NEWS CLIPS

July 7-13, 2018

Highlight of the Week@IITD

IIT-Delhi, IIT-Bombay and IISc Bangalore get Institution of Eminence status

July 9, 2018 https://indianexpress.com/article/education/hrd-ministry-grants-iit-delhi-iit-bombay-and-iisc-bangalore-institution-of-eminence-status-5251970/

The IoEs are proposed to have greater autonomy compared to other higher education institutions. The Manipal Academy of Higher Education, BITS Pilani and Jio Institute granted institution of eminence tag.

The Union Human Resource Development Ministry has granted the Institution of Eminence (IoE) status to IIT Delhi, IIT Bombay and IISc Bangalore today. Along with them, in the private sector, the Manipal Academy of Higher Education, BITS Pilani and Jio Institute granted institution of eminence tag. The UGC had received 103 applications including JNU and Delhi University for IoE status.

The Union HRD Minister, Prakash Javadekar, tweeted the names of IIT Bombay and IIT Delhi who will receive government funding as the private sector institutes which are granted the status of Institutes of Eminence will get the government grants of Rs 1000 in next five years.

In another tweet, the HRD Minister said, “While today’s decision gives virtually full autonomy, it will also ensure that no student will be denied opportunity of education with various measures like scholarships, interest waiver, fee waiver and ensure all equity principles”.

The IoEs are proposed to have greater autonomy in comparison to other higher education institutions. For instance, they will be free to decide their fee for domestic and foreign students and have a flexible course duration and structure. Moreover, their academic collaborations with foreign institutions will be exempt from approvals of government or UGC except institutions based in MEA and MHA’s list of negative countries.

Once identified, the target for the IoEs would be to break into the top 500 bracket in one internationally reputed ranking framework in 10 years and come up in the top 100 over time.

July 13

IIT खड़गपुर शीर्ष 100 स्वर्णयुग विश्वविद्यालय की सूची में

https://www.livehindustan.com/career/story-iit-kharagpur-features-in-top-100-of-the-golden-age-university-rankings-2066371.html

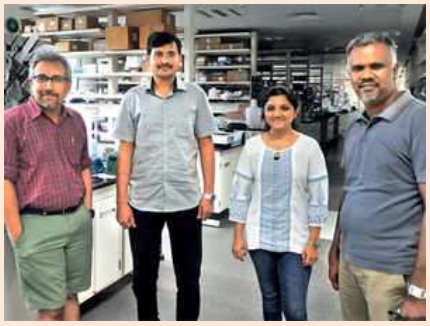
भारतीय प्रौद्योगिकी संस्थान (आईआईटी), खड़गपुर को टाइम्स की 100 शीर्ष उच्च शिक्षा स्वर्णयुग विश्वविद्यालयों की सूची (हायर एजुकेशन गोल्डन एज युनिवर्सिटी रैंकिंग) में शामिल किया गया। साथ ही, आईआईटी-खड़गपुर का नाम उभरते हुए 50 विश्वविद्यालयों की सूची में दर्ज किया गया है।

गोल्डन एज रैंकिंग में 50 साल से अधिक और 80 साल से कम समयावधि के दौरान स्थापित सर्वाधिक उत्कृष्ट विश्वविद्यालयों को शामिल किया जाता है। इस प्रकार टाइम्स की हायर एजुकेशन गोल्डन एज युनिवर्सिटी रैंकिंग में 1945 और 1967 के दौरान स्थापित विश्वविद्यालयों को ही शामिल किया जाता है।

इस सूची में शामिल करने के लिए विश्वविद्यालयों के मुख्य कार्य, मसलन शिक्षण, शोध, प्रमाणपत्र, अंतरराष्ट्रीय नजरिया और औद्योगिक आय के मानदंडों को देखा जाता है। इस सूची में सैन डिएगो स्थित कैलिफोर्निया विश्वविद्यालय शीर्ष पर है जबकि आईआईटी खड़गपुर 76वें पायदान पर है। आईआईटी-खड़गपुर को दुनिया के 350 से अधिक उभरते हुए विश्वविद्यालयों में 45वें पायदान पर रखा गया है। इस सूची में चीन का पेकिंग यूनिवर्सिटी शीर्ष पर है।

IISER SCIENTISTS MAKE DRUG CARRIERS TO KILL BREAST CANCER CELLS

https://punemirror.indiatimes.com/pune/civic/iiser-scientists-make-drug-carriers-to-kill-breast-cancer-cells/articleshow/64967235.cms



(L-R) Team that worked on the study, including Dr Nagaraj Balasubramanian, Nilesh Deshpande, Siddhi Inchanalkar and Dr M Jayakannan

The study is collaboration between the departments of chemistry and biology. Six years ago, Kathryn Takamura, a research student from The Ohio State University, visiting the Indian Institute of Science Education and Research (IISER) in the city, set the ball rolling for a significant study on a drug carrier to isolate and kill breast cancer cells. Takamura, a student of biochemistry, initiated a dialogue between both the biology and chemistry departments of IISER, Pune.

The starting point for the project was to stop the growth of Aurora A Kinase, an enzyme that is associated with the occurrence of cancer. â€œAurora Kinase A was the molecule that we originally envisaged targeting. Along the way, we realised that different cancers take up this nanovesicle differently. Among the cancers that took it up well, the one where Aurora Kinase is active and could hence be targeted turned out to be breast cancer cells,â€ says Dr Nagaraj Balasubramanian, cell biologist and associate professor, biology department at IISER Pune.

In a first, the challenges of poor drug solubility and transport across cell membranes for the drug Alisertib, also known as MLN8237, have been overcome with this polymer nanovesicle.

The nanovesicle is shaped like a ball and the drug is stored in its outer membrane. Several nanosystems and different drugs were tested in the lab, adds Dr M Jayakannan, professor and chair, chemistry department, IISER, Pune. â€œOnly this particular nanovesicle was able to take this drug,â€ he adds, referring to MLN8237, a drug known to inhibit growth of aurora kinases. Professor Jayakannanâ€™s team, including research student Nilesh Deshpande, designed the multi-drug carrying, self-assembling nanovesicle made from multiple glucose molecules or dextran polysaccharides, which are linked using a derivative from cashew nut extract. â€œWe used a plant-based derivative to modify dextran and make the nanovesicle, so that when it disintergrates in the body, it is completely natural and should be non-toxic to living cells and it is,â€ says Dr Jayakannan. The study has been conducted on cultured cells inside a lab and it is too early to determine what stage of cancer the drug could be administered.

Animal testing will be the next step for the study, which was published in the American Chemical Society, a leading scientific journal.

The study could not have been such asuccess if it had not been for the collaboration, stresses Dr Jayakanna, who has been working on natural polymers and nanovesicles since 2010. â€œIt has allowed us to think differently about drug chemistry. We are now able to ask questions like, what the delivery mechanism for drug is and how stable is it. Based on the confidence that we could

collaborate on this study, we feel we will be able to work on new problems together as well. Such a collaboration also works for students,â€⃞ says Dr Balasubramanian. Deshpande for instance learnt tissue culture from Siddhi Inchanalkar, graduate student of the Biology department, studying adhesion-mediated regulation of aurora kinase and its role in cancers. Adds Dr Jayakannan, â€œIt has helped us take this problem and address it at a different level. I have come to believe that after a certain point, it is impossible to solve some problems without this kind of collaboration.

'Large number of engineering colleges are frozen in time'

https://timesofindia.indiatimes.com/city/chennai/large-number-of-engineering-colleges-are-frozen-in-time/articleshow/64967812.cms

When Tamil Nadu was caught up in the NEET fiasco and needed an overhaul of its decade-old school syllabus, former vice-chancellor of Anna University M Anandakrishnan was roped in to head the curriculum framework committee for state board schools. He was instrumental in revamping the course material to help students adopt a concept-oriented approach and enable them to crack competitive tests. In an interview with TOI, the former chairman of IIT Kanpur, talks about why quantity is one of the main factors for deteriorating quality of engineers and the need for more skill development.

Q: What changes have impacted the growth of engineering education over the years?
There are major changes taking place the world over as technological revolution and technical education are simultaneously feeding into each other. This has led to manifestations in which a section of technical education has imbibed basic sciences and humanities. Another manifestation has been the more trans-disciplinary approach to engineering where students of one stream are branching out and simultaneously studying different streams. Also, technical education is becoming more product-oriented with college students increasingly coming out with innovations and products. In India, institutes like the IITs and NITs are adapting to these changes in a major way. However, a large number of engineering colleges are frozen in time, dealing with the situation is the challenge.

Every year nearly 15 lakh graduates pass out only about 5 lakh land proper jobs

Q: Is there an issue of quantity versus quality when it comes to engineering? Are too many engineers graduating a problem?

Yes, quantity is one of the main reasons for deteriorating quality of students and institutions. We have committed a major blunder in the 1980s and 1990s by mindlessly opening engineering institutions, especially in Karnataka, Tamil Nadu and Andhra Pradesh. Every year, we have 15 lakh graduates being churned out of campuses when there are jobs for only 5 lakh. The student-teacher ratio is not maintained in many colleges. Many try to manage with teachers with a bachelor's degree, when the AICTE mandates a minimum master's qualification. Colleges have to cut down the intake if they do not find adequate number of quality teachers. If the quality of the faculty is poor, it automatically reflects on the students. States in the south have too many engineering institutions, while others like Bihar and the north eastern states have fewer colleges than is required. This imbalance has to be corrected.

Q: AICTE has decided to close down colleges which aren't able to sustain the minimum required student numbers. Is closure of these institutions the way forward to improve quality?

There have been suggestions to shut colleges, but I disagree with it. Instead, these institutions should be transformed into skill development institutions. This transformation cannot happen easily and cannot be handled by AICTE alone. In my opinion, there is an urgent need for a national commission specifically for engineering education. A commission which can focus on helping these institutes serve better and not waste the existing manpower. Many of our engineering graduates are working for `10,000 and do not have any marketable skills. We don't need all colleges to become IITs or NITs, we need them to develop skills of students. Industries can be roped in to become partners in this process. The commission can also look into polytechnic colleges that train using outdated curriculum.

Q: The ministry of human resource development recently announced that the National Testing Agency would conduct NEET and JEE (Main) twice a year. Would this make any significant change to the admission scenario?

Giving the responsibility to NTA is a good decision, but the concern is if it is equipped to do the job. NTA should have enough support in terms of human, technical and monetary resources before conducting any exam. Twice a year is not a practical proposition. We need to be stable, systematic

and confident of conducting an exam before doing it twice. We always jump the gun when it comes to such matters. CBSE, having conducted exams for multiple years, is running into so many issues when it comes to competitive exams so with any new system, we need to be methodical.

Q: Whether it is JEE or NEET, the counselling process has been affected due to court orders after errors were spotted. Do changes need to be made to streamline such tests?
Unfortunately, any problem today results in court intervention and becomes a major part of the process. This doesn't happen in other countries. Errors have to be sorted out at the organisational level rather than in court. Some sort of access to the organisers would help avoid people going to court. The issue is that people don't have faith in these organisations, be it the UGC, AICTE, CBSE, or any other body, and perhaps for valid reasons. The people running there institutions are not permanent; members change every couple of years. Hopefully, with NTA taking charge of the exams this changing of heads may be resolved.

Scientists thumbs up for Karnataka govt's cloud seeding

https://www.deccanchronicle.com/nation/current-affairs/130718/scientists-thumbs-up-for-karnataka-govts-cloud-seeding.html

The exercise had increased the rainfall by 29 per cent and generated 2.1 tmc of additional water on the conservative side.

The two-and-a-half month long exercise was conducted in Karnataka between August 21 and November 7, 2017 to seed the clouds in areas which was facing drought for the fourth consecutive year.

The state government's cloud seeding programme – 'Varshadhari' in 2017 has been touted as the best such initiative the world has seen so far by meteorologists and scientists, who were part of the initiative.

A recently submitted report by an independent evaluation committee comprising meteorologists and scientists from the internationally known research institutes – the Indian Institute of Tropical Meteorology (IITM), Indian Institute of Science (IISc), former director general of Meteorology, Indian Meteorological Department (IMD) Ajit Tyagi among others on June 18 has praised 'Varshadhari' and has called it the best cloud seeding exercise in the world till date.

The two-and-a-half month long exercise was conducted in Karnataka between August 21 and November 7, 2017 to seed the clouds in areas which was facing drought for the fourth consecutive year.

“So far Varshadhari remains the best cloud seeding initiative in the world in terms of its success rate, costing and the inclusion of the study of soil moisture. The exercise had increased the rainfall by 29 per cent and generated 2.1 tmc of additional water on the conservative side. For the first time the scientists and meteorologists had included soil moisture component, which was derived from satellite data products to identify most vulnerable areas. Priority was given to seed clouds in the region, where soil moisture was deficit. There was day-to-day monitoring of data, which was collected before and after the cloud seeding from the three Doppler radars that were installed in Bengaluru, Gadag and Raichur,” said Dr. J.R. Kulkarni, an eminent scientist at IITM, Pune. He was member of the monitoring and evaluation teams and has co-authored the evaluation report.

Former chief of State Disaster Management Committee and head of ‘Varshadhari’ monitoring committee Dr V.S. Prakash told Deccan Chronicle that the idea behind cloud seeding was to identify the vulnerable areas and mitigate drought distress, and the exercise was highly successful.

“The entire state of Karnataka was the field of operation, but the focus was the worst drought hit areas of North Karnataka – Gadag, Haveri, Dharwad, Vijayapura, Bagalkot, Belagavi, Raichur and Kalburagi, where soil moisture was highly deficit. We also concentrated on Bengaluru (rural), Mandya and Mysuru in South Karnataka,” Dr Prakash said.

He pointed out that the State has the highest density of rain gauges in the country. “The 600 rain gauges helped us evaluate the impact of cloud seeding. Rainfall was measured before and after the exercise and we had used specific scientific techniques to assess whether the rainfall was normal or due to cloud seeding. The monitoring and advisory committee used to monitor the impact on a daily basis,” Dr Prakash added.

The data that has been collected from the project will be of multiple uses to metereologists to study rain variability, Dr Kulkarni said. “The data from the three radars will help us understand cloud characteristics. The entire project will help us understand and improve upon the science of cloud seeding,” he added.

Dr V. Mudkavi, head of CSIR Fourth Paradigm Institute (formerly CSIR Centre for Mathematical Modeling and Computer Simulation), Prof. Manikyam (retired scientist from ISRO), chief engineer, rural water supply, H.S. Prakash Kumar were members of the monitoring committee. Prof Venugopal of IISc, Dr Kulkarni, Ajit Tyeagi, a retired DG, IMD; retired scientists from IITM, Dr S.B. Morwal and Dr. N.R. Deshpande were members of the evaluation committee.

The incumbent Chief Secretary Vijay Bhaskar was the then development commissioner and Principal Secretary, RDPR Dr. Nagambika Devi were very supportive of the programme. Cloud seeding was the brain child of the then RDPR Minister H.K. Patil.

Bengaluru-based Hoysala Projects Pvt. Ltd was awarded a Rs 30-crore contract for Varshadhari, which was taken up in three major catchment areas of Cauvery, Malaprabha and Tungabhadra rivers in the state.

Hoysala Projects had contracted US-based Weather Modification Inc to carry out the operations. The Central government had provided assistance in terms of required permission for the project.

July 12

‘Research and teaching should go hand in hand’

https://telanganatoday.com/research-and-teaching-should-go-hand-in-hand

Indian Institute of Technology (IIT), Delhi, Director V Ramgopal Rao stressed the need for international collaborations in research besides interdisciplinary research and industry tie-ups for the growth of the nation.

He added that research and teaching should go hand in hand. Delivering the convocation address at the 21st convocation of the Kakatiya University (KU) here on Wednesday, Prof Rao said research in higher educational institutions must aim at resolving problems of the society

Saying universities were producing job seekers rather than job providers, Rao called upon them to instill a ‘do-it-yourself’ attitude and confidence among the students and make them job providers. He also advised universities to ensure that students receive exposure to the real world, cross-disciplinary collaboration, ability to build and lead teams.

Referring to globalisation, Prof Rao said, “We need to welcome foreign scholars and students to our universities and also increase exchange programmes with foreign universities to become learning centres for international best practices.”

KU Vice-Chancellor R Sayanna, giving details about the university’s achievements, said that the university had been re-accredited with ‘A’ Grade by the National Assessment and Accreditation Council with increased Cumulative Grade Point Average of 3.36.

“Today, the university is catering to the academic needs of 29 per cent of the students in the newly formed Telangana State. Geographically, the university covers the entire region of north and north-west parts of the Telangana State. The needs of higher education are met through 222 programmes in regular mode and 54 courses offered through distance mode. The university has 18 constituent and 529 affiliated colleges,” he siad.

Saying that active research is one of the key strengths of the university, he said, “Twelve departments are identified by UGC for Special Assistance Program (SAP). Nine departments are supported with Basic Scientific Research (BSR) and Department of Science and Technology (DST) identified eight departments of the university under FIST (Fund for Improvement of Science and Technology) for the development of the infrastructural facilities.”

Department of Science and Technology (DST) had been recognised by the Department of Zoology under INSPIRE programme, he added.

As many as 538 Ph D degrees in eight faculties were handed over to the candidates and 276 gold medals were also presented to the winners during the ceremony.

Registrar K Purushotam, Controller of Examinations S Mahender Reddy, Dean, Faculty of Arts, V Srinivas, and former vice-chancellors N Lingamurthy, V Gopal Reddy, Vidyavathi and others were present the ceremony.

UGC denied IIT-Madras, Anna University IoE status

https://timesofindia.indiatimes.com/city/chennai/ugc-denied-iit-m-anna-univ-ioe-status/articleshow/64954264.cms

Two premier institutes from Tamil Nadu — the state-run Anna University and IIT-Madras — that figured in the list of eight public institutions chosen as Institutions of Eminence (IoE) by an University Grants Commission-appointed panel, were denied the status of IoE by the UGC in its final list of six, which included three private institutions, to ensure "equal weightage for private and public institutions".

A 21-page 'report of empowered expert committee' released by the UGC on Wednesday listed eight public institutions — IISC-Bangalore, IIT-Madras, IIT-Kharagpur, IIT-Bombay, IIT-Delhi, Delhi University, Jadavpur University and Anna University. However, the UGC picked only three institutions — IIT-Delhi, IITBombay and IISc-Bangalore — as they had the highest rank in the QS world university rankings (2018).

Experts: Unfair to compare IIT-M with pvt colleges

UGC chairman D P Singh said, "It was a decision taken keeping in mind the principle of equity. These other five public institutions will be considered by the commission at a later stage. We don't know when it will happen."

Tamil Nadu and Delhi had two institutions each making it to the list, but Tamil Nadu became the only state to have both of them rejected, kicking off a debate in political and academic circles. "The policy is conceived in an extraordinarily casual manner. Comparing IITs and IISc with Manipal University or BITS-Pilani is ridiculous. Across the globe, such status is accorded only to institutes that have high research outputs. The research output of IIT Madras is far superior to that of private universities," said Anna University former vice-chancellor M Anandakrishnan, who was also the director of IIT Kanpur.

"The UGC has concluded that one yet-to-be established university has a potential to become autonomous, scuttling chances of institutions that have been proving themselves for decades just because they did not figure in international rankings," he said.

While higher education minster K P Anbalagan did not respond to calls, higher education secretary Sunil Paliwal said the state was happy that Anna University figured in the list of premier institutions. "We always knew it was a good institution but now we know it is among the top eight public institutions across the country. It is only a matter of time before we get the IoE status," he said.

Opposition parties like the DMK were not convinced. “It is unfair to drop two of our institutions because they did not figure in international rankings. It denies these institutions and its students the grant and allowances they rightfully own,” said former education minister Thangam Thenarasu. The state, he said, should take it up with the Centre. “It will be unfortunate if we don’t fight,” he said.

Earlier, chairman of the empowered committee N Gopalaswami also admitted that large share of weightage was given to perceptions in international rankings. “Number of foreign faculty and students does play a part. Many don’t choose Chennai because it is very hot, and instead prefer a more salubrious climate. So although research and per person output at IIT-M may be good, they were behind others in the international ranking,” he said.

IIT Madras director Bhaskar Ramamurthi said he was happy to know his institute made it to the final eight,but added that the only option for the institute now was to wait. “We believe we can be IoE. In our presentation, we gave a clear pathway,” he said. “But frankly, I don’t know how we can improve people’s perceptions to get higher world rankings,” he said.

Ayurveda Research Set for Tech Upgrade as IIT-Delhi and AYUSH Ministry Partner Up

https://www.news18.com/news/india/ayurveda-research-set-for-tech-upgrade-as-iit-delhi-and-ayush-ministry-partner-up-1808843.html

The All India Institute of Ayurveda and IIT-Delhi are scheduled to sign a Memorandum of Understanding (MoU) to encourage further research in ancient Indian medicines.
The Ministry of AYUSH has proposed to upgrade the education quality and facilities in the field of Ayurveda by inviting technological expertise from Indian Institute of Technology-Delhi.

The All India Institute of Ayurveda and IIT-Delhi are scheduled to sign a Memorandum of Understanding (MoU) to encourage further research in ancient Indian medicines. The MoU would be signed during a two-day conference ‘Raising Towards Excellence’ on July 17-18 at IIC, New Delhi.

Human Resource Development minister Prakash Javadekar and AYUSH Minister Shripad Naik along with representatives from the National Institutes under AYUSH Ministry and IIT-Delhi would be present at the conference.

“AYUSH is working towards upgrading the facility and education in Ayurveda in PG/Research and healthcare. We need to translate the research available in India’s ancient wisdom and for that we need to bring doctors, engineers and management experts together,” Dr Tanuja Nesari, head of the All Indian Institute of Ayurveda, told News18.
IIT-Delhi director Rampgopal Rao confirmed participation in the conference and the signing of the MoU. “Since we do not have a medical faculty, we are trying to connect with AIIMS and AYUSH in studying Ayurveda, especially through our physical engineering department,” he said.

“We can subject Ayurveda to scientific experiment. Ayurveda is based on experience. With IITs

joining them, we can explore the scientific validation, which is missing. We are beginning by inviting one faculty from each side to collaborate for 10 such projects," he added.

He said the initiative is about exploring newer areas under AYUSH.

"We are going to further collaborate on how to make Ayurveda more technologically advanced while remaining firmly rooted to the past," Dr Nesari said.

Doctors, Engineers, Management Gurus to Hone Ancient Thought

The AYUSH Ministry is also inviting representatives from the Indian Institute of Management to developing leadership skills, which are needed "to gain global recognition", said Nesari.

She said the IIT fraternity will discuss about bringing technology and ancient wisdom together, and IIM representatives would provide management and leadership expertise.

Experts opined that Ayurveda is heavily dependent on its old parameters. "As of now, we have a very subjective approach, and it is physician-specific. In the current system, the doctor decides the treatment. We are now inviting engineers and management experts to bring in the technological and managerial finesse to the field so that physicians can deliver healthcare at the fastest pace," added Nesari.

Sanjiv Oza, Vice-Chancellor of the Gujarat Ayurveda University, under AYUSH Ministry, will also be attending the conference. "We need to build the institutes of national calibre, like IIMs and IITs. So basically, we will be brainstorming over our structural changes with Ayurveda's roots remaining intact," he said.

Oza told News18 that the sessions will also deliberate on the use of nanotechnology in Ayurvedic drug preparation and how to use technology in 'Panchkarma' (procedure of purification) or in 'Sushruta Samhita', an ancient Sanskrit text on medicine and surgery.

Move for Change

There would also be focus on achieving administrational and financial uniformity in national institutes under AYUSH.

"Change is welcome. This was not done before because officers did not have this approach towards ancient Indian knowledge. Today, we have a secretary who is an expert, has travelled the country and realises the need to upgrade," added Oza.

In June 2017, AYUSH Ministry broke the convention of choosing bureaucrats as their secretary by appointing Vaidya Rajesh Kotecha, who is an Ayurveda expert.

The conference will be followed by series of other proposals. "There will be a collaborative research product with the IITs and the national institutes under AYUSH to develop the technology and give a

push to start-ups and entrepreneurship," added Nesari.

The conference will be attended by the national institutes under the AYUSH Ministry, All Indian Institute of Ayurveda, Institute of Post Graduate Teaching and Research in Ayurveda (Jamnagar), Morarji Desai National Institute of Yoga National Institute of Ayurveda (Jaipur), National Institute of Homoeopathy (Kolkata), National Institute of Naturopathy (Pune), National Institute of Siddha (Chennai), National Institute of Unani Medicine (Bangalore) and Rashtriya Ayurved Vidyapeeth (New Delhi).

IIT-J Uses Rajasthan Clay to Clean Water in a Low-Cost & Eco-Friendly Way!

https://www.thebetterindia.com/150056/iit-jodhpur-rajasthani-clay-clean-water-purification-low-cost-eco-friendly-way/

It was found that Rajasthani clay-based photo-catalysts are excellent specimens that can be used for water purification purpose.

India is the largest user of groundwater with an estimated 230 cubic kilometers of groundwater per year, which is more than a quarter of the global usage.

But groundwater is rapidly becoming a threat to the population rather than a boon with harmful substances such as agrochemical residue leaching into the water table.

With a majority of the population in India, especially the rural communities, depending upon groundwater for their everyday use, it is becoming critical by the hour to develop techniques to clean underground water.

With this objective in mind, IIT Jodhpur has developed a low-cost, environment-friendly solution that uses the sun and Rajasthani clay to purify contaminated water.

Describing the technology, Sharma told The Times of India that when photocatalysts are exposed to sunlight, reactive oxygen is formed which destroys the contaminants present in the water.

"However, present set of photo catalysts are expensive and practically not viable. Also, they are very fine particles and difficult to retain after treatment of water," he said, describing the previous conventional methods of using photocatalysts.

It was found that Rajasthani clay-based photo-catalysts are excellent specimens that can be used for this purpose. They maintain an inherent surface activity and can recover up to 99% after-water treatment.

And since it is natural clay, it has practically no threat to the environment or the human body.

Sharma said that another key feature of these clay photocatalysts is that they work well for pharmaceutical industry effluents.

The developed technology can be used to clean water from the textile industries, which have been subjugated to dyes and chemicals. This contaminated water is a major problem for Western Rajasthan.

With this cheap and environmentally friendly method, IIT Jodhpur is aiming to provide technical solutions for water purification in the local and remote communities by using a van, equipped with a photocatalytic water purification system.

They are also aiming to license the technology to businesses and organisations that can carry forward the technology to be implemented across India.

July 11

Going Green by Reclaiming Green Sand

https://researchmatters.in/news/going-green-reclaiming-green-sand

Researchers develop a highly effective solution for recovering green sand in small and medium foundries.

About 70% of the cast metal objects around us, from bathroom taps to automobile gearboxes, are manufactured in foundries using a method called sand casting. Molten metal is poured into moulds made from green sand---a mixture of sand (about 80%) and clay (about 10%). At high temperatures of about 1500℃ required for casting, clay forms a coating on the sand particles, and the sand becomes unusable for further casting. The disposal of such sand has severe environmental and cost implications, particularly for small foundries. In a new study, researchers from the Indian Institute of Technology Bombay (IIT Bombay) have demonstrated a practical and economical way to reuse this green sand.

Although existing methods for reclaiming green sand are capable of processing many tons of sand per hour, they are expensive. Since about 80% of the 4600 foundries in India are of small and medium scale, these methods are unaffordable for them as these foundries can reclaim only about 1000 kg of

sand per day. The only viable solution then is to dispose of the green sand by dumping them in water bodies and land. Since used green sand contains heavy metals like lead and tin, which leach into the ground causing water pollution, environmental laws restrict such dumping. On the other hand, buying fresh sand is now expensive since sand mining is banned in most states, further increasing the cost for small and medium scale foundries. Thus, reclaiming used green sand in a cost-effective and scalable approach turns out to be an attractive proposal.

In this study, researchers led by Prof. Sanjay Mahajani of IIT Bombay have proposed mechanical methods to reclaim the sand as opposed to the expensive heat treatment method at 800°C. The team has developed a better, economical and efficient approach to remove the clay using an abrasion and sieving unit.

The key to reclaim the sand is to remove the layer of clay deposited on the sand particles. The team explored various methods to remove the clay deposit mechanically. In the first method the researchers placed the sand in a vertical tube and used a supply of compressed air to enable rubbing of sand particles against each other. In the second case of a horizontal tube is used instead of the vertical tube. This enables additional rubbing of the sand against the walls of the container. Another method made use of small weights to increase the rubbing action or abrasion and a sieve to separate the removed layer of clay. The researchers evaluated the cost and noted the percentage of clay after reclamation for each of the methods.

The researchers found that the best option was the one that used abrasion and sieving. Prof. Mahajani suggested a two stage method where the sand particles are rubbed in the against pebbles in the first stage and sieved in the second stage to separate the clay particles. The sand to be reclaimed is placed in a rotating drum and pebbles of a hard stone such as agate are used for rubbing the clay off the sand particles. The weight of the pebbles needs to be chosen carefully so that clay is removed but the sand particles are not crushed. Pebbles weighing around 40g were found suitable. The second stage uses a rotating drum with a 50 micron (about the thickness of human hair) mesh that acts as a sieve. The sand particles rub against each other in this stage. Since clay particles are smaller in size than sand particles, they pass through the sieve and are collected and disposed of, leaving behind the reusable sand.

In some cases, if the green sand has a substantial moisture content, the efficiency of reclamation is reduced. Hence, the unit has a heater and blower system which first dries the sand before the reclamation process starts.The study found that the rotation speed of the device, the weight and size of agate pebbles, the moisture content of sand and the temperature were some of the factors that can influence the performance of the device.

So how efficient and economical is the proposed new method? The researchers found out that only 2.2% clay remained after the proposed two stage method at the cost of Rs. 550 per ton, while the corresponding numbers were 4.4% at Rs. 2700 per ton for the vertical tube method and 2.2% at Rs. 5600 per ton for the horizontal tube method. Although the setup and installation cost of the proposed two-stage unit is more than other conventional setups, the operating cost is much lower. The process results in a massive 83% savings over buying fresh sand, which costs about Rs 3200 per ton.

The researchers have set up a working prototype of the proposed unit which is capable of processing 100 kg of green sand per hour. "The two-stage device has been installed in the Government

Polytechnic College, Kolhapur, Maharashtra", says Prof. Mahajani, talking about the success they have seen so far. "Kolhapur is a large foundry cluster, and many small foundries are operational in this area. We are collecting the waste green sand from small-scale foundries and reclaiming using this prototype. As far as field trial results are concerned, they were found to be satisfactory. They appreciated our work and also started to use our reclaimed sand", he adds.

The study, published in the Journal of Materials Processing Technology, brings in an invention that caters to the needs of small and medium scale foundry owners, who can now abide by the environmental laws and obtain reusable, clean sand with minimal impacts on the environment. The researchers are now improvising on this innovation. "We are working on a hybrid unit which facilitates both thermal and mechanical reclamation. We are also trying to prevent the heat loss as much as possible to reduce the processing cost", shares Prof. Mahajani before signing off.

85/99 students successfully placed in IIT Mandi, an 86 per cent placement record for the institute

https://www.indiatoday.in/education-today/news/story/iit-mandi-successful-placement-record-2018-amazon-isro-1282479-2018-07-11

Indian Institute of Technology, Mandi, has recorded another strong season of placements with 86 per cent of the eligible students getting placed. Several of the remaining students have opted for higher studies, starting their own ventures, or preparing for competitive exams.

85/99 undergraduate students got placed

Of the total 99 undergraduate students eligible for placements during Academic Year 2017-18, 85 students got placed making it to a successful 86 per cent placement record for the institute.

A total of 103 offers were made in 2017-18, as against 95 offers in the preceding year.

The total number of companies that visited the campus increased to 58in 2017-18, which is the highest ever for any placement season in IIT Mandi -- as compared to 31 in the preceding academic year.

Major placement firms

The major firms that came for placements and internships include:

Amazon
Goldman Sachs
Siemens
Directi
Samsung Delhi

L&T ECC
Capgemini
Cognizant
Internet Academy

Public Sector Undertakings (PSUs) such as Indian Space Research Organisation (ISRO) and Hindustan Petroleum Corporation Limited (HPCL) also recruited students from IIT Mandi in 2017-18.

Four IIT Mandi students got placed in ISRO.

Varun Dutt, Faculty Advisor, Career and Placement Cell, IIT Mandi said that "this year, we saw 58 companies visit our campus at Kamand, which is the highest ever at our Institute till now." He added:

Computer Science and Engineering, Electrical Engineering, and Mechanical Engineering B. Tech. branches recorded 100%, 83%, and 63% placements respectively, in different companies.

The remaining Electrical and Mechanical Engineering students were planning to pursue other careers, finished Dutt.

A total of 18 startups visited IIT Mandi

The number of startups, especially those working in Artificial Intelligence/Data Sciences sector, recruiting from IIT Mandi also increased this year.

A total of 18 startups visited the campus this year, as against 11 from last year's, recruiting a total of 23 students during 2017-18

Top 5 recruiters (in terms of students placed) from IIT Mandi were:

Amazon: 11 offers
L&T ECC: 8 offers
Capgemini: 7 offers
Goldman Sachs: 6 offers
Siemens: 6 offers

Other recruiters

Some of the other recruiters include:

DE Shaw
OYO Rooms
TCS Research
Internet Academy
Vehant
Khosla Labs
Addverb
Future First
Finisar

L&T
Infosys
Cognizant
Palc networks
Samsung Noida
Wipro
Leptonmaps
Truring
Timetooth
KisanHub

Among those placed

100 per cent of the computer science and engineering students were placed in core computer science and engineering companies

87 per cent of mechanical engineering students were placed in core mechanical engineering companies

42 per cent of electrical engineering students were placed in core electrical engineering companies

IIT Mandi: An early bird

IIT Mandi started placements earlier as compared to older IITs.

The intense competition on day zero resulted in higher number of offers being made.

Also, the institute pushed it's students for internships in top companies and this push resulted in a large number of pre-placement offers at the end of their internship.

As per the tech college's records, about 1-3 per cent of the students try for engineering and civil services after graduating from the institute.

IIT Mandi students hired for diverse profiles

Companies hired students for diverse profiles such as:

Analyst
Applications Engineer
Member of Technical Staff
Associate Applications Developer
Management Trainee
Assistant Technical
Scientist
Graduate Engineer Trainee
Platform Engineer
Software Engineer
Officer/Engineer

Senior Software Engineer
Member Technical
Software Developer Engineer
Business Analyst
Software Engineer
Young Technical Leader

About IIT Mandi

IIT Mandi is a fully residential institute with more than 100 faculty members, over 1000 students across the four years of Bachelors of Technology (B.Tech) Degree, Master's students and PhD scholars working on Rs. 70 crore worth of ongoing Research Projects.

The residential campus in the serene landscape by the river Uhl offers a world-class academic environment with a high quality of life in a setting of natural splendor.

July 10

IIT Kanpur invents physics formula for deadly 'reverse swing' in cricket

http://www.dnaindia.com/cricket/report-iit-kanpur-invents-physics-formula-for-deadly-reverse-swing-in-cricket-2635561

Wasim Akram

The Indian Institute of technology (IIT) Kanpur has finally solved the physics behind once Pakistan's one-man powerhouse Imran Khan deadly 'in-dippers' or reverse swing. The new physics formula for swing, if adopted by the BCCI and Indian Coaches, may help the Indian pace battery to produce Imran Khan like results.

Professor Sanjay Mittal and his two students Ravi Shakya and Rahul Despande of the Institute's Aerospace department were conducting a series of research to unravel the mystery behind different swings by pacers on the cfricket pitch.

After research on run-up, bowling action, technique, delivery etc of different well known swing pacers in the world, the research team connected the swing on the pitch in their laboratory with formula of physics.

As per the new physics formula they invented for swing, they found that four conditions are required for any pacer to deliver any kind of swing. They are angle of the seam of the ball, speed, rough surface of the ball / pitch and weather conditions.

During they research they found that there was direct connection between the angle of the seam of the ball and speed to deliver deadly reverse swing. It was easier for medium pacers to generate revisers swing (in-dipper) than fast bowlers due to roughness of the ball and pitch.

Prof Mittal claimed that it was easier for any pacer (medium or fast) to deliver a reverse swing by applying a simple formula of physics and changing his action at the final delivery of the ball. He claimed that if a pacer delivers the ball by turning the seam 20 degree downward with a pace of 30 to 119 kms/hor speed, he gets the maximum swing, depending upon the weather conditions.

The Professor and his team claimed that if the ball is bowled at the speecd between 119 and 125 kms/our, the bowler with this formula can get reverse swing in the first trajectory and natural swing in the other, which is often called late swing in cricket. Imran Khan was famous for this kind of reverse swing, which used to be called his deadly in-dippers.

They also studied the connection between surface / roughness of the ball and swing and found that rough surface of the ball / pitch help medium pacers with speed of 20 and 70 kms to produce natural swing while pacers throwing the ball at the speed 79 to 140 kms/hour and above gets reverse swing if they knew the physics behind producing swings.

Ball tampering cases are due to this reason when a pacer tries to make the ball surface rough with his nails or using some pointed objects to bring down the thickness of the ball by one mm. This condition of the ball helps pacers generate more swings than the usual ball.

Swings are better produced in cold conditions than heat. It is due to this reason pacers always prefers playing matches in winters than summers. They came to conclusion after studying the success story of Saurav Ganguly ‘dada’ in wintry conditions of England where bowled medium pace and claimed many wickets. He, however, was not successful back home in Kolkotta and Delhi.

After inventing the physics formula for swing, the Aerospace department research team plans to do its trial on the pitch with real pacers before offering it to the BCCI and Indian coaches training new generation of pacers for the Indian Cricket team.

July 8

From 2019, students can appear for JEE, NEET tests twice in a year

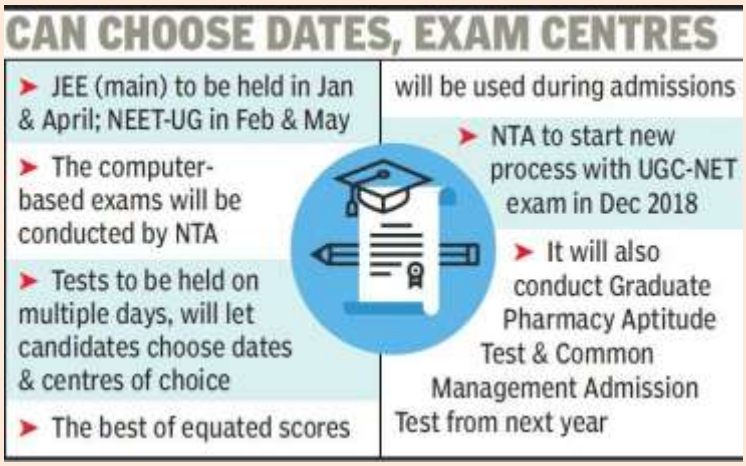
https://timesofindia.indiatimes.com/home/education/news/from-2019-students-can-appear-for-jee-neet-tests-twice-in-a-year/articleshow/64901708.cms

This year, 12 lakh youngsters sat for the annual JEE Main for admission to engineering institutions. Predictably, many could not make the grade, while others would have wanted to improve their scores, but their next opportunity would have come only a year later. This will no longer be the case, with the government announcing on Saturday that from 2019, aspirants will be able to sit twice a year for not only JEE Main, but also NEET for entry into medical colleges.

Examinees will be able to appear for JEE Main in January and April of every year and for NEET in February and May for the academic sessions beginning in August of that year. This will allow an examinee to choose either of the months to attempt the engineering or medical entrance test, or to repeat the test if the first score doesn't prove satisfactory.

The exams will be conducted by the newly formed National Testing Agency (NTA), which will take care of the variation in difficulty levels in the two tests in each course through the use of specialised standardisation techniques while determining the final scores.

The marks obtained in JEE Main determine admissions to the National Institutes of Technology, Indian Institutes of Information Technology and other government-funded technical institutes that together offer around 24,000 engineering seats. Many private schools also use JEE Main marks for their admission processes. High JEE Main scores are a benchmark for IIT aspirants, who then appear for the JEE Advance tests. NEET tests regulate admissions to around 60,000 undergraduate medical seats.



The computer-based tests will be conducted by NTA and not the Central Board of Secondary Education and other agencies like the All India Council for Technical Education (AICTE) as at present. "All entrance exams which were conducted by CBSE, such as UGC-NET, JEE Main and NEET, will now be conducted by NTA," Union human resource development minister Prakash Javadekar said on Saturday.

NTA will begin with the University Grants Commission's National Eligibility Test (UGC-NET) for college and university teachers, requiring a post graduate degree, from December 2018. From 2019, NTA will also conduct the Graduate Pharmacy Aptitude Test (GPAT) and Common Management Admission Test (CMAT) both conducted by AICTE so far.

With JEE Main and NEET being conducted twice for a single admission process, there will be a need to standardise the scores from the two sittings, say of January and April 2019 for JEE admissions of August 2019. "We will ensure that the difficulty levels are same across papers," said a senior HRD official. However, the tests will be equated nevertheless using psychometric methods,

standardisation techniques and the best of the equated scores will be used for admissions in case of variation in difficulty levels.

From August this year, NTA will start providing experience of computer-based tests through dedicated centres and test downloads free of cost to acclimatise candidates to the new system. The HRD ministry assured that the syllabus would remain the same and there would be no increase in cost of application while the exams will be more transparent and leak proof.

"This year in JEE-main 2.5 lakh candidates sat for the computer-based exam while the rest took a pen and paper exam. Computers will ensure security, transparency of exams and will be similar to international practice," said Javadekar.

Around 13 lakh aspirants sat for NEET this year, and 12 lakh for JEE Main. UGC-NET generally logs around 12 lakh registrations, while one lakh aspirants sit for the CMAT, and another 40,000, the GPAT.

NTA will soon provide a list of computer centres. Some of these will double up as practice centres free of cost for students who don't have personal computers. Javadekar said that this will ensure exams are leak-proof, of international standards and are much more convenient for candidates as they will be computer-based and allow faster declaration of results.

July 7

IIT-Kanpur puts on hold 3rd round of document verification, no counselling for IITs & NITs

https://timesofindia.indiatimes.com/city/kanpur/iit-kanpur-puts-on-hold-3rd-round-of-document-verification-no-counselling-for-iits-nits/articleshow/64894172.cms

The third round of document verification and counselling of JoSAA scheduled to be held on Saturday has been put on hold. With this, the counselling at all 23 IITs, National Institutes of Technology (NITs), IIITs and other government-funded technical institutions (GFTIs) will not take place on Saturday and Sunday.

Talking to TOI, organizing chairman, JEE Advanced 2018, prof Shalabh said, "Seat allotment, document verification and acceptance of seat by reporting at the reporting centres is in abeyance until appropriate orders, passed in a writ appeal by Madras high court on July 2 are received by the IIT-K".

Any further development will be announced on JoSAA and JEE Advanced 2018 website, he added.

A candidate, Lakshmi Sree L, who had successfully qualified JEE Advanced 2018, conducted by IIT-Kanpur, filed a writ petition in Madras high court on July 2 mentioning therein that she had followed the instructions carefully and spent her time during the examination by rounding the numerical value to the second decimal place for example 7.00.

She also mentioned in the writ petition that some of the candidates, without reading the instructions carefully, had given answers not up to the second decimal which is against the instructions given during the examination.

It was stated in the petition that a clarification in this regard had been made by IIT-Kanpur in its website which is against the instructions given during JEE Advanced 2018. IIT-K in its clarification had mentioned that if an answer is the integer 11, then all answers entered as 11, 11.0 or 11.00 will be correct. The petition said the grievance of the petitioner is that if marks are awarded to candidates, who have not strictly followed the instructions, it will affect the marks and ranks of candidates who have followed the instructions carefully. The candidate Lakshmi Sree, however, was successful in reserving BTech seat in mechanical engineering department under slide option at IIT-Kanpur, informed JEE office.

IIT-Kanpur through its lawyer had filed an appeal in the division bench of the Madras high court on Friday, and subsequently put on hold the task of document verification and counselling till further court orders.

Punjab Pollution Control Board comes up with plan for plastic waste management

https://www.hindustantimes.com/punjab/punjab-pollution-control-board-comes-up-with-plan-for-plastic-waste-management/story-ZPMhCcxcbsPaEn1MTJ5DfN.html

A new technique to produce pyrolysis oil (bio-oil) from multilayered plastic waste has been developed. The oil can be used as an industrial fuel in furnaces

Multilayered plastic waste, including chips, biscuit, chocolate, and toffee wrappers, and other packed material, cannot be recycled and is a major cause of pollution as they choke drains and sewer lines.

The Punjab Pollution Control Board (PPCB), in collaboration with the Thapar University and the Indian Institutes of Science Education and Research (IISER), has developed a new technique to produce pyrolysis oil (bio-oil) from multilayered plastic waste.

Multilayered plastic waste, including chips, biscuit, chocolate, and toffee wrappers, and other packed material, cannot be recycled and become a major cause of pollution as they choke drains and sewer lines.

PPCB chairman Kahan Singh Pannu said that the Board has offered to purchase this multilayered plastic waste for ₹10 per kilogram from the ragpickers. The money will be paid through registered society or plastic waste management society, which have been constituted in coordination with multinational food processing companies.

“The societies will be responsible for managing such waste,”the PPCB chairman said.

Pannu said that the multilayered plastic waste is generally coloured packing material which is a combination of plastic and aluminium.

“The ragpickers did not pick the multilayered plastic waste as it is light weight and cannot be recycled. The society will now pay ragpickers to collect the same, buy it from them and use it to produce pyrolysis oil at a unit set up in Mandi Gobindgarh,” he said.

He added that the plan will be implemented in Fatehgarh Sahib district on trial-basis, with an aim to make it first multilayered plastic-free district in the state.

“Pyrolysis oil is the end product of waste plastic and can be used as an industrial fuel in furnaces and the remaining pieces of multilayered waste can be used in construction of roads. A meeting has been set up with officials of the departments concerned to discuss the strategy,” Pannu said.

The PPCB chairman has directed the municipal councils in the district to actively participate in the drive, and get the multilayered plastic waste collected from the drains nad other areas.

The project will also help the ragpickers in improving their financial conditions, Pannu said.

Fatehgarh Sahib deputy commissioner (DC) Kanwalpreet Kaur Brar has assured to extend all possible assistance to the PPCB to make the project a success.

WHAT IS PYROLYSIS OIL?

- It is an end product of plastic waste and tyre pyrolysis. It is widely used as an industrial fuel to substitute furnace oil or industrial diesel.
- It is used as a fuel in: Burners of boilers, furnaces, hot water, hot air generators, thermic fluid heater, hot mix plants, other industrial burners, electric generators (mixed with 50% diesel), diesel pumps (mixed with 50% diesel)
- SOURCE: pyrolysisplant.com