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Highlights of the Week@IITD

छात्रों ने बनाया ऐसा शैंपू जो बिना पानी के धोएगा बाल

<https://www.livehindustan.com/career/story-iit-delhi-students-made-waterless-shampoo-for-humans-2172840.html>

आईआईटी दिल्ली में शोधकर्ताओं ने एक ऐसा वाटरलेस शैंपू तैयार किया है, जिसकी मदद से लोग बिना पानी के अपने बाल को साफ रख सकेंगे। यह उन्हें नहाने का एहसास कराएगा। आईआईटी दिल्ली में 22 सितंबर को मनाए जाने वाले उद्योग दिवस से पहले गुरुवार को संस्थान में शोध करने वाले छात्रों ने अपने उत्पाद प्रदर्शित किए।

आईआईटी दिल्ली के शोधकर्ता शिवम ने एक ऐसा ड्रोन पेश किया है जो ऊंचाई पर सैन्य कार्यों में मददगार साबित होगा। उनका ड्रोन 25 किलोग्राम तक वजन उठाने में सक्षम है। उनका ड्रोन इस तरीके से तैयार किया गया है कि ऊंचाई पर भी तेजी से उड़ सकता है। इसके ऊपर के पंख इस तरह डिजाइन हैं कि यह बेहद कम शोर करता है। वे लेह और लद्दाख के इलाकों में इसका परीक्षण करेंगे।

वारलैस शैंपू

आईआईटी दिल्ली के प्रोफेसर अनुराग राठौर के निर्देशन में संस्थान के वर्तमान और पूर्व छात्रों द्वारा बनाए गए शैंपू और बॉडी वॉश का प्रदर्शन किया गया। इसमें पानी की जरूरत नहीं पड़ती। दिल्ली के रहने वाले पुनीत ने 'क्लेन्स्टा इंटरनेशनल' स्टार्टअप शुरू किया है। उन्होंने बताया कि वाटरलेस शैंपू सैनिकों को काफी फायदा पहुंचाएगा। उन्होंने बताया शैंपू और बॉडी बाथ लगाकर साफ तौलिये से पोछना होता है। पुनीत के साथ इस प्रोजेक्ट में आईआईटी दिल्ली के पीएचडी छात्र विनीत भी शामिल हैं। .

60 रुपये में सांप के काटने का इलाज करने वाली दवा

सांप के काटने पर अब सस्ती विषरोधी दवा के जरिए इलाज हो सकेगा। इसकी कीमत 60 से 70 रुपये के करीब होगी। अभी एक डोज की कीमत 500 रुपये है। आईआईटी दिल्ली के प्रोफेसर अनुराग राठौर ने इसे तैयार किया है। प्रोफेसर अनुराग के मुताबिक दवा को आसानी से सुदूर इलाकों में ले जाया जा सकेगा। वर्तमान में उपलब्ध विषरोधी को ठंडे स्थान पर रखना अनिवार्य है। शोध में तैयार दवा का इस्तेमाल अधिक तापमान पर भी हो सकेगा।

1 घंटे में टीबी की बीमारी के बारे में पता चल जाएगा

इंडस्ट्री दिवस से पहले आईआईटी के शोधकर्ता छात्रों की एक ऐसी डिवाइस के बारे में भी बताया गया जो सिर्फ एक घंटे में टीबी की बीमारी का पता बता देती है। शोधकर्ताओं का दावा है कि आमतौर पर टीबी की जांच में 4 दिन का समय लगता है। शोधकर्ताओं ने बताया कि टीबी एक खतरनाक बीमारी है। जब यह शुरुआती स्टेज में होती है, तभी इसका पता लगना और उपचार जरूरी होता है।

रामगोपाल राव (डायरेक्टर प्रोफेसर, आईआईटी दिल्ली) ने कहा - 22 सितंबर को हमारे संस्थान में इंडस्ट्री दिवस मनाया जाएगा। कार्यक्रम में कई बड़ी तकनीकी कंपनियों के सीईओ मौजूद होंगे। इस साल आईआईटी दिल्ली के 400 छात्रों को पीएचडी की डिग्री मिलेगी। आईआईटी संस्थानों में इस साल सबसे अधिक पीएचडी छात्र हमारे संस्थान से ही निकलेंगे।

Research crosses boundaries at IIT-Delhi, touches new horizons

Sept 10, 2018 <https://indianexpress.com/article/education/research-crosses-boundaries-at-iit-delhi-touches-new-horizons-5347790/>

This unusual research collaboration has been made possible through the School of Interdisciplinary Research (SIRe) which was set up at IIT-D last October.

Shashank Shekhar, 39, did his MBA from IIT-Delhi, and is now a PhD candidate at the institute, working to build a revenue model for bioinformatics research and development. One of his three supervisors is from the Department of Management Studies; the second is a professor at the Department of Chemistry who also has responsibilities as a coordinator at the Centre of Excellence for Bioinformatics and Computational Biology; the third is from the School of Biological Sciences.

This unusual research collaboration has been made possible through the School of Interdisciplinary Research (SIRe) which was set up at IIT-D last October. Its twin mottos are “Collaboration over Competition” and “Breaking Departmental Barriers”, and it’s an effort by IIT-D to bring about fundamental change in the ways in which academic research happens in India.

“The basic objective of this school is to actively encourage researchers and students to stretch their boundaries and collaborate with people from other disciplines to help bring broader perspectives and new ideas to research problems,” Dr Arunachalam Ramanan, professor of chemistry and chairperson of SIRe, said. Collaboration has so far been limited mostly to within departments, Dr Ramanan said.

Even where IIT-D researchers have worked on interdisciplinary projects with researchers from other institutes, the “scope (of the collaboration) was limited”, Dr Ramanan said. “This school is going to provide a platform and help bring researchers from different backgrounds together to find solutions to a range of problems.”

Shekhar’s research is one of the projects being carried out under the aegis of SIRe. “The rising demand for personalised medicines and clinical diagnostics is promoting the use of bioinformatics,” Shekhar said. “The purpose of this research is to study the sector and its growth patterns, analyse strengths and weaknesses, and look for a commercially viable business model that would ensure the sector’s sustainability and longevity.”

While Shekhar's research is situated at the intersection of bioinformatics and management, another project, aimed at managing risks from emerging pollutants in urban environments, has brought together faculty from IIT-D's Departments of Civil Engineering and Biochemical Engineering and Biotechnology.

"We have just taken a student for this project from the civil engineering department," said Dr Chakma Sumedha, assistant professor of civil engineering. "As evidence of the impact of emerging contaminants on the natural environment mounts, there is an urgent need to manage the exposure to these compounds. We will be working to map these compounds and their byproducts in different urban environmental settings. It will help estimate the quantum of pollutants, and their possible sources," Dr Sumedha said. Such research will be particularly useful for a city like Delhi, Dr Ramanan said.

The projects were selected by a committee of experts consisting of faculty from multiple departments. SIRE now has 14 PhD students with 18 faculty members from nine departments, two centres and one school. IIT-D Director Dr V Ramgopal Rao, a professor of electrical engineering, is part of a project with a member of the Department of Physics faculty. Some projects have funding; for others, the PhD candidates are expected to have a scholarship of some kind. Once selected for the project, students are expected to do basic coursework in either of the relevant subjects related to the project.

Most projects are currently being pursued at the science, engineering, humanities and management centres at IIT-D. The institute, which was awarded Institute of Eminence status, has research MoUs with DRDO, AIIMS and JNU, and one already ongoing project involves faculty from the physics department of IIT-D and the School of Physical Sciences at JNU.

"As we are a very new school, we do not have a proper building or space yet. We function as a virtual school. So, for now it is limited to PhD students. Maybe in two years, the school can start MS (Research) and increase the number of PhD students to 25 in a year or two. At present there are no plans for an undergraduate programme," Dr Ramanan said.

Mahesh Rangarajan, professor of Environmental Studies and History at Ashoka University, said, "Interdisciplinary is a fact of life, and it is a very good idea as collaboration helps raise questions of significance from varying perspectives. Interdisciplinary research throws new light on issues; however, it should not be done at the cost of the core discipline.

Sept 14

आईआईटी कानपुर ने दिया था कम्प्यूटर पर हिन्दी टाइपिंग का तोहफा

<https://www.livehindustan.com/uttar-pradesh/story-hindi-diwas-special-iit-kanpur-had-given-hindi-typing-gift-on-computer-2172807.html>



गूगल से पहले कम्प्यूटर पर हिन्दी लिखने का तोहफा पूरी दुनिया को आईआईटी कानपुर ने दिया था। संस्थान के प्रो. आरएमके सिन्हा ने लंबी रिसर्च के बाद करीब 32 साल पहले ही कम्प्यूटर पर हिन्दी लिखने की तरकीब खोज निकाली थी। हालांकि इसे गूगल ने और डेवलप कर आसान कर दिया है। प्रो. आरएमके सिन्हा का अब निधन हो चुका है। उनके साथ रहे प्रो. अजय कुमार जैन अब भी संस्थान में कम्प्यूटर साइंस एंड इंजीनियरिंग विभाग में शिक्षक हैं।

आईआईटी कानपुर में कम्प्यूटर साइंस एंड इंजीनियरिंग विभाग में प्रो. सिन्हा के सहयोगी रहे प्रो. अजय कुमार जैन ने बताया कि करीब 32 साल पहले कम्प्यूटर पर सिर्फ अंग्रेजी लिखी जा सकती थी। तब प्रो. सिन्हा ने कम्प्यूटर पर हिन्दी या अन्य भारतीय भाषा के प्रयोग को लेकर रिसर्च शुरू की थी। लंबे प्रयास के बाद प्रो. सिन्हा ने कम्प्यूटर पर हिन्दी लिखने की प्रक्रिया खोज निकाली।

'जिष्ठ प्रणाली' दिया था नाम

प्रो सिन्हा ने कम्प्यूटर पर हिन्दी लिखने की अपनी ईजाद को 'जिष्ठ प्रणाली' नाम दिया था। इस प्रणाली के तहत अंग्रेजी अक्षरों की सहायता से ही कम्प्यूटर पर हिन्दी लिखी जा सकती थी। इसके लिए उन्होंने कम्प्यूटर पर एक विशेष प्रकार का सॉफ्टवेयर भी डेवलप किया था। हालांकि देश में कम्प्यूटर का अधिक चलन न होने के कारण हिन्दी लिखने की 'जिष्ठ प्रणाली' अधिक प्रचलन में नहीं आ सकी। इससे इसका प्रयोग सिर्फ एजुकेशनल संस्थानों में ही होता रहा। इसी प्रणाली के तहत कुछ साल बाद आईआईटी कानपुर ने अंग्रेजी से हिन्दी अनुवाद की प्रक्रिया खोज निकाली।

अंग्रेजी से हिन्दी अनुवाद भी दिया है आईआईटी ने

अंग्रेजी नहीं आती है तो कोई बात नहीं। गूगल बाबा हैं न। यह विचार सभी के मन में आता है। गूगल पर अंग्रेजी से हिन्दी ट्रांसलेशन डालते ही कठिन से कठिन शब्दों का अर्थ भी आसान हो जाता है। यह खोज है गूगल की। शायद आप भी यही सोच रहे होंगे। मगर अंग्रेजी से हिन्दी अनुवाद का तोहफा गूगल से पहले ही आईआईटी कानपुर ने दे दिया था।

25 साल पहले खोजी थी तरकीब

करीब 25 साल पहले आईआईटी कानपुर के प्रो. आरएमके सिन्हा और प्रो. अजय कुमार जैन की अगुवाई में पीएचडी छात्रों की एक संयुक्त टीम ने लंबी रिसर्च के बाद इसमें सफलता पाई थी। टीडीआईएल (टेक्निकल डेवलपमेंट ऑफ इंडियन लैंग्वेज) प्रोजेक्ट के तहत इसकी शुरुआत हुई थी। आईआईटी कानपुर के दो विशेषज्ञों ने अंग्रेजी से हिन्दी और हिन्दी से अंग्रेजी अनुवाद की शुरुआत की। इसमें सफलता के बाद उन्होंने यह प्रोजेक्ट सरकार को सौंपने के साथ अन्य आईआईटी को ट्रांसफर कर दिया। इसके बाद इसका और विकास कर आईआईटी ने बहुत जल्द एक दर्जन से अधिक भाषाओं का दूसरी भाषा में अनुवाद संभव कर दिखाया।

कानपुर: आईआईटी का 'फ्यूल क्वांटिफायर' रोकेगा पेट्रोल-डीजल की चोरी

<https://www.livehindustan.com/uttar-pradesh/story-iit-fuel-quantifier-protect-us-from-petrol-and-diesel-theft-2172798.html>



आपकी गाड़ी में पेट्रोल पंप वाले ने कम तेल डाला है या गाड़ी से तेल चोरी हो गया है, तो परेशान होने की जरूरत नहीं है। आईआईटी कानपुर का 'फ्यूल क्वांटिफायर' अपनी गाड़ी के तेल की एक-एक बूँदा का हिसाब देगा। डिवाइस आपको मोबाइल पर अपडेट देता रहेगा कि गाड़ी में कितना तेल है। यह भी पता चलेगा कितना तेल निकाला गया और कितना टैंक में बचा है।

आईआईटी कानपुर के मैकेनिकल इंजीनियरिंग विभाग के दो शोध छात्र छात्र महेंद्र गोहिल और माधवराव लोंधे ने इस 'फ्यूल क्वांटिफायर' डिवाइस को तैयार किया है। डिवाइस को चार पहिया और भारी वाहनों में भी फिट किया जा सकता है। यह डिवाइस ब्लू-टूथ, जीपीएस और वाई-फाई के जरिए एक विशेष एप से कनेक्ट होगा। वाहन में डिवाइस लगाने के बाद एप मोबाइल में डाउन लोड करना होगा जिसके बाद आपको अपने मोबाइल स्क्रीन पर तेल की बूँद-बूँद का हिसाब मिलने लगेगा। इसके बाद पेट्रोल पंप पर तेल डलवाने के लिए मशीन की रीडिंग देखने की भी जरूरत नहीं पड़ेगी।

छात्रों के मन में कैसे आया ख्याल

महेंद्र गोहिल और माधवराव लोंधे ने बताया कि पेट्रोल पंप पर पेट्रोल और डीजल की चोरी से हर व्यक्ति परेशान है। इस समस्या से हम भी कई बार वाकिफ हुए तो ख्याल आया कि क्यों न कुछ ऐसा डिवाइस बनाया जाए, जिससे इस समस्या से छुटकारा मिल सके। फिर हमने एक विशेष आकार (कोन जैसा) का डिवाइस तैयार किया।

कई पंप चोरी कर रहे थे तेल

आईआईटी के एक सर्वे के अनुसार यूपी में 6745 पेट्रोल-डीजल पंप हैं। पिछले दिनों एसटीएफ और ऑयल कंपनियों के अधिकारियों के छापों में 345 पंपों पर ईंधन की चोरी पकड़ी गई थी। जबकि न जाने कितने पंप ऐसे हैं, जो लगातार चोरी कर रहे हैं। इन चोरियों को देखते हुए ही इस डिवाइस को बनाने का ख्याल आया है।

डिवाइस और एप का है पेटेंट

माधवराव लोंधे ने बताया कि इस डिवाइस को आईआईटी कानपुर के मैकेनिकल विभाग के प्रो. नचिकेता तिवारी की देखरेख में तैयार किया है। डिवाइस के लिए भी एप भी तैयार कर लिया है। इसका पेटेंट भी करा लिया गया है।

'फ्यूल क्वांटिफायर' ऐसे करेगा काम

'फ्यूल क्वांटिफायर' प्रति यूनिट टाइम के हिसाब से तेल नापता है। नोजल से टंकी में तेल जाने की गति चाहे तेज हो या धीमी, उसका असर रीडिंग पर नहीं पड़ेगा। डिवाइस में कई सेंसर लगे हैं। सबसे पहले तेल मैग्नेटिक रोटार में जाता है। इसमें लगे ब्लेड घूमने लगते हैं और तेल की रीडिंग आने लगती है। डिवाइस की रीडिंग एकदम सही आती है। छात्र महेन्द्र गोहिल ने बताया कि यह 98.5 फीसदी से अधिक सही रीडिंग बताएगा। अगर सेंसर में गड़बड़ी हुई तो रीडिंग में जरूर अंतर आ सकता है। यह अंतर 1000 एमएल में 5 एमएल का हो सकता है।

बाइक के लिए डिजाइन हो डिवाइस

अभी यह डिवाइस सिर्फ तीन पहिया, चार पहिया या बड़े वाहनों में ही लगेगा। इसे फ्यूल टैंक के ढक्कन की जगह लगा दिया जाता है। इससे कार की डिजाइन में किसी तरह का कोई अंतर नहीं आता। मगर इसे बाइक के फ्यूल टैंक में लगाया जाए तो काफी बदलाव करना होगा। जो शायद ग्राहकों को पसंद नहीं आएगा इसलिए नई डिजाइन की डिवाइस तैयार कर रहे हैं।

1000 रुपये का होगा डिवाइस

डिवाइस और मोबाइल एप जल्द ही कामर्शियल प्रयोग के लिए बाजार में होगा। इसकी कीमत लगभग 1000 रुपये के करीब होगी। अभी कई कंपनियों से वार्ता चल रही है। कोशिश है कि इसकी कीमत और कम की जा सके। ताकि इसका उपयोग वृहद स्तर पर हो सके।

IIT-J: Rajasthani clay can remove fluoride from groundwater

<https://timesofindia.indiatimes.com/city/jaipur/iit-j-rajasthani-clay-can-remove-fluoride-from-groundwater/articleshow/65802911.cms>



Indian Institute of Technology-Jodhpur (IIT-J) has devised a formula to remove fluoride from water through locally available resources. Head of Chemistry department Rajesh Kumar Sharma has told TOI that fluoride content in groundwater (which is a prime source of drinking water) in most parts of Rajasthan is several times higher than the permissible limits leading to health hazards. The findings of the research can help families to get rid of the problem by using locally available resources.

Sharma partially shared his formula which is patented says that Rajasthani clay added with hydroxyapatite (a natural mineral in bones and teeth enamels and easy to synthesize in laboratory) and pods of Prosopis Julifera (Vilayati Babool) formed an effective system for fluoride removal from

water. "The Rajasthani clay is rich in silica and alumina added with advised formula deters 90% of fluoride from the water," said Sharma. The samples have been scientifically tested. It can be beneficial for people in the several regions in the state.

The ideal way suggested by Sharma is removing the fluoride through the earthen pots in households. "The filters could be made by traditional potters and can be used as traditional "Matkas" where filtered water will be drinkable. This is most inclusive way to reach out the formula to the needy people," said Sharma.

Counting the benefits of taking the household approach, Sharma, "Every household can take up the responsibility of their own family. By doing so they are not putting any burden on the government or any municipality," said Sharma. The IIT-J has planned to take out this developed technique to the ground soon. They will pass on the method to potters so that they manufacture earthen pots to serve the purpose.

The continuous intake of fluoride can cause severe health hazards like dental, skeletal, cardiovascular, gastro intestinal disorder and other neurological effects.

JEE-Main changes from 2019

<https://www.telegraphindia.com/india/jee-main-changes-from-2019-259162>

The Joint Entrance Examination (JEE) Main, the undergraduate engineering admission test, will be held as a purely computer-based exam in 2019 with multiple sets of question papers and the topper of each paper will be treated as equal performers with a 100 percentile score.

The new National Testing Agency (NTA), which will hold the exam, will introduce several changes to the test taken by over 11 lakh students every year.

The JEE-Main is the gateway for admission into BTech courses in the National Institutes of Technology (NITs). The top 2.2 lakh scorers are allowed to take the JEE-Advanced examination, the entrance test for admission into the Indian Institutes of Technology (IITs).

The JEE-Main was being conducted by the Central Board of Secondary Education (CBSE) since 2013 in pen-and-paper mode as well as through computers. The test asks questions on mathematics, physics and chemistry.

The NTA will hold the test in two cycles - the first cycle between January 6 and 20, 2019, and the second between April 6 and 20. The test will have multiple sets of question papers. Since each question paper will have different sets of questions, there is a possibility of grievances based on the level of difficulty. The NTA has decided to adopt the percentile system to address possible grievances arising from the differences in difficulty.

The percentile score of a student is obtained by dividing the number of students below him with the number who appeared, the ratio multiplied by 100. The topper of each session will get the same percentile of 100. The marks obtained in between the highest and lowest scores will also converted to appropriate percentiles.

Since there will be several sets of question papers, there will be several 100 percentile scorers. The NTA will work out a merit order by looking at the score in mathematics and then physics. Higher score in mathematics and that in physics will be used as tie-breakers, a NTA official said.

The percentile score will be the normalised score for the examination and it will be used for preparing the merit list. The percentile scores will be calculated up to seven decimal places.

An NTA official said the question sets would follow the same standardisation in terms of setting difficult and easy questions in each paper. The date of the examination would randomly be allotted to the candidate to reduce a possible grievance that students of a particular region were made to appear in a difficult paper.

"This model of normalisation has proved to be successful in selection of students for admission into the All India Institute of Medical Sciences (AIIMS). We examined the AIIMS system and adopted it," the official said.

An IIT Delhi teacher said that the IITs would allow the 2.5 lakh top scorers of the JEE-Main to appear in the JEE-Advanced in 2019. In 2018, 2.2 lakh top scorers were allowed to take the test. "There will be increase in number of BTech seats in all IITs. The JEE-Advanced will allow 2.5 lakh top scorers of the JEE-Main. The NTA's proposed method of normalisation appears to be reliable model for selecting meritorious students," the faculty member said.

Sept 13

Quality has dipped because of JEE format. Students are guessing the right answer: Prof Das

<https://timesofindia.indiatimes.com/home/education/news/quality-has-dipped-because-of-jee-format-students-are-guessing-the-right-answer/articleshow/65793785.cms>



IIT-Ropar was among the eight new Indian Institutes of Technology established 10 years ago. When Prof Sarit Kumar Das, a professor of mechanical engineering at IIT-Madras, became its director in 2015, the fledgling IIT had 650 students. That number is now 1,550, and is likely to increase to 2,500 by 2019.

Das speaks to TOI on the problems with JEE, brain drain and why the IIT system doesn't produce well-rounded students. Here are the excerpts...

Are you happy with the quality of students coming to the IITs?

There has been a dip in quality in the last 20 years. There are many reasons for this, but a key reason is change in the JEE (Joint Entrance Examination) format from problem solving to multiple choice. Now, you do not solve the problem, but try to guess the right answer. Guessing can be done by elimination, but for solving the problem one must know how to tackle it. The current system does not test your problem-solving ability.

Should we revert to the old system?

Though I feel the old system should be brought back, there are doubts about its practicality. People will go to court and there will be thousands of cases.

What, according to you, is a well-rounded student?

Our system is not capable of producing well-rounded students. As a professional, you also require interpersonal skills, ideas, managerial skills and survival skills which we quite often do not impart. The world's best universities do not admit people on the basis of one examination. They make a qualitative evaluation based on a student's projects - social and scientific - communication skills and ideas. We are not able to catch the creativity; this is where we are lacking. In the last five to eight years, there is a conscious effort at IITs to change that. We have started giving emphasis to humanities in the curriculum.

What would you say about students outside the IIT universe?

It is a myth that only IIT students are the best. A large number of very capable students are outside the IIT system. The IIT exam is such that the outcome depends upon how you performed on one particular day. You missed two problems, the rank goes down a couple of thousand points.

A large chunk of engineering grads go on to do an MBA. Doesn't it defeat the purpose of an IIT education?

I used to think the same way when I started my teaching career. Today, my view has changed. At 18, no one knows what his\her aptitude is. Sometimes you come to IIT due to peer and family pressure. If, after passing out of IIT, you can become a Raghuram Rajan or Manohar Parrikar, what is the problem? The IITs should not only aim at producing an engineering workforce, but leaders in every walk of life.

Do you see any change in the 'brain drain' trend?

Twenty years ago, I taught a class of 85 students at IIT-Madras. Later, I came to know that 67 of them had gone abroad as there were hardly any opportunities in the country. Five years ago, I taught a class of 120 at the same institution; only 19 went abroad. This is the scenario across IITs - hardly 10% are going abroad. Students are getting jobs in big companies here. They have also started thinking about startups, which was not the case 10 years ago.

What changes are needed to make the system more productive?

First, we have to come out of this so-called "socialist mode" of trying to provide equal salaries to all.

One of the killers of the system is the pay scale. As a director, I can neither reward performance nor stop the salary of someone who is not performing. In foreign universities, one has to prove oneself or be kicked out. Only the best remain. In our system, we cannot throw out people. As for students, they should be given freedom to choose what they want to study. The old concept of teaching everything in an engineering college is a thing of the past.

IIT-Patna to award gold medals to 3 students today

<https://timesofindia.indiatimes.com/city/patna/iit-patna-to-award-gold-medals-to-3-students-today/articleshow/65787878.cms>

Three meritorious students (MTech, BTech and MSc) will receive gold medals at the sixth convocation ceremony of Indian Institute of Technology-Patna (IIT-P) to be organized at Gyan Bhawan on Thursday.

The institute will also award silver medals to five BTech, eight MTech and three MSc students who have secured the highest marks in their respective branches. Altogether 282 students — 173 from BTech, 72 from MTech, 22 from MSc and 15 PhD scholars — will get their degrees on the occasion.

Besides, cash prizes will be given to 14 students for their outstanding projects. Six BTech students will receive Rs 5,000 each whereas eight MTech students will get Rs 7,500 each at the convocation ceremony. The Kedar Nath Das Memorial Award will be given to one student of the department of computer science and engineering for all-round performance, excellent organizational abilities and leadership qualities.

While scientist Manas Bihari Verma will be the chief guest, IIT-Kanpur's deputy director Minanidra Agarwal and IIT-P's board of governors' chairman Ajai Chowdhry will be the guests of honour at the event.

Students, participating in the ceremony, will be dressed in traditional attires. While boys will wear white and off-white kurta-pyjama with Kolhapuri chappals, girls will attend the function in a light coloured sari or salwar-kameez.

IIT-P director Prof Pushpak Bhattacharyya will present the annual report of the institute on the occasion. A day after the convocation ceremony, IIT-P will organize an alumni meet for its former students on its Bihta campus on Friday.

More than 200 students attended a rehearsal ceremony of the convocation at Gyan Bhawan on Wednesday.

Sept 12

IBM, IIT Bombay team up to accelerate AI research in India

https://www.business-standard.com/article/news-ani/ibm-iit-bombay-team-up-to-accelerate-ai-research-in-india-118091200570_1.html

IBM and IIT Bombay on Wednesday announced that the university will join the AI Horizons Network as part of a multi-year collaboration to advance AI research.

The Department of Computer Science and Engineering at IIT Bombay is one of the preeminent research institutions in the world, with a long history of leadership in data mining and information retrieval systems.

By joining the AI Horizons Network, IIT Bombay will pair its world-class faculty and top graduate students with leading AI scientists from IBM Research - India to advance and accelerate the application of AI, machine learning, natural language processing and related technologies to business and industry.

Teams will investigate new techniques for knowledge representation across documents, graphs, charts, and other forms of multi-media content. This area of research will be critical in helping to develop new AI applications in key industries such as financial services, retail and healthcare, which rely heavily on rich, multi-modal content.

The collaboration will also work to advance the field of training and building domain-specific AI agents (chatbots), which are designed to aid humans in complex decision making such as making trading and investment choices in financial services. Additionally, work is planned to explore new, domain-neutral training approaches which could enable faster, more efficient training of AI systems.

"We have always had strong collaborations with the leading academic institutions in India," said Arvind Krishna, senior vice president, Hybrid Cloud and director, IBM Research.

"Through this collaboration with IIT Bombay, we aim to accelerate the pace of innovation for AI in India, working hand-in-hand with some of the top scientists and research scholars in the country," added Krishna.

"This partnership will enable IIT Bombay faculty to work in collaboration with researchers around the world on the frontiers of Artificial Intelligence focusing on industrially relevant problems and will provide access to large data sets. We look forward to fruitful collaboration, which will make a significant impact on the field," said Prof. Devang Khakhar, Director, IIT Bombay.

IIT-KGP, Canadian varsity ink MoU on academic partnerships

https://www.business-standard.com/article/news-ians/iit-kgp-canadian-varsity-ink-mou-on-academic-partnerships-118091201338_1.html

IIT-Kharagpur has signed a pact with Carleton University of Canada to support research collaboration, capacity building and other academic partnerships.

Under the Memorandum of Understanding (MoU), both institutions will focus on opportunities in student and faculty exchanges and professional development programmes, IIT-Kharagpur said in a statement here on Wednesday.

The two institutions will also explore the possibilities of collaborative master's programmes and jointly supervised Ph.D students.

The MoU will cover interaction among faculty on joint research projects and research visits and, when necessary, joint applications for research funding from external agencies.

"We are happy to sign the MoU with Carleton University. We look forward to a long and fruitful collaboration," IIT-Kharagpur Deputy Director Sriman Kumar Bhattacharyya said.

Carleton is focussing in areas such as autonomous vehicles and technology enablers for smart cities. IITKharagpur has similar research focus on intelligent transportation, future of cities, digital convergence and centre of excellence in artificial intelligence.

"This new partnership is a beginning of a long-term collaboration with students exchanges and launch of exciting professional development programmes," said Karen Schwartz, Associate Vice-President, Research and International, Carleton University.

Discussions are on between the Department of Systems and Computer Engineering at Carleton University and Department of Electronics and Electrical Communications Engineering at IIT-Kharagpur for dual-degree programs for master's and doctoral students.

Plans are also in place for distance education offerings in data analytics, cybersecurity and management leadership, which will be jointly taught by experts from both institutions.

Funding for research and innovation is improving: Clarivate Analytics

<https://www.financialexpress.com/industry/funding-for-research-and-innovation-is-improving-clarivate-analytics/1310165/>

Clarivate Analytics accelerates the pace of innovation by providing insights and analytics to clients around the world, enabling them to discover, protect and commercialise new ideas, faster.

Clarivate Analytics accelerates the pace of innovation by providing insights and analytics to clients around the world, enabling them to discover, protect and commercialise new ideas, faster. Recently, it brought out the 'State of Innovation – India' report that looks at the Indian innovation landscape against the backdrop of patent trends in Asia. "We are a data analytics provider and our mission is to accelerate the pace of innovation," says Jay Nadler, CEO, Clarivate Analytics. Nadler and Arvind Pachhapur, vice-president, IP & Science, Clarivate Analytics, deep dive into the Indian innovation scenario and discuss key insights from the report, in an interaction with Sudhir Chowdhary. Excerpts:

What are the key findings from the 'State of Innovation—India' report (2015-17)? What are the broad trends that have emerged with regard to patent activity in the country?

Jay Nadler: Globally, India ranks sixth in terms of number of patents published, considering European Patent Office as a single entity. If you come one level down and look at just Asia, India comes out fourth as China, Japan and Korea are ahead of India. Asia is a hot spot of innovation. Every year Clarivate Analytics publishes the Top 100 Global Innovators list, and 45 corporations on this list are from Asia. This number has increased considerably from the past year. India is poised to grow rapidly, if we look at the growth rate for 2012-17, only China (15.5%) is ahead of India (10.8%). Given the right impetus, if India continues to steer forward at the same rate, it will march ahead on the Asian as well as world charts.

Arvind Pachhapur: Within India, we have analysed the India priority inventions, that is, the applications first filed in India. The top technology categories in terms of volume of India priority

patents published in the period 2015-17 are computing, polymers and plastics, communication and pharmaceuticals. The list for 2012-17 remains the same, the only change being the order of communication and pharmaceuticals on the list. In terms of growth rates (CAGR) during 2012-17, the top categories are computing (25.5%), communications (25%) and automotive (24.1%). Of these, automotive (44.2%) and communication (41.7%) have further picked up pace in 2015-17. It is motivating to note that of the 10 categories which we found to be the top 10 focus areas for Indian innovators, all of them showed an accelerating growth rate but for electric power engineering that showed a decline in growth rate in 2015-17 compared to 2012-14.

We are seeing more pivotal innovation from the pharmaceutical organisations. We are also witnessing rapidly increasing interest amongst the academic community in life science programmes. This will also reflect in the growth of patenting in the years to come.

Nadler: Another finding of the report hints towards the increased convergence of technology in different sectors. As an example, innovation in automotive is increasingly not purely about mechanical engineering. The communication and computing aspects increasingly play an important role with the convergence of technologies.

Is research getting adequately funded in India?

Nadler: The situation on research funding is improving. Across sectors, research is not adequately funded at this point. It needs huge funding not just by the government but also by the private sector. The intention is there, the clarity of thought is there and the policies are there. It takes time to turn the ship but it is moving in the right direction. If we look at the percentage of GDP which goes to research funding, India still has to catch up with developed economies as well as other key Asian countries such as China and Japan. It is improving with increased awareness and with the right policy and initiatives shaping up in the country on research and innovation.

Some amount of product-oriented research does happen out of IITs. How do you see that?

Pachhapur: The IIT system has featured consistently on the list of Asia Pacific's Most Innovative Universities (Top 75) by Reuters. IITs are at the forefront of research and innovation, not only they have taken research seriously but they have also been converting their ideas into intellectual property and commercialising it. The active research parks and close collaboration with the industry also reaffirm this. Majority of IITs use our research platforms such as Web of Science and Derwent Innovation for variety of use cases across the innovation life cycle. We will see more outcomes as the universities continue to take the right initiatives in hiring the right faculty, publishing research in good quality journals, moving towards applied research and ensuring that there are close industry partnerships.

Do you think the introduction of new policies such as 'Make in India', 'Digital India' and 'Start-up India' has an impact on the patent filing activity across sectors?

Pachhapur: A strong government push has led to an increase in patenting activity in India. Other countries such as China and Singapore have also done this successfully. In some cases, it is connected to a funding grants and policies; in some cases it is about incentives for publishing research and patenting ideas and innovation and it certainly provides focus.

Initiatives such as the National Institutional Ranking Framework implemented by the ministry of HRD has also created increased awareness and focus among universities and small institutions on research and innovation in view of weightage given to both research output and innovation output in the rankings. We are also noticing hackathons aimed at young students and graduates, providing them a platform where they can present their ideas and be exposed to funding and mentoring avenues.

The setting up of Patent Facilitation Centres is another impetus to the start-ups that are typically less aware of intellectual property (IP), why it is required and how you can file patents. Another benefit of these centres is that it helps in the commercialisation of IP—valuation of patents and finding commercial partners.

How do you see the dispersion of product innovation outside Silicon Valley and in India?

Nadler: The cost of living is incredibly high in Silicon Valley, and it is starting to drive people to other geographies. We did a recent analysis on Industry 4.0 technologies such as Artificial Intelligence, Big Data analytics, industry automation and others; Asia is way ahead in the game.

Pachhapur: The start-up ecosystem in India is developing rapidly, supported both by the government as well as the private sector. Now we see automotive R&D ecosystems in Chennai, Bangalore, Gurgaon, Pune and Chennai, to mention a few. The government is also creating ecosystems for life sciences and biotechnology, for example, in Karnataka and Telangana. This will lead to more product companies emerging in India.

Sept 11

IIT-Madras to help install air monitor in Rameswaram

<https://timesofindia.indiatimes.com/city/chennai/iit-m-to-help-install-air-monitor-in-rameswaram/articleshow/65761240.cms>

The pilgrimage island of Rameswaram is set to get a low-cost air quality monitor with the help of researchers at IIT-Madras. The equipment will be installed at the Vivekananda Kendra on Tuesday with the data being linked to the Air Research Laboratory at IIT-M.

Vasudevan, who is in charge of the Vivekananda Kendra, said the device was vital as dust levels on the island were high due to the presence of sand dunes. The equipment will show PM10 and PM2.5 levels in the atmosphere, besides providing data on humidity levels, temperature and carbon monoxide and carbon dioxide levels.

When former President A P J Abdul Kalam visited the Kendra four years ago, he wanted it to do something for the environment, said Vasudevan, adding, “This was the trigger and we subsequently learned that low-cost air quality monitoring equipment was manufactured at IIT-M and approached it.”

Associate professor of civil engineering, IIT-M, Shiva Nagendra said a conventional air quality monitoring station would cost around Rs 1 crore, besides a recurring expenditure of Rs 6 lakh per month for its operation and maintenance, but the ones produced by IIT-M cost only Rs 3.32 lakh. While

the Kendra provided Rs 1 lakh, the Rural Technology Action Group, which is the IIT-M's outreach programme, has offered Rs 2.32 lakh, he said.

The sensors – which are the most important component of the equipment – are now being imported but IIT-M is in the process of making them under the Make in India programme, he said. "Once they are ready, they will be tested and calibrated. This will further bring the down the cost," he added.

IIT Mandi student to represent India in Para Asian Games 2018

<https://timesofindia.indiatimes.com/home/education/news/iit-mandi-student-to-represent-india-in-para-asian-games-2018/articleshow/65765771.cms>



An accident in 2009 that got him bed-ridden for months, leading to a permanent injury could not stop Nitesh Kumar, 23-year old professional para shuttler from representing India at various international tournaments. He has added another feather to his cap after getting selected in MD SL3-SL4 category for Para Asian Games 2018 to be held in Jakarta, Indonesia from October 8-16.

It was in 2013 when Kumar became extensively interested in badminton during his preparatory course at IIT-Roorkee. Later, he got admitted to IIT-Mandi in 2014 to pursue BTech in Electrical Engineering and joined NSO programme at the institute, which is sports course for first year students. After practicing for two years with other able-body athletes at IIT Mandi, Nitesh participated in All India Nationals 2016 - his first para tournament. He has represented India at Asian Para Badminton Championship 2016, Ireland Para Badminton International 2017 and Thailand Para Badminton Championship 2018.

Currently, Kumar holds up World Rank 8 and National Rank 3 in para badminton. "People do not expect us to be in sports. Even after competing at international level, we are unnecessarily pitied upon," said 23-year old para shuttler.

Nitesh struggles to prepare for doubles game as there is no organised practice routine for para badminton players to practice with each other, which hampers their team performance in tournaments.

"Paralympic sports do not receive as much craze as other sports in India and para players still face scarcity of resources and support. Most of the times, even physiotherapists are not there with para players during tournaments. But the scenario is changing after the Rio 2016 Paralympics," said Gaurav Khanna, Head National Coach, Indian Para Badminton Team.

Speaking about the unknown avenues and opportunities, Khanna added, "Many youngsters with physical, vision and intellectual disabilities who have a spark for sports do not know how to pursue their passion and the sole reason is lack of awareness. Also, for para-athletes there are no renowned practice spaces like Gopichand Academy to make a one-spot hub to nurture talent and skills."

Cracking JEE a big deal in Korea too, says IIT Delhi student from Seoul

<https://timesofindia.indiatimes.com/home/education/news/cracking-jee-a-big-deal-in-korea-too-says-iit-delhi-student-from-seoul/articleshow/65767408.cms>



Jaen Hyun Kim from Seoul, South Korea is the first foreign student pursuing BTech, Biotechnology, from IIT-Delhi and the 20-year-old refers India as his second home. He decided to do his schooling from India post class VI as he wanted to seek admission in the IIT, which only accepts students through JEE Advanced at the undergraduate level.

Kim says that for many foreign students who want admission in the IITs, there is a lack of guidance. So often, the only way for them is to shift to India and join a coaching center here to prepare for the JEE (Joint Entrance Exam).

Also, in Korea cracking JEE Advanced is considered a tough task and the general perception is that if one can make to the IITs, s/he can crack any other exam, says Kim. The system of negative marking makes the exam hard to crack. Such a system is not followed in Korea.

"Back home we have an option to go abroad after elementary school and study in a different culture. The general trend among those who want to study in a foreign land is to choose the US or the UK. However, I wanted to get an admitted to the IIT and one of my father's friend's son was already studying in India and gave me a positive feedback. So, I decided to come here," says Kim.

He did his high school from an international school in Hyderabad, where he studied Hindi as part of his core subjects, and later joined a coaching centre to prepare for the IIT entrance exam.

"I prefer talking in English as Hindi was one of my subjects till high school, I haven't used it much. I speak Hindi when bargaining with the autorickshaw drivers," he jests.

Talking about the differences in the education system in India and South Korea he says, "Initially I

found it difficult to solve subjective question papers in schools here as back in Korea there are only objective question papers."

At colleges in Korea, equal weightage is given to the extra-curricular activities while herein India there is more stress on the grades, he says adding that however, in India there is more stress on the language skills so his English developed a lot here.

As far as studying in IIT is concerned, he says, the faculty is highly-qualified, the labs are well-equipped and the overall environment is very supportive. Fellow students have helped me adjust to the hostel and college life, mostly out of intrigue but, he shares a good bond with the friends I have made. He has observed that Indians are very shy towards foreigners.

He is a travel enthusiast and has already travelled across southern and northern India.

"I have already visited Taj Mahal five times and in Delhi, I like to visit the Red Fort, which I have already seen thrice. Next year I want to visit Red Fort on Independence Day to hear the Prime Minister speak," he says adding that not many people know the fact that both India and Korea celebrate their independence on the same day i.e. August 15.

He likes the spicy food in India and would choose dosa and vada for breakfast and aaloo poori for lunch. Though in love with all the festivals held in the country, he especially likes celebrating Dussehra and Diwali, during which he treats himself with rasgullas and faluda.

Sept 10

IIT Delhi readies a slew of innovations

<https://economictimes.indiatimes.com/industry/services/education/iit-delhi-readies-a-slew-of-innovations/articleshow/65759899.cms>

Call it the hub of innovations. IIT-Delhi boasts of many startups, and even startups in the making. From drone technology to solution to track air pollution, IIT-Delhi researchers are big on out-of-the-box solutions to fix problems of all sizes. Next week, IIT-Delhi will host its second industry day at its campus where several startups, students and researchers from IIT-Delhi will showcase innovative solutions. ET takes a look at four such innovations.

AIR DROP FOR DEFENCE The latest project of robotics startup BotLab Dynamics founded by IIT-Delhi graduates in 2016 is a drone that can lift a package weighing up to 25 kilogram and carry it for 90 minutes. BotLab works on enhancing the capabilities of existing aerial and underwater platforms by putting Vision and Machine learning models on these systems.

"Drones today are limited by flight time and payload which limits their use in serious industrial applications. We have worked towards enhancing the payload," said Tanmay Bunkar, founder, BotLab.

"We hope these systems can be used by defence forces for airdropping supplies in inhospitable highaltitude areas and for surveillance applications," said Bunkar.

Further, the company is working on swarming these systems together so multiple systems can be controlled simultaneously. “One can control many systems simultaneously with only one command signal from the ground and the drones can move together to accomplish that task,” said Bunkar. Bot-Lab has also worked closely with naval construction wing.

“Now, we are testing vision-based autonomy on the underwater system that can control the remotely operated underwater vehicle,” he said. This system will soon be tested at various ports and harbours.

SANITATION SOLUTION FOR WOMEN Conceived by students Archit Agarwal and Harry Sehrawat, Sanfe— Sanitation for Female —is a startup that has developed a biodegradable and disposable device sanitation device for women.

“While doing the surveys I realised the problems women, especially pregnant women, face and this is when I got an idea to make a product that allows women to stand and urinate,” said Agarwal. “There had to be some methodology to avoid contact with the toilet seats in public washrooms. We started with a simple funnel design and gave it to some women for trials,” he said.

Sanfe is currently in the commercialisation stage. It is available on Amazon and Flipkart and would soon be available in the retail markets. The startup has set up a manufacturing line, which is capable of production up to 10,00,000 pieces a day.

Sanfe has already received funding offers from Hindustan Petroleum Corporation Limited as well as from BIRAC, Department of Biotechnology, said Agarwal.

NON-INVASIVE SURGICAL SIMULATION Virmat, a surgical simulation and innovation startup, is currently working on physical simulators for training neurosurgeons.

The company is working on physical simulator for Endoscopy Third Ventriculostomy (ETV) in the form of head model. Various materials with properties similar to the tissues will be used for fabrication of the simulator. It will also have a sensor-based scoring system to evaluate the skills of the practicing surgeons.

“The first task of the simulator will be to position the head as in actual surgery. It will be followed by making a skin incision and placement of retractor. Then a burr hole will be created in the skull by drilling,” Ramandeep Singh, founder and managing director of Virmat, said. “The endoscope will be inserted in the brain till it reaches the ventricles,” he said. Currently, the product is in the development stage and various components of the simulator are being validated by surgeons.

At a later stage, along with its ETV simulator, Virmat is looking at providing physical simulation solutions to other surgical approaches as well as other surgical branches. Virmat has been awarded funding under Pfizer IIT Delhi innovation and IP Program.

AIR POLLUTION MONITORING Aerogram, a startup led by Dr Sarita Ahlawat with alumni of IIT-Delhi, is working on creating an air pollution monitoring network to predict the concentration of pollutants at any given point in a mapped area.

Using this device, any individual can receive information about the real-time pollution levels present locally in his/her neighbourhood. This is a compact, low-cost air pollution sensing device that can provide real-time data on multiple pollutants. A network of such devices can communicate data to a central server, which, in turn, can be accessed by Aerogram's mobile application.

"The first such network of 30 devices will be operational soon in IIT-Delhi," said Ahlawat. "We have integrated sensors for common pollutants such as PM (1.0, 2.5, 10), CO₂, CO, Ozone, SO_x and NO_x on a single compact platform along with Wifi connectivity," Ahlawat said.

IITs to jointly look for foreign faculty

<https://economictimes.indiatimes.com/industry/services/education/iits-to-jointly-look-for-foreign-faculty/articleshow/65759798.cms>

Indian Institutes of Technology (IITs) have formed a united front to tackle a common problem: paucity of foreign faculty. A meeting of IIT directors and officials of the ministry of human resource development last month decided to streamline the faculty scouting process with a focused approach.

Each top institute has been allocated one or more geographical area where it will be responsible for the recruitment of global teaching talent—not just for itself, but for other IITs as well.

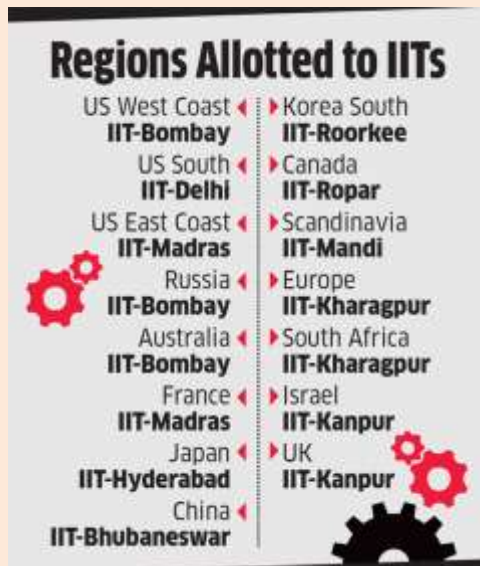
None of the 23 IITs currently have permanent faculty of foreign origin while a few have Indian-origin foreign faculty or adjunct foreign faculty.

The August 20 IIT Council meeting also proposed the setting up of a working group of a few IITs to carry on the global faculty hunt. The human resources ministry, meanwhile, is in talks with the foreign ministry to help ease visa guidelines that restrict foreigners to work as faculty members on a permanent basis in India.

The main hunting ground for faculties is the US, which has been divided into three regions and allocated to IIT-Bombay (West Coast), IIT-Delhi (southern US) and IIT-Madras (East Coast), a person who was part of the council meeting said. IIT-Hyderabad will scout for teachers in Japan, IIT-Mandi in Scandinavia and IIT-Ropar in Canada.

"IITs, as it is, help each other. This plan to recruit faculty on behalf of others is still in a formative stage, but would definitely help all IITs in getting access to foreign faculty," said Bhaskar Ramamurthy, director, IIT-Madras.

IIT-Ropar is the first to initiate steps on this front. Its director, Sarit Kumar Das, is going to hold walk-in interviews in Toronto on September 15. The institute is already spreading information about the recruitment drive through the Indian community in Canada.



“We are targeting Indians who want to return to India as well as other foreign faculty members,” said Das.

Foreign faculty would not only bring diversity at the IIT campuses, but also help them improve their global rankings, said Devang Khakhar, director, IIT-Bombay. “The foreign faculty recruitment coordination was discussed in the last meeting,” said Khakhar.

“The MHRD has probably kept in mind the track record of the IITs before assigning various regions to the IITs,” said Timothy Gonsalves, director, IIT-Mandi. The institute has tie-ups for student exchange, curriculum share and faculty with Scandinavian countries like Sweden, Norway and Denmark and hence has been assigned this region.

Visa for foreign-origin faculty has been an issue for the IITs. “But the government is trying to get rid of this hurdle and soon the visa restrictions would be lifted,” said Gonsalves.

“Though it is early to talk about how this route to recruit foreign faculty would be taken, but many IITs are keen on the US as it certainly has a large pool of teaching talent,” said V Ramgopal Rao, director, IIT-Delhi. However, some say the joint faculty selection will have its own challenges.

“Joint faculty selection is not possible. The faculty shortage is so acute that an IIT may recruit first for itself rather than on behalf of others,” said one IIT director, who did not wish to be named.

IIT Bombay develops platform that can detect lung cancer from breath

<https://indianexpress.com/article/cities/mumbai/iit-bombay-lung-cancer-detection-platform-5347690/>

The same platform can also be used to monitor air pollution levels or detect explosives such as TNT (trinitrotoluene).

Researchers at the Indian Institute of Technology, Bombay, have developed a platform that can ‘sniff out’ the presence of cancerous cells in the lungs from the breath of a person.

In a paper published in the journal ACS Sustainable Chemistry and Engineering, a two-member team from IIT-B claims that certain chemicals exhaled through breath are indicative of lung cancer but are not detected by a conventional breath test. The team, headed by Chandramouli Subramaniam, a professor from the institute's Department of Chemistry, has developed a system that claims to detect such chemicals in single molecular levels in about a minute.

The same platform can also be used to monitor air pollution levels or detect explosives such as TNT (trinitrotoluene). The research project was funded by the Department of Science and Technology's Nano-mission programme.

"There are two types of techniques to detect a chemical substance (an analyte): indirect and direct. In the most commonly used indirect method, other molecules called 'labels' specifically bind to the analyte and emit a fluorescent light which is detected. In the direct method, the light scattered by the analyte itself has a specific signature that is detected," said Subramaniam, adding that their new platform uses the direct method called the Raman spectroscopy.

According to the paper, the intensity of the light collected in Raman scattering is inherently very low and, to overcome this, scientists worldwide have developed a method called Surface Enhanced Raman Scattering (SERS). "However, getting a reliable signal has been a problem as the nanoparticles are highly mobile due to Brownian motion of these colloids," said Subramaniam. To overcome this, the scientists at IIT Bombay have made a "cage" of nanoparticles to trap the analytes.

The newly designed platform was able to detect substances in gaseous, liquid or solid forms. "It utilises the concept that any solid substance will always have a layer of molecules in vapour phase at its surface. This process helped the platform 'sniff' substances like TNT in its solid form – a significant feat considering solids need to be otherwise dissolved to form solutions or be heated to high temperature to be detected. The platform successfully identified TNT in the presence of similar, non-explosive but chemically similar substances like DNT (dinitrotoluene) and nitrobenzene," said Subramaniam, adding that the platform can be used to make portable spectrometers.

"We are in discussion with an Indian company to develop a handheld Raman spectrometer. We can then couple it with our SERS platform to form a diagnostic device, enabling us to provide early warning signs for lung disorders. A security screening device could also be potentially built," he said.

IIT-B department tells recruiters to go easy on students

<https://timesofindia.indiatimes.com/city/mumbai/iit-b-department-tells-recruiters-to-go-easy-on-students/articleshow/65747144.cms>

The computer science and engineering (CSE) department at IIT-Bombay has written to recruiters, mainly from the IT sector, seeking to streamline the process of placement talks and tests before the final interviews in December.

For at least three months, placement activities take up substantial time for final year students, affecting their teaching and research, say professors.

SUGGESTIONS FOR PLACEMENT TESTS

| | |
|--|---|
| <ul style="list-style-type: none"> > Limit number of pre-placement talks > Encourage audio-recorded pre-placement talks for students to enable repeat listening > PPTs can be held on chosen weekends > Limit number and duration of screening tests > Companies holding screening tests should not back out from interviews > Participating companies | <ul style="list-style-type: none"> should submit their questions to the department, which will collate them and proctor the test/tests. Students can be graded based on the questions that interest companies > Tests should not exceed one hour > Students selected by companies should not be asked to attend company events before completion of the academic session |
|--|---|

In the letter, the department has highlighted the fact that the number of firms primarily interested in CSE graduates is significant. “Students end up taking a large number of tests. Even the toppers, who would normally get through their first choice, appear in multiple tests... It is not unusual for students to attend 40 talks and tests which amount to 120 hours of time. Due to this overload, research output and overall academic performance of students during the semester is seriously affected,” stated the letter.

Department head Uday Khedkar told TOI, “It is inappropriate to tell students to not take the placement tests. Students come to IIT-B because the placements are good and we are happy that there are many opportunities for our students. All we seek is streamlining the process and making the schedule more predictable. Ideally, companies can rely on students’ scores in their coursework.”

If the schedules are known to the department in advance, then teachers can work around it, said Khedkar.

“The number of tests students take across departments, not just CSE, is stressful. The placement cell does give us good training on how to approach these tests, but the numbers does make the process hectic,” said a former student who graduated from the CSE department this year.

The IITs started discussing this problem a few years ago, but a permanent solution eluded them. Khedkar said it is difficult to arrive at a solution. “Ideally no placement activities should be held before December 1, but it is a decision all IITs have to take together,” he added.

Professor Kaustubha Mohanty, ex-convenor of All-India Placement Committee for IITs, however, said, “The issue about changing placement schedule has been discussed several times in the AIPC, but most recruiters are software-based and their vacancies arise only post August. They cannot hire during summer. Campuses are also busy with summer internships then. What is required is more discipline in academics and research from students to ensure both activities are balanced,” said Mohanty.

30 IIT students win Panasonic Ratti Chhatr Scholarship

<https://news.careers360.com/30-iit-students-win-panasonic-ratti-chhatr-scholarship>



Panasonic has awarded 30 students from 15 Indian Institutes of Technology (IITs) Ratti Chhatr Scholarship. The scholarship program aims to provide assistance to select undergraduate students, enabling them to pursue higher education at their respective IIT, across the country.

The total scholarship amount is 42,500 INR per annum is given quarterly for a period of four years to 30 Scholars selected by Panasonic India.

Panasonic India instituted the scholarship program in 2015 and has already facilitated over 90 students. On the fourth edition of the program, Panasonic India today, awarded scholarships to 30 students.

Amitabh Kant, CEO, NITI Aayog, Government of India, said, “Our nation is going through a phenomenal era from a developmental standpoint, but it still need to push the limits in terms of innovation and creation. Those elements can only be imparted through the inflow of young innovators and disruptors, who in this new generation can take us forward into a successful period of continual glory and invention. Ratti Chhatr Scholarship program, will serve as the perfect platform to help propel students to realize their full potential and contribute to country’s development.”

Congratulating the winners, Manish Sharma, President & CEO, Panasonic India & South Asia, said, “The Indian Institutes of Technology (IITs) are a platform for young India to learn and excel; a platform that helps nurture leaders of tomorrow. At Panasonic India, we value the essence of education and understand the importance of providing scholarships in order to encourage the talented students to continue pushing the limits and set a mark for themselves. High quality skill development is the need of the hour in our country, we hope that through our efforts these students will embody that notion and emerge as imperative assets for our economy and serve the nation proudly. We congratulate the winners and hope this small token of appreciation will help them achieve their dreams.”

Sept 9

IIT Kharagpur delegation to adjoin researchers in US

<https://www.indiatoday.in/education-today/news/story/iit-kharagpur-delegation-to-adjoin-researchers-in-us-1335675-2018-09-09>

An Indian Institute of Technology (IIT) Kharagpur delegation is visiting the US to meet researchers looking for a career in the best higher education in India, as a part of the international outreach programme.

"We are keen to engage with bright and promising doctoral students and post-doctoral fellows in the US and discuss academic career options at the Institute," Director P P Chakrabarti, head of the delegation, told the PTI.

The institute was striving to enhance its human resource in teaching, learning and research **"by providing a fulfilling research and academic ambience to young talents, be it innovative research or developing new methods of teaching and education,"** he added.

Schedule of the delegation:

- The delegation visited Washington DC on **September 8, 2018**
- It will reach **Boston on September 11, Miami on September 12, Houston on September 13, and Bay Area, California on September 16.**

Meetings of the team:

1. The team members will meet the researchers interested in various academic positions and looking for a career in one of the best higher education in India.
2. Mr Chakrabarti will also meet the administration of **George Washington University Law School** with which IIT Kharagpur already has had a technical collaboration agreement.
3. He will also hold meetings on academic and research collaboration with the administration of the **Association of Public and Land Grant Universities (APLU)**
4. Similar meetings will be held with the president of the **University of Massachusetts Dartmouth, chancellors of UC San Diego and the University of Houston.** Two memorandums of understanding (MoUs) will be signed in this regard with UMass Dartmouth and Houston.

The mission of IIT Kharagpur:

1. To provide broad-based education, helping students hone their professional skills and acquire the best-in-class capabilities in their respective disciplines.
2. To draw the best expertise in science, technology, management and law so as to equip students with the skills to visualise, synthesise, and execute projects in these fields.
3. To imbibe a spirit of entrepreneurship and innovation in its students.
4. To undertake sponsored research and provide consultancy services in industrial, educational and socially relevant areas.

Sept 8

IITs, IIMs will be roped in for speedy assessment and accreditation of edu institutes: Javadekar

<https://www.outlookindia.com/newscroll/iits-iims-will-be-roped-in-for-speedy-assessment-and-accreditation-of-edu-institutes-javadekar/1379123>

IITs and IIMs will be roped in for the speedy assessment and accreditation of higher educational institutes along with official agencies such as NAAC and NBA, Human Resource Development (HRD) Minister Prakash Javadekar said on Saturday.

While the National Assessment and Accreditation Council (NAAC) and the National Board of Accreditation (NBA) will be expanded, the premier Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) could also join hands and form an accreditation agency to expedite the process, he said.

At present, only 15 per cent of the higher educational institutes in the country are accredited.

"We have asked IITs and IIMs to come together and create an agency which we can use to expedite the process of accreditation," the minister told reporters on the sidelines of the 4th World Summit of Accreditation here.

He said accreditation from now onwards will be based on "learning outcome" and quality of education should be the key parameter for determining the standard of an institute.

The minister's comments came against the backdrop of the University Grants Commission (UGC) in August clearing a proposal to allow more accreditation agencies to come into the sphere of accreditation to enhance the existing capacity.

Speaking at the event, the minister said 80 per cent of the weightage for accreditation will be given on learning outcome and peer reviews, while the physical verification of the campus and infrastructure could be done through the use of satellites.

"An institute which maintains quality will only survive and those who fail to do so will be out of business," he said.

Higher Education Secretary R Subramanyam suggested that "no accreditation, no admission" should be taken up as a policy initiative from 2022-23 onwards in keeping with Prime Minister Narendra Modi's vision of a "New India".

Meanwhile, speaking at a panel discussion on International Literacy Day, the minister said the government would be rolling out a scheme where school students can engage themselves in the literacy mission and provide education to people who are illiterates.

Illiteracy should be eliminated in four-five years. He rued the fact that even after 70 years of Independence, the country is still talking about basic literacy.

IISER Bhopal develops organic solar cell using vitamin B12 derivative

<https://www.thehindu.com/sci-tech/science/iiser-bhopal-develops-organic-solar-cell-using-vitamin-b12-derivative/article24903121.ece>



Corroles show excellent absorption in the visible light range and are highly stable, says Jeyaraman Sankar (right).

The synthesised material absorbs light much like porphyrin in natural chlorophyll

Researchers at the Indian Institute of Science Education and Research (IISER) Bhopal have developed cheaper and more flexible organic solar cells using a synthetic derivative of vitamin B12.

An organic solar cell is made up of acceptor and donor materials. The donor absorbs light from solar radiation and the harvested energy is passed to the electrodes with the help of the acceptor. In the present study, published in ACS Applied Materials and Interfaces, the researchers synthesised the donor using an artificial aromatic chemical (corrole) which has a similar structure to the corrin ring in vitamin B12. The artificially synthesised corrole (Cor-BODIPY) absorbs light much like porphyrin in natural chlorophyll.

“Corroles have very good photophysical properties. They show excellent absorption in the visible light range and are highly stable. They are very flexible unlike the silicon solar cells and so could be used in flexible electronics,” says Dr. Jeyaraman Sankar from the institute and corresponding author of the work.

Another commercially available organic molecule was used as an acceptor. “The molecule is electron deficient and so can be used as an acceptor, while the corrole is the electron source. We carried out light absorption and emission studies,” says Dr. Ruchika Mishra, Research Associate at the institute and the first author of the paper.

The organic cells developed by the team showed three absorption bands between 400-650 nm — whole visible range of the solar spectrum — with a maximum absorption at 420 nm. The ability to turn the light absorbed to electricity (power conversion efficiency) was 2.5%.

The researchers enhanced the performance of the solar cells by coating them with different solvents. The surface morphology was investigated after the treatment and microscopy images showed that the treatment helped improve the alignment of the Cor-BODIPY donor by forming a denser molecular packing on the active surface. This treatment more than doubled the power conversion efficiency from 2.5% to 6.6%.

“Many solar cells made of porphyrins which started with 1% efficiency have now reached over 10% due to appropriate improvements. Further optimisation can help increase the efficiency of our cells too. More studies are also being carried out to ascertain its stability and the results look promising,” adds Ruchika.

Corroles are currently used as sensors, catalysts and in biomedical imaging. This is the first study wherein a corrole has been utilised for a bulk heterojunction solar cell as a donor material. The authors hope that this study shall open up a new window and may pave way for its development as a low-cost, efficient photovoltaic material with a wide range of absorption and increased flexibility.