



## NEWS CLIPS

**October 13-19, 2018**

Highlights of the Week@IITD

### **Rendezvous 2018 North India's Largest Cultural Fest by IIT Delhi Is Bigger than Ever Before**

<https://edtimes.in/rendezvous-2018-north-indias-largest-cultural-fest-by-iit-delhi-is-bigger-than-ever-before/>

Amazing were the younger days, when we were devoid of stress and worries of a busy life. Those bright days live on, as cherished memories of times long gone, and so does the longing to re-live them, to feel the careless bliss once more. Oblivious, time never turns back.

From 13th to 16th October 2018, the bright days will take a life of their own, in a Symphony Of Nostalgia- at Rendezvous 2018, North India's largest cultural fest.

It's time to take a break from the hectic city life, to go back to arm-wrestling and pen-fighting, while reliving Takeshi's castle and M.A.D. Rendezvous is more than just an amalgamation of events, it's an experience of a lifetime.

Thus, the theme of this Rendezvous 2018, Symphony of Nostalgia seems to be pretty apt.

The 43rd edition of the annual cultural festival of IIT Delhi, which is the largest cultural festival in northern India will be held over 4 days of non-stop activities, events, competitions and workshops.

With over 650 colleges across India participating, the Rdv2k18 will see 200 events running on all 4 days.



Experience the stellar Pronites with outstanding performances, to electrify the ambience, and make for a perfect end to a day full of competitive events that provide a stage to showcase your creativity.

Confluence, a musical blend of cultures from all over the world, will up the game of music to a new height, as the masters, adept and passionate, will deliver performances that add a new life to the tunes that make for quality music.

A panel discussion, hosted by Barkha Dutt, gives an insight into the views of people that shape today's policy decisions. This and a plethora of events are lined up, to make Rdv2k18 the perfect escape from the routine. And this year, Rdv is bigger than ever before.

### **A Bath in Just 8 ml**

<https://www.businesstoday.in/magazine/coolest-start-ups-2018/a-bath-in-just-8-ml/story/285114.html>

Puneet Gupta's start-up Clensta International lets you have a bath and wash hair without using a drop of water.



When an army officer who had been posted in Siachen told IIM Calcutta alumnus Puneet Gupta, who was working with a defence start-up then, that he had once not taken a bath for 90 days, Gupta felt he should find a solution. He explored alternatives and landed on waterless technology. His start-up Clensta International, founded in February 2016, offers bathing products that do not need any water. Both its products, body wash and shampoo, are alcohol, sodium lauryl sulfate (SLS) and gluten free, making them suitable for all skin and hair types.

"Water is only a rinsing mechanism. So the idea is to maintain personal hygiene, without using water. We thought that molecules of dirt, oil and grease can easily be removed without water; when you take a normal bath, 80 per cent of the water doesn't even touch your body," explains Gupta. Along with a team of researchers at IIT Delhi, Gupta developed activated molecules that absorb dirt molecules. "After you massage the product all over your body or scalp, all you have to do is wipe it clean with a tissue or towel," he says, adding that 100 ml of his product saves 350 litres of water.

IIT Delhi has a 5 per cent stake in Clensta for providing research and infrastructure. Gupta bootstrapped his venture with Rs 3.5 crore he collected from friends and family. He raised another Rs

3.5 crore from angel investors in three rounds of investments. Pradeep Gupta, co-founder, Indian Angel Network; Rishabh Mehta, founder & CEO, Locad; Ajai Chowdhry, co-founder, HCL; Jaideep Mehta, CEO, VCCircle; Raman Roy, Chairman, Nasscom; and Bikky Khosla, CEO, tradeindia.com are some of the prominent investors in the start-up. Gupta plans to raise another Rs 30 crore in the next 12 months to invest in capex and scale up globally. He has a revenue target of Rs 40 crore by FY20. Clensta launched its products only in February 2018 so its revenue of Rs 20.36 lakh in FY17 (as per Ministry of Corporate Affairs) don't reflect earnings from sales of products.

Occupying a small office in IIT Delhi's biotech incubation centre, Gupta says he had not realised that there was so much scope for water-less hygiene products, and was focused only on the defence sector. But now he plans to be in a market that encompasses the defence and paramilitary, daily use consumers, hospitals, at-home patients, home healthcare, adventure excursions, railways and long distance travellers. According to Gupta, the market size is Rs 11,000 crore.

Although there aren't any direct competitors, explaining the product to customers - how these are different from dry shampoos and sanitizers - is a challenge, which is why he has adopted a business-to-business (B2B) model. "To create awareness about how we are different was a challenge for us because that needed investment in marketing. Convincing CEOs about the utility of the products via presentations and personal meetings was simpler, so B2B made sense," he says. So far, Gupta has 30 business customers on board, including the Indian Army. Gupta says the company will soon start selling directly to consumers. Clensta's products are available on Government e-Marketplace (GeM). "By April 2019, we are planning to go B2C but immediate plans are B2B. We are in discussions with Decathlon, Apollo Pharmacy, and Future Retail to sell our products. We will also tap the e-commerce space," he says.

Clensta's products are also available in some other countries, through its subsidiary in the Netherlands, Clensta International BV.

The 100 ml bottles of Waterless Body Bath and Waterless Shampoo cost Rs 549 and Rs 499, respectively. Gupta plans to launch the consumer segment at half this price if the government reduces the GST on the products from 18 per cent to 5 per cent. He also plans to launch two more products: a waterless dental solution; and an anti-mosquito waterless shampoo. Increased business will not lead to a compromise in quality, says Gupta. "All our pilot product formulations are prepared in the lab here... under our core team's supervision. We'll continue that," he says.

## **October 19**

### **Set up intellectual property centres, innovation labs: UGC tells universities**

<https://timesofindia.indiatimes.com/home/education/news/set-up-intellectual-property-centres-innovation-labs-ugc-tells-universities/articleshow/66272235.cms>

The UGC has asked all universities and higher educational institutions to set up 'Intellectual Property centres' and 'Innovation labs' to promote a culture of innovation and entrepreneurship. "The start-ups, innovators and entrepreneurs from across the country have appreciably applied their creativity to address social issues.

"However, it is further needed that a culture of innovation and entrepreneurship must be promoted as there is no dearth of grassroots level innovations in the country and efforts must be made to facilitate their growth," the University Grants Commission (UGC) said in a letter to universities.

Setting up Intellectual Property Centres at universities, establishing innovation labs, setting up entrepreneurship cells and adding entrepreneurship into curriculum are among the activities prescribed by UGC.

It has also asked universities to encourage organisation of boot camps, mentoring and investor sessions and holding entrepreneurship focussed events at colleges where successful entrepreneurs be invited to interact with students.

## **October 18**

### **Nano-Carbon: New India-Made Weapon against Mosquitoes?**

<https://www.businesstoday.in/magazine/coolest-start-ups-2018/a-bath-in-just-8-ml/story/285114.html>

**The female Aedes mosquitoes that spread dengue, chikungunya, and zika viruses, lay eggs in water bodies along the roadside and in decorative flower pots and vases in homes or offices.**



The odorless nano-carbon thus produced is environment friendly

#### **HIGHLIGHTS**

- Toxic smog has once again threatened to engulf the Capital
- Nano-carbon particles, are a potent new weapon against Aedes mosquitoes
- The odorless nano-carbon produced is environment friendly

Toxic smog has once again threatened to engulf the National Capital Region (NCR) as farmers in parts of Haryana and Punjab have begun to burn their crop residue. And the zika virus, spread by Aedes Aegypti mosquitoes, has mysteriously raised its head in Rajasthan, having already infected about 90 people and worrying health officials. Now a team led by Sabyasachi Sarkar, visiting professor and nano-technologist at the Indian Institute of Engineering Science and Technology (IIST) in Shibpur, West Bengal, has proposed a single solution to solve these twin problems.

The novel method (for simultaneous mosquito and smog control) has been reported in a recent issue of the Journal of Vector Borne Diseases.

The female Aedes mosquitoes that spread dengue, chikungunya, and zika viruses, lay eggs in water bodies along the roadside and in decorative flower pots and vases in homes or offices.

In laboratory studies, the researchers have now shown that water-soluble nano-carbon particles (wsNCP) dissolved in water prevent respiration of mosquito larvae, causing anoxia (lack of oxygen) and ultimately their death. In fact, the larvae exposed to these nano-particles fail to reach even the pupae stage -- one step before becoming an adult mosquito.

"And interestingly, these nano-carbon particles, that are a potent new weapon against the Aedes mosquitoes, can be obtained from 'controlled burning' of crop residue," Sarkar, formerly a chemistry professor at the Indian Institute of Technology-Kanpur, told this correspondent.

The odorless nano-carbon thus produced is environment friendly and is non-toxic to humans. It has also been shown to be harmless to fish and other living species in water, the report says.

For their study, the researchers collected a few Aedes aegypti mosquito larvae from a shallow pool near their institute and reared them in an aquarium containing "fluorescent" wsCNP at a concentration of three micro-grams per millilitre (3ig/ml).

According to the report, "fluorescent imaging" of the entire life cycle of mosquitoes revealed that larvae exposed to the carbon nano-particles died even before attaining the pupae stage. The nano-particles displayed a unique property by getting deposited over the air tube of the larvae choking their respiration causing anoxia and death.

"Based on these observations it can be concluded that the use of non-toxic, wsCNP is safe to prevent growth of mosquitoes in water pots and other hot-spots around house-hold premises," says the report.

"These nano-particles could be economically produced and preserved in the solid form for a long time and can be used as and when required by people without any need to spray chemical insecticides or fogging," Sarkar said. "Once added to water, being non-destructive, it may not require much replenishment."

Sarkar said their study has incidentally shown a solution to the air pollution over the nation's capital due to uncontrolled crop residue burning in neighboring states.

"Under controlled burning of the crop residue, one can get tonnes of such nano products with little chemical modification," Sarkar said. "This carbon based nano-powder so obtained can be distributed to the people for application on any suspected waterbody near homes, offices and schools."

However some experts are sceptical about nano-carbon emerging as a weapon against mosquitoes.

"This will work only in a petri-dish," Payyalore Rajagopalan, former director of the health ministry's Vector Control Research Centre in Puducherry told this correspondent in an email, adding: "But not in

**October 17**

**QS India University Rankings 2019: IITs grab top slots, check complete list**

<https://indianexpress.com/article/education/qs-university-rankings-2019-iit-iisc-grab-top-slots-check-complete-list-5404012/>

QS India University Rankings 2019, QS World University Rankings 2019: While IIT-Bombay has secured the top position, the Indian Institute of Science (IISc) in Bengaluru stands second.

QS India University Rankings 2019: Indian Institutes of Technology (IITs) have dominated the top slots in the first standalone QS ranking of India's higher education institutes. While IIT-Bombay has secured the top position, the Indian Institute of Science (IISc) in Bengaluru stands second. The IITs in Madras, Delhi, Kharagpur and Kanpur have bagged third, fourth, fifth and sixth respectively.

The ranking by the QS (Quacquarelli Symonds), a UK based company specialising in education, include public universities, private universities and higher education institutions or deemed universities.

Twenty Indian institutions receive full marks –100/100 – in the staff with PhD, the indicator designed to identify the extent to which institutions are cultivating a highly-qualified faculty body. In the research productivity indicator, paper per faculty nine institutions achieve a score between 98.4 and 100.

**QS India University Rankings 2019: Here is the complete list:**

- 1) IIT-Bombay
- 2) IISc
- 3) IIT-Madras
- 4) IIT-Delhi
- 5) IIT-Kharagpur
- 6) IIT-Kanpur
- 7) University of Hyderabad
- 8) University of Delhi
- 9) IIT-Roorkee
- 10) IIT-Guwahati
- 11) University of Calcutta
- 12) Jadavpur University
- 13) Anna University
- 14) University of Mumbai
- 15) Banaras Hindu University
- 16) IIT-Hyderabad
- 17) Birla Institute of Technology and Science
- 18) IIT Indore
- 19) Savitribai Phule Pune University
- 20) Alagappa University, Karaikudi
- 21) IIT-Ropar
- 22) IIT-BHUBANESWAR

- 23) Symbiosis International (Deemed University)
- 24) Institute of Chemical Technology (UDCT), Mumbai
- 25) IIIT – Allahabad
- 26) Manipal Academy of Higher Education
- 27) NIT, Rourkela
- 28) Jamia Millia Islamia, New Delhi
- 29) NIT TIRUCHIRAPPALLI
- 30) Tamil Nadu Agricultural University, Coimbatore
- 31) Thapar University
- 32) GB Pant University of Agriculture and Technology, Pantnagar
- 33) AMU, Aligarh
- 34) Osmania University, Hyderabad
- 34) IIT-Patna
- 36) Tezpur University
- 37) Bangalore University
- 38) Sri Venkateswara University
- 39) University of Calicut
- 40) Amrita University
- 41) Amity University
- 42) ISM University, Dhanbad
- 43) Mangalore University
- 44) Vellore Institute of Technology (VIT)
- 45) Dr Harisingh Gour Vishwavidyalaya (Sagar University),
- 46) Andhra University
- 47) University of Kerala
- 48) IIIT-Delhi
- 49) Panjab University
- 50) University of Mysore
- 51-55) University of Kashmir
- 51-55) Pondicherry University
- 51-55) Jamia Hamdard, New Delhi
- 51-55) Cochin University of Science and Technology
- 51-55) Sardar Patel University, Vallabh Vidyanagar
- 56-60) Sri Krishnadevaraya University, Anantpur
- 56-60) North Maharashtra University, Jalgaon
- 56-60) Goa University
- 56-60) Shivaji University
- 56-60) SRM Institute of Science and Technology
- 61-65) Gauhati University, Guwahati
- 61-65) Jawaharlal Nehru Technological University
- 61-65) Sastra Deemed University
- 61-65) Kalinga Institute of Industrial Technology (KIIT)
- 61-65) Guru Nanak Dev University, Amritsar
- 66-70) Mohanlal Sukhadia University, Udaipur
- 66-70) BANASTHALI University

66-70) KUMAUN University, NAINITAL  
66-70) MAHARAJA SAYAJIRAO University OF BARODA, VADODARA  
66-70) O. P. JINDAL GLOBAL University  
71-75) UniversityOF JAMMU  
71-75) CHRIST (DEEMED TO BE University), BENGALURU  
71-75) ICFAI FOUNDATION FOR HIGHER EDUCATION, HYDERABAD  
71-75) KONERU LAKSHMAIAH EDUCATION FOUNDATION  
71-75) GULBARGA University, GULBARGA

## **IIT-IISER to set up model advanced lab and infra eco-system for decoding deadly diseases**

<http://www.newindianexpress.com/states/andhra-pradesh/2018/oct/17/iit-iiser-to-set-up-model-advanced-lab-and-infra-eco-system-for-decoding-deadly-diseases-1886488.html>

Ganeshan shared that recently they recruited a person, who was working seriously on 'Tuberculosis'.



IISER Director (right) K N Ganeshan addresses the media in Tirupati on Tuesday

The Indian Institute of Science Education and Research (IISER) will soon set up a model advanced lab & infra eco-system here in collaboration with the Indian Institute of Technology (IIT), said K Ganeshan, Director, IISER, here on Tuesday.

Speaking to the media, Ganeshan said that IIT & IISER are premier educational institutions in the country, and would be setting up a lab for conducting people-friendly research-oriented most advanced facilities for early accurate detection of cancer.

“The research and courses would be designed from the basic-level. Faculty recruitment is also being done keeping various scenarios in mind,” he said. The director stated that spectroscopy would be procured for advance research which can accurately diagnose cancer as presently, diagnosing the diseases was very important than anything.

Ganeshan shared that recently they recruited a person, who was working seriously on 'Tuberculosis'. “The IISER-Tirupati is also contemplating for some MoUs with Pharmaceutical industries in Chennai and the IISER Tirupati was following unique system of recruitment process,” he explained.



The director said that though they don't have an engineering faculty, the IIT has science faculty and they would collaborate for developing infra even from basic-level in the name of hospital for needs of students of both the institutions.

"Within four years, Tirupati will witness huge academic activity at IIT & IISER-Tirupati," he said. He said that they had provided space for Kendriya Vidyalaya for establishing a school on the campus. "We have received the communication from the Union government and the Cabinet has sanctioned Rs 3,074.12 along with recurring of Rs 354 crore."

Ganeshan also added that recently the Union Cabinet approved the establishment and operationalisation of permanent campuses of the two new Indian Institute of Science Education and Research at Tirupati, Andhra Pradesh and Berhampur, Odisha. "The total cost likely to be incurred is Rs 3,074.12 crore (non-recurring Rs 2,366.48 crore and recurring Rs 707.64 crore)," he said.

### **Launch of T10KL programme under the project "National Virtual Library of India", funded by the Ministry of Culture**

<http://indiaeducationdiary.in/launch-t10kl-programme-project-national-virtual-library-india-funded-ministry-culture/>

The Ministry of Culture, Government of India set up the National Mission on Libraries in 2012 to ensure sustained attention to the development of Libraries and the Information Science Sector. The National Mission on Libraries has, as one of its activities, created the National Virtual Library of India (NVLI), a project whose purpose is to facilitate creation of a searchable comprehensive database of digital resources on information pertaining to India. The effort is directed primarily to provide searchable access to digital assets, primarily related to Indian culture and knowledge. The NVLI project is coordinated by IIT Bombay, and executed by IIT Bombay, C-DAC Pune and IGNOU. The activity comprises two main blocks – (a) collection and curation of digital assets from libraries, museums and other resource points and (b) development of a portal that will provide facilities to search and display the digital assets.

Also, an integral part of the NVLI project is the capacity building and training on Koha and other open source digital library software to all librarians across the country.

The Train 10 Thousand Librarians (T10KL) programme was launched from the Electronic Media Production Centre at IGNOU on 12th October 2018 by the Vice Chancellor of IGNOU, Prof Nageshwar Rao, in the presence of Prof Kannan Moudgalya of IIT Bombay, the Principal Investigator of NVLI, and Prof Uma Kanjilal, Professor in the Faculty of Library and Information Science, IGNOU. In a first for the country, 2,500 Librarians across the nation participated through 98 Remote Centres of IIT Bombay, located in 19 states, and received Koha training. For the purposes of this workshop, the methodology created and proved in the Train 10 Thousand Teachers programme by IIT Bombay was used.

A Librarian and a System Administrator from every Remote Centre was initially trained on the USE of Koha and the INSTALLATION of Koha in a Coordinator Workshop conducted at IIT Bombay. These two, in turn, imparted this knowledge in their Centre for librarians and system administrators from nearby libraries. On an average, 25 people received training in each Remote Centre. The open source

software A-VIEW, developed by Amrita University, with funding from government bodies, provided the audio-video interaction capability between the 100 Remote Centres, IIT Bombay and IGNOU. The actual training was carried out through the Spoken Tutorial methodology.

Spoken Tutorials are 10 minute long audio-video tutorials, created for self-learning. All tutorials go through a rigorous checking and validation process. Any user with a basic computer and a dial-up connection can access and learn from these videos. They can also be downloaded for off-line use. These tutorials are available in all 22 Indian languages.

Prof. Uma Kanjilal welcomed the Vice Chancellor of IGNOU and all participants. She highlighted that the setting up of the National Virtual Library of India, the capacity building of librarians, the survey of public libraries and the setting up model libraries in districts and states were the 4 aims delineated under the National Mission on Libraries, which was launched in February 2014.

Towards this, the NVLI project has taken up the task of training the librarians of India, especially those in public libraries to use Koha, a free and open source library management software. She pointed out that Koha supports almost all international standards used by library professionals like MARC 21, UNIMARC, RFID, FRBR, etc., leaving the user to focus solely on activities such as cataloguing, issue, charging, discharging, renewal, and procurement. The software is scalable, meets almost all requirements of a library and has new updated versions every 6 months.

Prof. Kannan, speaking about T10KL said that this technology has made India a small country as anyone from any corner of the country with a 2 mbps internet connection, an open source Operating System and a laptop can participate in the interaction sessions as if they are face to face.

Prof. Nageshwar Rao, while launching the workshop welcomed this initiative which reaches out to librarians across India and will enable them to create digital catalogues of their collections. After the hands-on workshop was completed at the end of the day on 12 October 2018, many librarians from about 64 Centres participated in the live interaction with experts. They have asked for help in establishing a Koha resource that they can use remotely and also for help to computerisation of their catalogue. The NVLI team shall establish Koha on Cloud for public libraries. Help will be given through the Ask a Question platform, wherein library experts will answer Koha related questions every Tuesday, 4 to 5pm.

Combining the reach of T10KL and the efficacy of Spoken Tutorials, Koha training can revolutionize libraries in India.

## **October 16**

### **IIT-Bombay Ranks First, IISc Bengaluru Second in QS Ranking of India's Higher Education Institutions**

<https://www.india.com/education/iit-bombay-ranks-first-and-iisc-bengaluru-second-in-qs-ranking-of-indias-higher-education-institutions-3382894/>



In the first independent QS ranking of India's higher education institutions, the top three positions have been bagged by the Indian Institutes of Technology (IITs) in Mumbai and Madras and the Indian Institute of Science (IISc) in Bengaluru, Indian Express reported.

The first place has been occupied by IIT-Bombay, while the second and the third have been bagged by IISc Bengaluru and IIT-Madras respectively. The table reflects the country's top 75 institutions, the newspaper reported.

"Performance criteria used for the Indian University Rankings is the same as we use for the QS BRICS Ranking. In the global tables, academic reputation carries 40 per cent weightage, in the Indian edition it carries 30 per cent. The World University Rankings focus on research impact (citations per faculty) and the domestic league looks at research productivity (number of papers per faculty)," Simona Bizzozero, communication director told Indian Express.

Other names that feature in the list are IIT-Delhi, IIT-Kharagpur, IIT-Kanpur, Hyderabad Central University, Delhi University, IIT-Roorkee and IIT-Guwahati.

On June 7, the QS World University Rankings released its latest edition, which declared IIT-Bombay as India's top-ranking institution. As per the QS World University Rankings, IIT-Bombay took the 162nd rank and thus moved up 17 places this year to displace IIT-Delhi as India's top-ranked institution. IIT-Delhi was also dethroned by IISc-Bangalore, which stood at the 170th rank moving ahead 20 places.

It's only been a year since IIT-Bombay made a comeback in the top 200 ranks. IIT-Bombay has been performing dramatically over the period of two years and has been improving its performance overall. From 219th rank in 2016, 179th rank in 2017 to 162nd rank this year, IIT-B has been performing consistently. IISc which was earlier in the top 150 institutions in the World University Rankings failed to get back in to its former position which it was two years back.

### **Prof. Vikram Vishal of IIT Bombay wins NASI Young Scientist Award for his work on tapping shale gas in India**

<https://researchmatters.in/news/prof-vikram-vishal-iit-bombay-wins-nasi-young-scientist-award-his-work-tapping-shale-gas-india>



Prof. Vikram Vishal, Assistant Professor at the Department of Earth Sciences at the Indian Institute of Technology Bombay, was recently awarded the prestigious NASI Young Scientist Award - 2018 for his work on unconventional hydrocarbons. He is one of the 20 researchers across the country, to be awarded the annual prize for exceptional research in the field of Electronics, Engineering, Chemical Sciences, Physical Sciences and Plant Sciences.

The NASI Young Scientist award, instituted by the National Academy of Sciences India, recognises creativity and excellence in young scientists in India. The annual award carries a citation, a medal and Rs. 25,000 cash prize. Since 2006, 143 researchers across India have received the coveted award.

“NASI is the oldest scientific academy in India, and unlike several awards, the Young Scientist Award is highly competitive as the awardees come from different disciplines. I feel great about receiving the award,” says an elated Prof. Vishal.

Prof. Vishal’s current research, funded by the Ministry of Human Resource Development, focuses on unconventional hydrocarbon reservoirs in India. Unconventional hydrocarbon reservoirs are sources of oil and gas, that needs to be extracted using techniques different from the conventional extraction of hydrocarbons. Examples of these hydrocarbons include shale gas (natural gas trapped within certain fine-grained, fissile rocks called shales), shale oil, gas hydrates (a solid ice-like form of water containing gas molecules) and coal bed methane. His work proposes to estimate the shale gas potential for India accurately.

In their research, Prof. Vishal and his team of researchers mimic the conditions of the hydrocarbon reservoirs in their lab. They subject the collected shale samples to various conditions of temperature and pressure and estimate gas potential based on their observations. They predict a gas potential value of 25-30% more than that predicted by existing methods.

“Current shale gas estimates in India are not supported by field studies or experiments and do not have validated numbers. In this aspect, India is capable of producing best estimates through in-depth studies”, shares Prof. Vishal, who is also a recipient of the INSA Young Scientist Award for 2017. A combination of specialized techniques and expertise helps us understand these unconventional oil and gas sources.

“The recent efforts by the Government of India to explore unconventional hydrocarbon reservoirs such as shale gas and gas hydrates coincides with my expertise and interests. As a scientist, this laid the foundation for me to collect samples from various prospective basins in India and estimate the potential of natural gas as a future energy source. Exploiting even a small proportion of these reservoirs can serve the country for centuries”, adds Prof. Vishal. His work could help the country’s

aspiration of reducing oil imports in the next five years and increase the country's share to the natural gas contribution by 15 per cent by 2022.

## **October 15**

### **There are just 40 foreign teachers at IITs despite govt's big push for global faculty**

<https://theprint.in/governance/there-are-just-40-foreign-teachers-at-iits-despite-govts-big-push-for-global-faculty/133114/>

**HRD ministry wants higher education institutes like IITs to have 20% international faculty. But the figure is just about 1% at IITs.**

The Modi government is keen on getting international scholars to teach at higher education institutes in India, but even the flagship Indian Institutes of Technology (IITs) have not been able to attract many.

In fact, only 40 foreign nationals teach across the 23 IITs according to latest data from the human resource development ministry — which is only about 1 per cent of the total strength of 5,400 faculty members. The ministry's target is to have this figure climb to about 20 per cent, since it would help boost the institutes' international rank and profile.

While the IITs do employ Indian-born persons settled abroad, recruiting foreign nationals has proven to be very difficult, despite the institutes regularly holding roadshows and interactions at foreign universities.

#### **A variety of reasons**

Part of the reason for this failure to recruit seems to be bureaucratic red-tapism — a senior HRD ministry official said it usually takes six to eight months between giving an offer letter to the teachers and them joining, because each person has to get clearance from the home ministry and the external affairs ministry.

“The long wait is the reason that many people end up dropping out instead of joining,” the official said. The HRD ministry is now in talks with the two ministries to speed up the process.

Another reason is that foreigners are only offered five-year contracts. “This clause is a little problematic because faculty members face uncertainty when they are bound by such time limits. They do not enjoy the kind of academic freedom that regular faculty does,” said Sudipto Mukherjee, dean of faculty at IIT-Delhi.

One more deterrent for foreign nationals is that they cannot even participate in many research projects of national importance, which are done in collaboration with the government.

“There are two reasons for this — one is because the department of science and technology does not fund them, and the other is that the external affairs ministry wants to keep them away from such projects because they could be crucial to India’s security,” Mukherjee said.

### **Urgent need**

IIT-Bombay and IIT-Delhi, which have recently been given the status of Institute of Eminence (IoE) by the HRD ministry, have an urgent need to recruit foreign faculty, since one of the key criteria for the status is to have 30 per cent international faculty. At the moment, Delhi has just three foreign nationals on board, while Bombay has the most of any IIT — nine.

“We are struggling to meet the 30 per cent quota of international faculty. We are trying to create friendly environment for them but what needs to be sorted is easing of norms,” said Mukherjee.

Even outside these two institutes, there is a huge overall shortage of faculty members. Ministry sources say each IIT is at least 300 faculty members short — the older ones have 500 and need to have 800, while the new ones only have about 100 each and need to hit the 400 mark.

“There are about 7,000 faculty members needed across all institutions and this shortage cannot be met with the numbers of PhDs that each IIT is producing. The most number of PhDs that an IIT produces is 300, and not all of them join teaching. This is also one reason we need international faculty,” said an official from the HRD ministry.

### **Part of adjusting to new country**

Foreign nationals who are already teaching at the IITs recall their experience with the authorities as just one of the teething troubles in adjusting to a new country.

Dr Jun Bey Seo, a South Korean national who teaches in IIT-Delhi’s electrical engineering department, said: “Wherever I go, I need to adjust myself to the country, to the culture. I learnt the speed of paperwork in India quite early, when I was completing my joining formalities.

“People confused me about the documents — someone said I would need an Aadhaar card and PAN card, someone said I would not. Then, offices would make me come again and again for documents that they needed. Also, the huge queues everywhere unnerved me, but apart from that it’s alright. I came here because I wanted to experience a new culture.”

A European professor at one of the IITs who did not wish to be identified said: “There are initial troubles with the authorities that we have to face. They want to know why we want to come to India. But eventually it is all an official procedure that we need to complete.”

## **IIT-M team develops low cost dust collector**

<https://timesofindia.indiatimes.com/city/chennai/iit-m-team-develops-low-cost-dust-collector/articleshow/66209192.cms>

We've all seen the people who sweep our roads sweating in the sun and choking on the dust. Now researchers from the Civil Engineering department of IIT-M have come up with a machine to make their jobs easier.

They've named it the 'Low Cost Road Dust Collector'. SM Shiva Nagendra, Professor of Civil Engineering, told TOI that it was basically a tricycle fitted with two brushes and a small solar-powered motor.

The brush in front rotates clockwise and the one at the back goes anti-clockwise while the sweeper pedals along merrily. The fine dust that is thrown up is collected through six suction pipes attached to small solar-powered motor and stored in a container. The coarse particles get pushed to the sides of the road. An added bonus is that no more will the sweepers face respiratory problems because of breathing in fine dust particles.

One of the researchers, Dheeraj Alshetty, said the machine can sweep up 20 kg of fine particles in one hour. The researchers spent Rs55,000 on making the prototype over three months, but they said commercial manufacture would be much cheaper.

"In the prototype we have used heavy steel for making the dust collectors. When it is manufactured on a commercial basis, light weight aluminium sheets can replace the heavy steel, which will make the pedalling easier. Already the prototype has been patented by the team," said Shiva Nagendra.

## **CSIR gets its new Director General in Dr Shekhar C. Mande**

<https://researchmatters.in/news/csir-gets-its-new-director-general-dr-shekhar-c-mande>



In a recent announcement, Dr Shekhar C. Mande, the current Director of the National Centre for Cell Science (NCCS), Pune has been appointed as the new Director General of the Council of Scientific and Industrial Research (CSIR) and the Secretary of the Department of Scientific and Industrial Research (DSIR), India. He succeeds Dr Girish Sahni, who retired on 31st August 2018. CSIR is one of the world's

largest publicly-funded research and development organisations and is known for its contributions in diverse areas of science.

Dr Mande is a leading structural and computational biologist and has more than 100 publications to his credit. His laboratory at NCCS has been involved in research on the structural characterisation of Mycobacterium tuberculosis proteins and the computational analysis of genome-wide protein: protein interactions.

After completing his M.Sc. in Physics from Nagpur University in 1984, Dr Mande obtained his PhD in Molecular Biophysics from the Indian Institute of Science, Bengaluru, in 1991 under the supervision of Prof. M. Vijayan. He started his postdoctoral research at Rijksuniversiteit Groningen, in the Netherlands in 1991 and joined as a senior fellow at the University of Washington, Seattle, USA in 1992.

After returning to India, he joined the Institute of Microbial Technology, Chandigarh, as a scientist and continued till 2001 when he was selected as a Staff Scientist at the Centre for DNA Fingerprinting and Diagnostics, Hyderabad. In 2011, Dr Mande was appointed as the Director of NCCS, Pune, an autonomous Institute of the Department of Biotechnology, Government of India. He also served in various advisory committees for the Government of India.

Dr Mande has several honours and awards to his credit. He is the fellow of all the three major science academies of India—the Indian National Science Academy (INSA), the National Academy of Sciences India (NASI), and the Indian Academy of Sciences (IAS). He received the prestigious Shanti Swarup Bhattacharya Prize for Biological Sciences in 2005.

Expressing his commitment to this new role, Dr Mande responded, “I am personally excited with this opportunity to work with great institutions...” and that “...CSIR will strive to contribute to the growth on Indian society, as it has gloriously done in the last 75 years.”

### **To maintain education quality, UGC to tighten scrutiny of private universities**

<https://www.hindustantimes.com/education/to-maintain-education-quality-ugc-to-tighten-scrutiny-of-private-universities/story-D8aabrNCcoR8PqR9UmLrEL.html>

Hundreds of acts under which private universities are set up in different states will be examined in light of the latest parameters that UGC will soon come up with, a senior official said.



University Grants Commission is already working on revising parameters for the setting up of universities.



To ensure that the mushrooming of private universities across the country does not lead to a decline in the standard of education, the Union human resources development (HRD) ministry has initiated a massive exercise in which hundreds of legislations establishing these varsities will be scrutinised to identify if there are deviations from set norms, according to a senior official familiar with the developments. The exercise, which is expected to begin mid-November, is being led by the regulator of the higher education sector, University Grants Commission (UGC), which has already collected at least 300 state acts. A team of legal consultants working with Niti Aayog will study these acts to give a holistic picture, the official added.

UGC is already working on revising parameters for the setting up of universities. "There have been concerns about the standard of education in the hundreds of private universities spread across the country, and also about maintaining quality. There have been reports of varsities with insufficient infrastructure, including some functioning from just a few rooms," said the ministry official who asked not to be named.

It was felt that a way to address the situation was to have a comprehensive evaluation of the legislations through which these bodies are set up, the official added.

The hundreds of acts under which private universities are set up in different states will be examined in light of the latest parameters that the regulator will soon come up with, said the official. "The idea is to identify any lacunae or gaps that lead to a laxity in the maintenance of educational standards, and ways to address them."

He added that the ministry has taken steps to bring UGC and legal consultants together to address this key aspect following directions from HRD minister Prakash Javadekar.

"The government is in favour of granting more funds and more autonomy to institutions that provide quality education, but ensuring that standards are not diluted is a key premise. Therefore, it is believed this exercise would go a long way in addressing quality concerns," the official said.

Apart from this, UGC is analysing nearly 8,000 cases it finds itself embroiled in, because, officials feel, ambiguities in existing legislations could be the reason behind several of these legal matters. "The study may help in suggesting ways in which the burden on the UGC of such cases may come down in the coming days," said the official quoted above.

Former UGC member Inder Mohan Kapahy said, "Some (private universities in India) are very good and some not as good. At times, even political pressure may lead to the formation of such a body. A key aspect is: the day an act or ordinance is passed, the body can give degrees. There should be some mechanism to ensure quality checks at the time of inception. In India, operations of a varsity have hardly ever been stopped. So it is important to have quality checks at the time of inception, particularly with regard to new private varsities."


**October 13**

## **Technological innovation to drive healthcare interventions**

<https://www.downtoearth.org.in/news/science-technology/technological-innovation-to-drive-healthcare-interventions-61867>

Data standardisation, security and privacy protection have to be addressed and regulated before rolling out such interventions



 Anatomical model of human eye or eyeball with digital artificial microchip on white background.

Age and disease demographics are changing rapidly across the globe. The number of people above 65 years is expected to double and constitute nearly 17% of the world population by 2050. The chronic disease incidence rate is expected to rise to 57% by 2020. These figures highlight the need to enhance quality and efficiency of care with quick response time to health-related emergencies.

To cater to the large patient numbers, care models are transitioning from hospital-centric care to in-home care. Hospital-based interventions will increasingly cater to acute cases only. Real-time monitoring of a person's physiological and biophysical parameters, and relaying health information to care providers becomes essential in achieving this.

Ideas that cut across medicine, biological and engineering sciences, material design, and system innovations are converging to address these challenges. The shift is going to be from legacy products like pacemaker and imaging systems to wearables for general fitness tracking and gait monitoring. Taking a step further, researchers are now developing and testing more focused miniaturized bioelectronic devices for recording and analysing health data for detecting determinants of health and for medical interventions.

In diagnostics, non-invasive bioelectronic skin sensors that measure analytes in biofluids like saliva, tears and sweat are showing promising results in assessing stress levels, and detecting conditions like diabetes and cystic fibrosis. Researchers from the All India Institute of Medical Sciences (AIIMS) and Indian Institute of Technology Delhi (IITD) have developed a biosensor for detecting glucose in saliva samples for diabetes detection. The results can directly be viewed on the user's smartphone. Many such studies are now underway in India.

Conductive gels and patch sensors resembling fashion accessories are also being developed to record cardiac, brain and muscle activity which could complement the traditional blood analysis and clinical examinations. Mechano-acoustic skin sensors that measure speech patterns and internal body

sounds, like swallowing, are being explored to quantitatively measure impact of rehabilitation in patients, such as those recovering from stroke.

In treatment, miniscule implants placed inside the body can cross the blood-brain barrier and deliver drug directly at the target site, even in hard-to-reach internal organs. Such devices have shown promising results in laboratory settings in reducing side effects and toxicity while increasing overall drug efficacy. This could also ensure patient compliance, a step further to the recently approved digital pill, especially in patients on long care and those with compromised cognition.

Certain implants can also electrically stimulate cardiac or brain tissues to treat conditions like irregular heartbeat, certain motor disorders and cognitive impairments. Other implants like, artificial retina and cochlear implants, restore functionalities of damaged tissues. These interventions, being referred to as 'Bioceuticals', could restructure conventional therapeutic options for more efficient outcomes.

In India, a lot of work has now started in this sphere. Results from a few studies have started trickling in, with most of them in development or early stages of testing. Research findings in the journal Scientific Reports by researchers from IIT Kharagpur earlier this year reported bioimpedimetric analysis of cancer cells that efficiently distinguishes their aggressiveness by measuring electric field impedance in laboratory conditions. In another study published in the journal Sensors earlier this year, researchers at IIT Delhi developed a novel low-cost prosthesis based on sensors to enable normal gait kinematics, i.e motion analysis, for lower limb amputees.

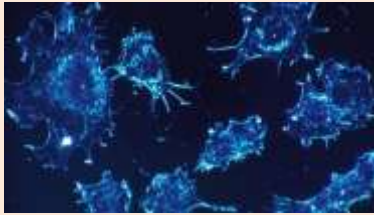
IIT Kharagpur is setting up a Bioelectronics Innovation Laboratory that aims to develop battery-free implantable miniaturized engineering systems for treatment of brain, nerve, muscle or spinal cord disorders by restoring missing neural functions. The proposed coin sized implant will be powered wirelessly and will combine brain activity testing like electrical simulation, bio-potential recording and neuro-chemical sensing for use in rehabilitation and prostheses.

Round-the-clock data collected from bioelectronic devices could replace the present time-point investigations and lead to better management of health condition of patients. In addition, data from multiple people can help develop artificial intelligence algorithms and predictive tools. Such tools have already started showing analytic performance similar, and sometimes better, than manual inspection by a specialist physician. In countries like India that suffer from shortage of qualified doctors in remote areas, such devices have immense potential. However, data standardization, data security and privacy protection have to be addressed and regulated before rolling out such interventions.

In next few years, health monitoring, neural prosthetics and biochemical prosthetics are expected to drive major developments in this space. Although the monitoring devices have already started testing the market in niche patient segments, it may take the implants another 5-10 years to reach health centres as they make their way through developmental and regulatory checkpoints.

**[This research by IIT Roorkee claims to detect and cure cancer economically](https://www.indiatoday.in/education-today/featurephilia/story/iit-roorkee-cancer-cells-research-carbon-dots-1367175-2018-10-13)**  
<https://www.indiatoday.in/education-today/featurephilia/story/iit-roorkee-cancer-cells-research-carbon-dots-1367175-2018-10-13>

***A team of IIT Roorkee researchers led by professor P Gopinath have developed a safe way to detect cancer cells using carbon dots, which will stop the growth of these cells and treat cancer in a cost-effective way.***



A team of IIT Roorkee researchers led by professor P Gopinath have developed a safe way to detect cancer cells using carbon dots, which will stop the growth of these cells and treat cancer in a cost-effective way.

IIT Roorkee researchers have come up with a new way of detecting and treating cancer cells.

But first, let's talk about how cancer is the most dreadful disease one can have.

Cancer is the second leading cause of death and disability around the world

A large number of people die because of cancer than from all the cases of AIDS, tuberculosis, and malaria put together

It has become one of the major causes of death in India. Every year, about 0.4 million deaths occur in India due to cancer (Government of India, 2010).

What's problematic is that most cases of cancer are detected only in the advanced stages, when they are untreatable. This is especially true in developing countries like India.

### **Cost of treatment**

1. Cancer treatment in private hospitals is forbiddingly expensive in India.
2. Non-Hodgkin's lymphoma is a type of cancer that originates in our lymphatic system. Its diagnosis and treatment include lymph node biopsy, bone marrow test, an endoscopy, a PET scan, special anticancer drugs, and six cycles of chemotherapy.
3. All of this may cost around Rs 10,00,000.
4. The main reason is the staggeringly high cost of imported equipment for setting up a cancer hospital and expensive cancer treatment drugs.

However, IIT Roorkee has come up with a new way of detecting and treating cancer in an economical way.

Cancer, up until now was detected by using quantum dots that use toxic metals. These toxic metals are expensive to produce and break down when exposed to light. They can also cause some side effects during diagnosis.

A research team of P Gopinath, Uday Kumar and Bharat Bhushan developed a safe way to detect cancer cells.



Team of researchers: Dr Uday Kumar with Dr P Gopinath, associate professor, and Dr Bharat Bhushan.

The team is working on the development of various polymer based nanocarriers for the delivery of several anticancer agents and also exploring the possibilities of different bio-compatible imaging agents for cancer diagnosis.

The researchers synthesised carbon dots by heating a solution of finely chopped rosy periwinkle plant leaves which when heated under controlled conditions yielded nanosized carbon dots.

#### **What are carbon dots?**

Carbon dots (C-dots) are light-emitting (luminescent) nanoparticles that can be used to track biological processes inside cells. They are less toxic than similar alternatives, making them more suitable to be used in live biological systems.

#### **What is the difference between quantum dots and carbon dots?**

There is not much difference between the two, except that quantum dot is a generalised term(nanomaterial of any kind), while carbon dot is a nanomaterial of carbon only.

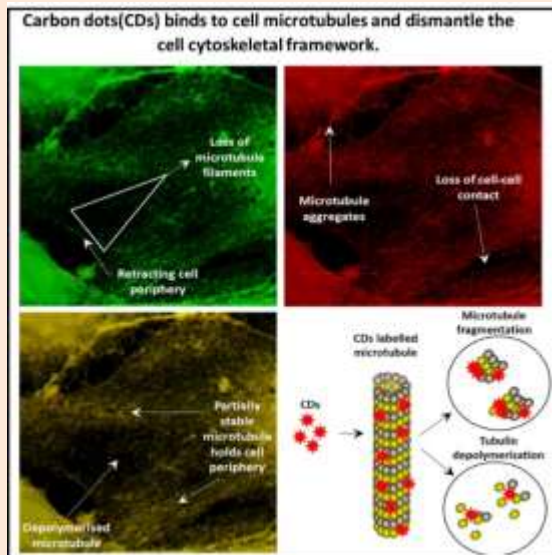
Carbon dots are highly biocompatible and biodegradable.

What's interesting is that not all carbon dots are toxic. There are also synthesized carbon dots from other sources which are non-toxic.

"So, when we synthesize carbon dots from a medicinal plant like periwinkle, it will retain the toxic property," says P Gopinath, Associate Professor, Department of Biotechnology and Joint Faculty in Centre for Nanotechnology, IIT Roorkee.

When incubated with specific cancer cells, the carbon dots entered the cells.

These cells showed enhance fluorescence, indicating that the dots reached inside the cells. The dots selectively bound to microtubules (filamentous intracellular structures) that support cell division and help transport various molecules inside the cells.



Carbon dots binds to cell microtubules and dismantle the cell cytoskeletal framework.

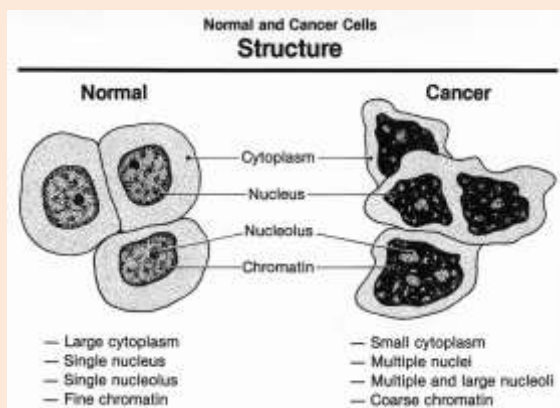
A key property of these carbon dots is that they destabilise the structure of the microtubules and convert them into fragments, making the dots useful to stop the growth of cancer cells.

"Because of the fluorescence property, carbon dots can light up and we can also track the movement of the disease using carbon dots," says prof. Gopinath.

This is an economical and eco-friendly way to produce fluorescent carbon dots from the leaves of a common medicinal plant, adds Gopinath.

The IIT Roorkee research team is also developing methods wherein carbon dots could be targeted to cancer cells in particular.

"As this is nonspecific, it can target even the normal cells so when we devise a method to target the cancer cells, then we can spare the normal cells from this activity and we can kill only the cancer cells," says Gopinath.



Difference between normal and cancer cell structure.

Before choosing periwinkle leaves for this research, what were the previous resources you used to achieve the same result and why was periwinkle the most ideal?



Catharanthus roseus, commonly known as the Madagascar periwinkle, rose periwinkle, or rosy periwinkle, is a species of flowering plant in the dogbane family Apocynaceae.

"We have also done green synthesis of multifunctional carbon dots from coriander leaves and investigated their potential application as antioxidants, sensors and bio-imaging agents. However, they are non-toxic and do not kill cancer cells."

"A rosy periwinkle plant is already in use in ayurvedic medicine for treatment of various diseases. Therefore, we have selected this plant source and synthesized carbon dots from this which can kill cancer cells," Gopinath explains.

#### **How will your research help in tackling cancer in India?**

Therapeutic choices will be affordable and easily accessible in India.

"Our research aims to develop low-cost efficient anti-cancer therapeutic options. If this nanotag based approach is successful in animal and clinical trials, then it may be a low-cost nano-medicine to cure this dreadful disease," says Gopinath.

Have you approached hospitals and companies in India as well as abroad to adopt this technique? What have been the responses?

"We have to understand the complete molecular mechanism and investigate the therapeutic efficiency using animal models before we approach any companies. It will take another 10-15 years to get this drug into the market," says P Gopinath.

#### **IIT Kharagpur enters into collaboration with Norwegian varsity**

<https://indianexpress.com/article/education/iit-kharagpur-enters-into-collaboration-with-norwegian-varsity-5400433/>

***Both IIT Kharagpur and NTNU have trans-disciplinary academic and research programs encompassing science and technology, medicine, social sciences to arts and fine arts and more areas of common interest will be explored in future***

The IIT Kharagpur and Norwegian University of Science and Technology (NTNU) have signed an MoU to facilitate cooperation in research and education between the two institutes, an IIT KGP statement said on Friday. NTNU is an expert in Hydro Power, Ocean Modelling, Deep Sea Resources and Marine Technology which will be key areas of focus under this MoU.

IIT Kharagpur has three departments and centers working in these areas — the Department of Ocean Engineering and Naval Architecture, the Center for Oceans, Rivers, Atmosphere and Land Science and the Department of Civil Engineering with its core areas in Hydrodynamics, Coastal, Marine and Hydraulic Engineering and Wave Modelling, IIT KGP Deputy Director Prof Sriman Kumar Bhattacharyya said.

Both IIT Kharagpur and NTNU have trans-disciplinary academic and research programs encompassing science and technology, medicine, social sciences to arts and fine arts and more areas of common interest will be explored in future. Prof Bhattacharyya, and NTNU Rector Dr Gunnar Bovim signed the MoU in New Delhi on October 11. Nils Ragnar Kamsvg, Ambassador of Norway to India, was present on this occasion.

Following the meeting of the Prime Ministers of India and Norway in April this year, the Norwegian Embassy has been seeking to engage with top educational institutions in India, the statement said.