing research on the development of the zinc - bromine (ZnBr) storage batteries, said P. Ragupathy, Senior Scientist currently working on ZnBr batteries at CECRI.

ZnBr batteries work on redox flow technology which receives keen interest in storing large amount of electricity especially from Solar and Wind sectors

Scaling up the development of the ZnBr Batteries to a megawatt level will reduce the cost of production of these batteries to half of the lead battery's cost", said Ragupathy while speaking to Economic Times.

The current market price of a 10 kilo watt hour ZBM2 storage battery as produced by Redflow, the world's leading flow battery company, is Rs. 5.5 lakh and added import costs.

ZnBr batteries have multiple advantages over lead-acid batteries such as, minimal battery degradation and performance loss even after numerous full charge-discharge cycles, high energy efficiency (70-80 %) along with deep discharge capability.

The zinc-bromine batteries also weigh one-sixth when compared to lead acid batteries. Zinc-bromine batteries also offer low production costs - the batteries involve simple materials such as zinc, environmental friendliness - no hazardous materials are involved in construction.

Despite these advantages and favorable features, commercialization of this battery has not been achieved due to, self discharge and short circuit happening due to zinc. CECRI's efforts are centred on low cost electrode materials/separators.

"ZnBr batteries work on redox flow technology which receives keen interest in storing large amount of electricity especially from Solar and Wind sectors", Ragupathy added.

CSIR - CECRI was allocated Rs 15-20 lakhs for the development of the Zn-Br batteries and expects to produce 500 - 1000 Watt units within the next one-and-a-half years.

India currently does not import any ZnBr Batteries due to very high import costs, but with the development of ZnBr batteries within the country the scenario is destined to change added the senior scientist. Bangalore based HPCl and Sahiibabad based CEL are already showing interest in this technology.

Ragupathy believes India can become a key player in this technology due to its high solar isolation for generating solar electricity.

ZnBr batteries are widely used in the western world for the storage of energy with companies like Redflow and ZBB globally established brand names.

http://energy.economictimes.indiatimes.com/news/power/reducing-energy-storage-cost-by-50-per-cent-a-possibility-csir-cecri/53191998

ETEnergyWorld | Jul 13, 2016

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Meet discusses ballast water risks

CSIR- NIO

Scientists from the ASEAN (association of South East Asian nations) met on Wednesday, to discuss how they can collaborate and develop methodologies for risk assessment of ballast water management.

The port to port transportation of ships from all over the world usually leads to their ballast water being exchanged. With this, the organisms of one part of the sea are quite often released into the ecosystem of another. Ballast water is water carried in ships' ballast tanks to improve stability, balance and trim.

ZnBr batteries work on redox flow technology which receives keen interest in storing large amount of electricity especially from Solar and Wind sectors

The issue concerning the transfer of alien species into a new environment is a decades-old phenomenon. "Earlier, ships would have rocks to stabilize the vessel and it wasn't until the past 30-35 years that ballast water tanks came into the picture," said chief scientist, NIO, Dr AC Anil.

Some examples of such bio-invasion of organisms include mussels invading Great Lakes in USA, comb jellies invading the Black Sea, etc. Once the alien invasive species goes into another environment, it can wipe out the rest of the organisms, which can be devastating to the ecosystem and health of the oceans.

The international maritime organization (IMO) has developed a convention which can help ASEAN countries to mitigate this problem. India was chosen as one of the pilot countries to represent South and South East Asia in the global environment facility funded IMO programme called global ballast water management programme.

Goa-based national institute of oceanography (NIO), is also documenting the species exchanged at main Indian ports. "We have made an inventory of organisms and found several new species. We will be able to quarantine ships that dock there," said Anil. The inventory will be ready by 2017.

http://timesofindia.indiatimes.com/city/goa/Meet-discusses-ballast-water-risks/articleshow/53199110.cms

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V M Tiwari takes charge as CSIR-NGRI Director

CSIR- NGRI

V M Tiwari has taken charge as the new Director of CSRI-National Geophysical Research Institute here.

He was previously the Director of National Centre for Earth System Studies in Thiruvananthapuram.

Tiwari obtained his post-graduate degree in Geophysics from Banaras Hindu University (BHU), Varanasi and began his scientific career at CSRI-National Geophysical Research Institute (CSIR-NGRI) after receiving a Ph.D in Geophysics from NGRI and BHU, a release said today.

Tiwari's research interests primarily focuses on deciphering subsurface mass distribution and mass transport relevant to a wide range of scientific and societal application such as elucidating structure and dynamics of different geological settings in the Indian lithosphere, variation in water storage over Indian subcontinent and mapping of sub-basaltic sediments, it said.

"Besides well cited research papers in leading journals, he has also contributed significantly to the projects of Oil and Mineral Industries", the release said.

http://www.business-standard.com/article/pti-stories/v-m-tiwari-takes-charge-as-csir-ngri-director-116071301098_1.html

Press Trust of India | Hyderabad | July 13, 2016

Green process lowers cost of gold face packs

TRIBUNE NEWS SERVICE

CHANDIGARH, JULY 13

Women who are keen to have gold facials, an application of facial packs that contain gold particles for beauty treatment, now have a reason to cheer. The Council for Scientific and Industrial Research (CSIR) has come up with a new, eco-friendly process of synthesising gold that reduces the cost of such packs.

Gold is considered to be beneficial for the skin as it helps in improving blood circulation, removes toxins from the skin, lightens pigmentation, cures sunburns and rejuvenates the tissue, besides providing a golden glow to the skin that is sought when dressing up for special occasions.

Gold dust used in such facial packs was so far being prepared through chemical means. Now, National Botanical Research Institute, a CSIR laboratory, has devised a way to make nano gold particles using a non-chemical procedure that involves the use of fungi.

Scientists at the institute experimented on 300 types of fungi and homed on to the Trichoderma Viride, which was able to quickly synthesise gold particles. Besides being eco-friendly, use of fungi in synthesising nano gold particles also proved to be cost-effective. Using nano-particles results in a faction of the material being used compared to conventional processes for the same application. Nano gold is being used for various other industrial purposes, including high-tech electronic circuits, space gadgets, pharmaceuticals and medicare. Earlier, the institute had developed a herbal lipstick that was claimed to be safe and eco-friendly.

छह दशक बाद भी खेतों में पानी नहीं

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