NEWS CLIPS

January 5-11, 2019

Highlights of the Week@IITD

Delhi to get bi-weekly pollution action plan: Here's how it will impact environment

https://www.mynation.com/news/delhi-to-get-bi-weekly-pollution-action-plan-here-is-how-it-will-impact-environment-pl27r7

HIGHLIGHTS

The bi-weekly pollution action plan, which is being formulated by scientists from IIT-Delhi, is expected to come up with pre-emptive measures. It will give an idea about which place will record a higher level of pollution.

The national capital is all set to get its first bi-weekly pollution action plan by February 2019. The Central Pollution Control Board (CPCB) will be funding the project from the 'Environment Protection Charge' paid by heavy-duty diesel vehicles.

Initially, it was decided that the project will be restricted to only Delhi, but later it was proposed that it will be extended to all the surrounding cities in the NCR.

What to expect from the project

1. The bi-weekly pollution action plan, which is being formulated by scientists from IIT-Delhi, is expected to come up with pre-emptive measures.

2. It will not only tell us how pollution could spike in the coming days, but also give an idea about places that would record a higher level of pollution.

3. The plan will also suggest what sources need to be controlled to bring down the pollution level, measures that could be enforced and by what percentage the pollution level would go down if the advice is taken.

4. Assistant professor at civil engineering department of IIT-Delhi Sri Harsha Kota said, as reported by Hindustan Times, "The plans would be submitted to the Central Pollution Control Board (CPCB) at least a week in advance so that authorities get the time to take decisions and act on it. The measures suggested for every fortnight would change according to forecast and the probable pollution sources."

5. Scientists have been studying the latest emission inventory report of Delhi prepared by the Indian Institute of Tropical Meteorology.

6. They have been also consulting three-years' data from the India Meteorological Department and National Physical Laboratory, which would be then fed into a US atmospheric dispersion modelling system. This will help them to predict how, where and when the population level can rise.

7. "Based on these forecasts, we would prepare bi-weekly or fortnight action plans primarily targeting the PM2.5 levels in the pollution hotspots. The plans would also try to tell by what percent the pollution could drop if the measures are implemented," said Mukesh Khare, a professor at IIT-Delhi and coordinator of Centre of Excellence for Research on Clean Air, according to the website.

IIT Delhi alumnus pledges □10 crore

https://www.thehindu.com/news/cities/Delhi/iit-delhi-alumnus-pledges-10-crore/article25922125.ece

Indian Institute of Delhi alumnus Amarjit Bakshi, who is also the founder and managing director of Central Park and Continental Engines, has pledged support of ₹10 crore to IIT Delhi, the institute said on Saturday.

Mr. Bakshiwill be paying the amount to the institute on a ₹1 crore per year basis.

"His support is significant as it will go a long way in augmenting IIT Delhi's endowment fund, which the institute envisages to put in place to pursue its vision and mission that now contains reiteration of goals such as internationalisation, interdisciplinary activities and industrial connect under the status of Institute of Eminence," the institute said. Professor V. Ramgopal Rao, Director IIT Delhi said: "As an Institute of Eminence, we have very high aspirations and alumni contributions will go a long way in achieving these objectives. Mr. Bakshi is a pioneer in his field and I am sure that this contribution will motivate many of our alumni to come forward and give back to the institute."

Twin Brothers from Delhi Score Over 99 Percentile in CAT 2018, Younger One Loses To Elder By 0.2

https://www.mensxp.com/social-hits/news/49231-twin-brothers-from-delhi-score-over-99-percentile-in-cat-2018-younger-one-loses-to-elder-by-0-2.html

That time of the year is finally here, when someone around you will suddenly start showing interest in you. People who haven't called you in months, will now want to talk to you and know how you're doing.

This is not a horoscope and I am not predicting your love life. I am talking about those nosy relatives and neighbours, who don't bother about your existence the whole year, but will now call you to know your CAT percentile. The results of CAT (Common Admission Test) 2018 were announced yesterday and as many as 11 candidates have scored 100 percentile.

While, the first position is acquired by 22-year-old IIT Kanpur graduate Rounak Majumdar, the second spot has reportedly been acquired by Abhishek Garg from Delhi who scored 99.99 percentile.

Abhishek and his twin brother Anubhav garg, both cracked CAT 2018 and scored over 99 percentile; but Anubhav is 0.2 percentile behind Abhishek, making him the topper from Delhi. Abhishek and Anubhav have always been toppers in their school, the kind of students our parents want us to be friends with.

They cracked engineering exam JEE together, joined IIT-Delhi together and now both of them have cracked CAT 2018 too. Explaining the mantra behind his success to The Indian Express, Abhishek Garg said "Repetitive mock tests is the key to success. Apart from it, hard work throughout the year with special focus to Quant section helped me a lot."

The Garg brothers draw inspiration from their father, Tarun Garg, who himself is an alumnus of IIM-Lucknow and working as an executive director, marketing in Maruti Suzuki India. "The success of my father in the management field inspired us to choose the path," Abhishek added.

This IIT-Delhi student is offering low-cost smart home solutions

https://www.newsbytesapp.com/timeline/India/39537/175197/all-about-this-iitian-s-india-centric-smart-home-solution

Home automation is an emerging market in India, and has a long way to go before it can become mainstream.

Given the relatively nascent stage the market is in, quality smart home solutions are hard to find, or are often prohibitively expensive.

However, Pranjal Kacholia, a 3rd year IIT-Delhistudent, has plans to change that with his indigenous, cost-effective smart home solution.

All about this IITian's India-centric smart home solution

Journey
The beginning of Pranjal's entrepreneurial journey

Speaking to NewsBytes, Pranjal said that his journey began a couple of years back, when he found a glaring problem.

Pranjal was looking for smart home solutions in his hometown of Kota, Rajasthan, when he found that vendors were quoting as much as Rs. 8 lakh for home automation.

He immediately realized that customers were being overcharged, and that there was an opportunity.

Eden Smart Homes
Seeing an opportunity, Pranjal founded Eden Smart Homes in 2017

With the idea of changing the smart home market in India, Pranjal teamed up with four other engineers who had made forays into this space earlier, and founded Eden Smart Homes in July 2017.

Within a year, Pranjal and co. had managed to come up with an indigenously-built, hi-tech smart home solution, that was not just cost-effective, but also designed for India in particular.

Overview
An overview of Eden's product

Eden's solution involves installing small hardware modules behind switchboards which allows all appliances in a house - from fans and lights to ACs and geysers - to be controlled via a smartphone app.

The best part? Eden offers a retrofit solution that essentially means older wiring, appliances, and switchboards do not have to be changed.

Further, unlike many other smart home solutions, there is no central hub.

Details
How the Eden Smart Module works

These Eden Smart Modules take a mere 15 minutes to install.

Once installed, the modules connect with a house's Wi-Fi router and offers smart home functions via a mobile app.

When you give a command to turn on/off an appliance, the Wi-Fi router relays the message to the concerned module.

Commands can be issued remotely from anywhere.

Users also get push notifications when appliances are turned on/off.

Other features offered by Eden's solution

Other features offered by Eden's solution include monitoring power consumption, the ability to view real-time status of appliances, scheduling on and off times for appliances, creating custom scenarios, one-button control of the entire smart home etc.

Advantages
The numerous advantages offered by Eden's solution

Notably, Eden's smart home solution offers several advantages.

Apart from costing a fraction of similar global products, the Eden Smart Module, as it is called, also eliminates other potential problems.

By eliminating the need for a central hub, Eden ensures that failure of one module does not affect the entire smart home's functioning.

Further, push notifications can also serve as security alerts for unauthorized use of appliances.

So, how much would automating a home cost?

Eden Smart Home's solution is also considerably cheaper than alternatives offered by other global brands. For perspective, Pranjal told us that fully automating an entire 3 BHK apartment would cost just Rs. 90,000, compared to several lakhs for solutions by other brands.

Future plans
What Eden has planned for the near future

As it stands, Eden Smart Homes has received backing from the government's StartUp India program, and is awaiting patents for its technology.

Eden is also partnering with builders in Delhi, and has demo modules installed in some flats made by big builders.

Further, Eden is in talks with distributors across India to create a pan-India reach as it looks to scale up production.

It's a great time to be in the IoT business

Given Eden's innovative approach and the price-sensitive nature of the Indian market in general, it could stand to gain a lot from the emerging IoT market in India, which is slated to hit $15bn by 2020.

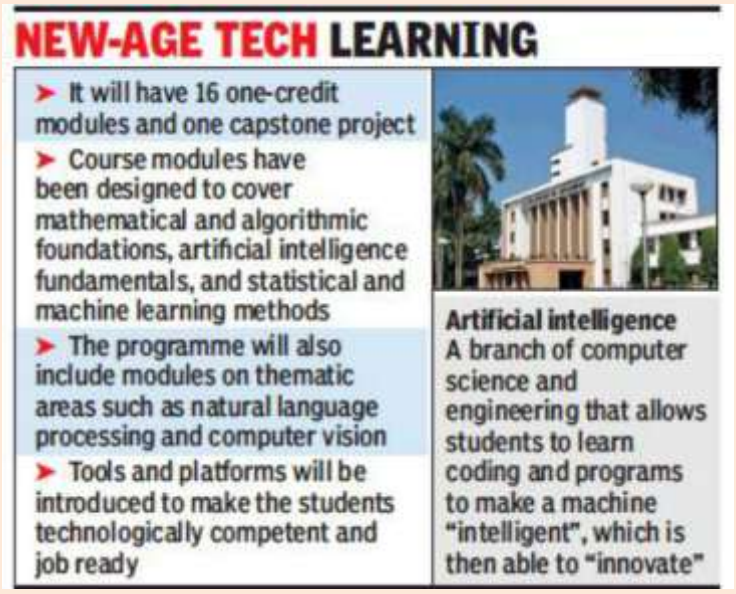
January 11

IIT-Kharagpur ready with six-month Artificial Intelligence course

https://timesofindia.indiatimes.com/city/kolkata/iit-kharagpur-ready-with-six-month-artificial-intelligence-course/articleshow/67481326.cms

There is good news for professionals as well as students in the final year of engineering and science streams. Indian Institute of Technology Kharagpur (IITKgp) is ready with a sixmonth certificate programme on Artificial Intelligence (AI) and Machine Learning which will allow the professionals to brush up their skills on the new-age technology.

The course will commence on March 15 with centres initially at Kharagpur, Bangalore, Kolkata and, possibly, Hyderabad. The six-month programme will cover foundational concepts as well as industrial application of AI with a mix of classroom teaching and online learning.



"The AI wave has been touted as the fourth industrial revolution and there is a growing perception that it will disrupt almost every sector. But it will also create many more. There is an increasing need for skilled AI professionals in order to create and augment AI systems. Around 2 lakh jobs are expected to be created by 2020 in the AI field in India," said IIT-Kharagpur director, Partha Pratim Chakrabarti.

"The certificate programme by IIT-Kgp is aimed at strengthening India's talent pool in Machine Learning and Artificial Intelligence," added Sudeshna Sarkar, head of department at Centre for Artificial Intelligence, IIT-Kharagpur.

With the launch of the Centre for Artificial Intelligence earlier this year, IITKharagpur has taken up the task of training engineers in the new technologies in this domain. The trainees will be selected from working professionals and senior students. In the first batch, 300-400 aspirants will be allowed to enrol for the course.

The classes will be taken by faculty experts from IITKgp and other reputable institutions as well as industry experts. Students will have the opportunity to work on live projects. A certificate will be awarded based on successful completion of the modules.

"A rigorous AI program for professionals is the need of the hour. This program has been designed by IITKharagpur faculty in consultation with industry experts," said Chakrabarti.

Aneesh Reddy, founder of Capillary technologies which has seed-funded the course welcomed the move as he identified the talent scarcity in AI as one of the biggest challenges in its adoption by Indian tech ecosystem.

The course is the first of several certificate courses being launched by IIT-Kharagpur to deliver high quality AI training.

January 10

Merit trumps quota need: JEE data

https://www.telegraphindia.com/india/merit-trumps-quota-need-jee-data/cid/1681341

Most of the students who might qualify under the economic quota would probably have qualified anyway on merit

A look at the break-up, by parental income, of the students who registered for the JEE Advanced in 2016 and those among them that qualified appears to counter the idea that economic backwardness may by itself translate into educational backwardness.

Among the students who declared their parental income and registered for the JEE Advanced — by clearing the tough JEE Main — nearly 90 per cent showed incomes below Rs 8 lakh a year.

Among the students who cleared the JEE Advanced —qualifying for admission to the IITs — over 82 per cent of those whose parental income is known came from below the Rs 8 lakh category.

If low-income candidates can crack the JEE Advanced — one of the toughest admission tests in the country — they are likely to ace entrance exams for other courses and institutions too.

The Centre plans to introduce a 10 per cent reservation in government jobs and education for the "economically weaker sections" among communities that so far did not enjoy the benefit of quotas. Officials have said an annual parental income of Rs 8 lakh is the likely cut-off to determine who is eligible for this slice of reservation.

But the JEE Advanced Report 2016 issued by the IITs suggests that the government's proposed quota may have only a minimal impact on admissions, rendering it largely redundant, academics suggested. Some of the highlights of the report's findings:

At least 75.53 per cent of the 1.56 lakh students who registered for the JEE Advanced have parental incomes below Rs 8 lakh. This accounts for 89.4 per cent of the students whose parental incomes are known.

Of those who qualified through the JEE Advanced, 69.48 per cent were from the below-8-lakh category, which comes to 82.4 per cent of those whose income category is known.

Suppose one assumes that the entire chunk of 49.5 per cent quota (Dalit, tribal, OBC) students falls within the below-8-lakh bracket and leaves them out of the calculations. Even then, the below-8-lakh general category students account for 74.4 per cent and 57.4 per cent, respectively, of the general students who registered and qualified.

This implies that most of the students who might qualify under the economic quota would probably have qualified anyway on merit.

"I, therefore, don't see much change in the profile of the students coming to the IITs (because of the proposed quota). The catchment for the 10 per cent quota remains virtually the same as that for the

(current) 50.5 per cent unreserved seats," said M.K. Panigrahi, an IIT Kharagpur professor and former JEE Advanced chairperson.

G.B. Reddy, an IIT Delhi professor and former JEE chairperson, echoed him, arguing the proposed quota would not help the targeted group much. He suggested the government might eventually feel compelled to create supernumerary seats for the economically weaker students from the upper castes --- or perhaps create extra seats for everyone.

"My gut feeling is that the government may create additional seats," he said.

One possible implication of the JEE Advanced 2016 Report is that a lower income cut-off may have a greater impact.

The chart shows that up to the Rs 3 lakh bracket, each category's share in the "qualified" column is less than its share in the "registered" column. The higher up the income scale one goes, the better the performance.

A human resource development ministry official underlined one facet of the economic quota: the space available for Dalit, tribal or OBC students to make the general merit list will shrink by 10 per cent.

MEANS AND MERIT

How students who took the JEE Advanced 2016 performed if classified according to parental income

Income (Rs)	Registered (%)	Qualified (%)
Up to 1 lakh	27.76	18.95
1 to 2 lakh	11.41	9.64
2 to 3 lakh	9.82	9.44
3 to 4 lakh	8.07	8.27
4 to 5 lakh	7.56	8.63
5 to 6 lakh	5.64	7.23
6 to 7 lakh	2.87	3.87
7 to 8 lakh	2.40	3.46
Over 8 lakh	8.94	14.84
No info	15.53	15.68

Source: JEE Advanced Report for 2016 issued by the IITs. Most of the candidates stated their parental income in their application forms but some didn't

IIT-Kanpur expels 18 over 'poor academic performance'

https://indianexpress.com/article/education/iit-kanpur-expels-18-over-poor-academic-performance-5531090/

While nine postgraduate students were permanently terminated in a senate meeting held in December, nine undergraduate students were terminated in a senate meeting held Tuesday.

As many as 136 students were served termination notices in December over “poor academic performance”. Among them, 73 were undergraduate student while 63 were pursuing postgraduate and PhD courses.

IIT-Kanpur has expelled 18 students over “poor academic performance”. The institute’s deputy director, Manindra Agarwal, said the students can re-appeal.

While nine postgraduate students were permanently terminated in a senate meeting held in December, nine undergraduate students were terminated in a senate meeting held Tuesday.

As many as 136 students were served termination notices in December over “poor academic performance”. Among them, 73 were undergraduate student while 63 were pursuing postgraduate and PhD courses.

“It was more on a temporary basis. The students then appealed against the termination. In the senate meeting held last month, appeal by postgraduate and research students were heard and nine of them got permanent termination. In Tuesday’s meeting, the senate heard appeals of undergraduate students. I was not part of that meeting, so I cannot confirm the exact number of students permanently terminated,” said Agarwal.

The Institutions of Eminence Haven't Been Selected Yet. Who's Responsible?

https://thewire.in/education/the-institutions-of-eminence-havent-been-selected-yet-whos-responsible

The government is in a quandary because the body it tasked with picking deserving universities has done more than it was asked to.

Union HRD minister Prakash Javadekar

The Government of India launched the Institutions of Eminence (IoE) initiative in 2017. It sought to pick 20 IOEs – 10 public and 10 private universities – to break into the ranks of the top 500 institutions worldwide.

In July 2018, based on the Empowered Experts Committee (EEC) recommendations, the government selected six IOEs (three public and three private):

IISc Bengaluru
IIT Bombay

IIT Delhi
BITS Pilani
Manipal Academy of Higher Education
Jio Institute

In the process, the government left out five public universities also recommended by the EEC: IITs Kharagpur and Madras, Delhi University, Jadavpur University and Anna University.

In the first week of December 2018, the EEC forwarded the names of 19 institutions for consideration of eminence status to the University Grants Commission (UGC). At the time, the government and the EEC reportedly differed over the number of institutions to be considered 'eminent'. The EEC wanted all of its 30 recommendations to go through whereas the government preferred sticking to 20 as originally stipulated.

But almost a month later, the government hasn't said anything about the 14 remaining IoEs. And although the UGC has to forward these names to the Ministry of Human Resource Development within 15 days, this hasn't happened yet either.

What's going on? Apart from being mum on the other 14 institutes, the government hasn't announced the names of the five universities that the EEC had recommended in July 2018. It's also puzzling that they haven't yet been inducted into the IoEs group, especially when the government can't go wrong in announcing their selection and deliberating on the merits of the recently-recommended institutions after.

And why is the EEC seeking eminence status for 30 institutes when the government's initiative mentioned only 20?

The delay may have something to do with the EEC's new list of 19 universities, which includes sectoral and/or specialised institutions unlikely to become world-ranked universities, and its insistence that 30 institutions be accorded 'eminent' status.

Private universities: Satya Bharti University; Krea University; Amrita Vishwa Vidyapeetham; Vellore Institute of Technology; Jamia Hamdard University; Shiv Nadar University; Azim Premji University; Ashoka University; Kalinga Institute of Industrial Technology; O.P. Jindal Global University; Indian Institute for Human Settlements; and Institute of Public Health Sciences.

Public universities: Banaras Hindu University (BHU); Tezpur University; Savitribai Phule Pune University; University of Hyderabad; Aligarh Muslim University; Panjab University; and Andhra University.

The new list contradicts the EEC's own report to the government in mid-2018. In that report, the EEC referred to the UGC Guidelines and the UGC Regulations (both 2017) and said that its goal was "to assess the potential of an institution to be globally ranked among the top 500 in 10 years and eventually among the top 100."

The EEC report's discussion on sectoral/specialised institutions is interesting here. The EEC noted that several public institutions had applied for 'eminence' status. It praised the achievements of some but criticised those that had "applied for recognition under the scheme most probably attracted by the financial dispensation and not because they stand a reasonable chance of achieving the stiff goal of being within 500 of world university rankings in 10 years."

The committee then went beyond its mandate and proposed a category of 'Special Institutions'. As stated in the report:

The EEC would like to recognise a number of applicant institutions who hold great potential to reach national and global prominence in a singular field of study, e.g. management, agriculture, technology, medicine, etc. … However, it does not believe that the IoE program, targeted to build world-class universities that are measured against broader benchmarks and expected to produce diversified outcomes, is the right avenue to support their future development.

Therefore, it recommended "the government establish a special program for standalone institutions, invest in them and allow them to excel on the world stage in their own chosen field."

These recommendations were well-intended – but the government had asked it to select eminent institutions and not recommend 'Special Institutions'. As a result, it's not surprising that the government now finds itself in a quandary. It had asked the EEC to recommend institutions. In the first instance, the EEC proposed 11 of which the government selected six. The second time, the EEC recommended 19 and seems dead-set on all being qualified as 'eminent'.

At this juncture, the Government of India should quickly stamp its final authority on the matter and do what it first set out to do: select those universities capable of breaking into world university rankings as IoEs and ignore the EEC's recommendations.

Scientific community expresses concern over 'attacks on critical thinking'

https://www.outlookindia.com/newsscroll/transferred-on-basis-of-false-unsubstantiated-and-frivolous-allegations-alok-verma/1456162?scroll

In the last four years, there have been efforts to actively propagate pseudoscience and anti-scinece perceptions, D Raghunandan of All India Peoples Science Network said, while expressing concern over attacks on critical thinking in educational institutes like JNU.

Speaking at a panel discussion on 'Science Movements in India' in the presence of Professor M Jagadesh Kumar, Jawaharlal Nehru University vice-chancellor, Raghunandan said, "There are attacks on critical thinking which is core to the idea of scientific temper. This is happening in institutes of higher learning like JNU, IIT-Madras and Bombay. This will not help either in the task of promoting scientific temper or critical thinking."

Kumar, who chaired the event, said, "Scientists and science as such has somehow become isolated. A hierarchical power structure has been created, classifying someone who is not a scientist as 'others'. These others are also called amateurs, lay men."

The only way of knowledge transfer is through developing things and later telling people about how it was developed, however this view is not shared by certain scientists, he said.

There are efforts to actively propagate pseudoscience, anto-scien'e perceptions and in the last four years we have seen this happening more often, said Raghunandan, referring to the controversy during the recent Indian Science Congress

There is lot of talk about rewriting textbooks in pursuit of various agendas, but not enough has been done in terms of actually working on books required to teach science and social science in higher institutions, he added.

January 9

IIT, AIIMS, IISc faculty slam Indian Science Congress, urge it to promote real science

https://theprint.in/governance/iit-aiims-iisc-faculty-slam-indian-science-congress-urge-it-to-promote-real-science/175587/

PM Modi with other guests during the Indian Science Congress in Jalandhar

37 professors from top education institutes demand that the association should be more careful in choosing its speakers in the future.

New Delhi: Faculty from top education institutes such as the Indian Institutes of Technology (IITs), All India Institutes of Medical Sciences (AIIMS), Indian Institutes of Science Education and Research (IISERs), Indian Institute of Science (IISc), among others, have written to the president of the Indian Science Congress Association (ISCA) expressing shock over some of the outlandish comments made by speakers at the 106th Indian Science Congress held in Jalandhar recently.

The five-day event ran into a controversy when two speakers, including a scientist and a vice-chancellor of an Indian university, made unscientific comments while delivering a talk. While one questioned the scientific theories of Newton and Einstien, another said that Kauravas were test-tube babies.

‘Pick speakers carefully’

The letter, signed by 37 professors from IITs, AIIMS, IISc and some state universities, demands that the association should be more careful in choosing its speakers in the future.

“We are deeply shocked and disturbed that false claims, based on confusing episodes in mythology as science, have been made in the 106th Indian Science Congress, that too in scientific presentations made to the Children Science Congress,” the letter says.

“Such content in the ISC undermines the long scientific tradition of the ISC which, in the past, has been led by outstanding scientists such as Acharya Prafulla Chandra Ray, Sir Ram Nath Chopra and Prof. P. Parija. Such claims tarnish the image of Indian science globally,” it adds.

The letter further says that stories from the epics are poetic, enjoyable, rich in moral elements and in imagination, but are not scientifically constructed or validated.

Even as the ISCA vowed to pick speakers more carefully from now on, the academic community has requested it to find out how the current speakers were chosen.

“We hope you will find out how the speakers were deemed fit to address the gatherings, and we hope stronger steps are planned to ensure that the ISCA actually promotes and advances the cause of science,” the letter adds.

IIT-Madras Scientists Create 'Space Fuel' to Curb Global Warming, Hope to Solve Fuel Crisis

https://www.news18.com/news/india/iit-madras-scientists-create-space-fuel-to-curb-global-warming-hope-to-solve-fuel-crisis-1996315.html

The 'space fuel' was created by simulating interstellar conditions in the lab and may be used to convert atmospheric CO2 into an energy source.

Indian Institute of Technology, Madras scientists have created what they call 'space fuel' by simulating interstellar conditions in the lab, a method that may be used to convert atmospheric CO2 into a next generation energy source on Earth.

The research, published in the journal Proceedings of the National Academy of Sciences (PNAS), could help curb greenhouse gases as well as provide a new, sustainable source of energy.

"What we have found is that molecules like methane and ammonia in space could exist in a completely different form than what is known to us," Thalappil Pradeep of Indian Institute of Technology (IIT) Madras told PTI.

Clathrate hydrates are molecules like methane, carbon dioxide, etc, trapped in well-defined cages of water molecules forming crystalline solids.

They are formed at high pressures and low temperatures at places such as the ocean floor, hundreds of metres below the sea level. They are also found in glaciers such as in Siberia.

Such hydrates especially that of methane, are thought to be the future sources of fuel. Many nations across the world including India have programmes to explore hydrates in the ocean bed.

IIT Madras researchers formed such hydrates in vacuum, one thousand billion times below the atmospheric pressure called ultra-high vacuum (UHV) and temperature close to minus 263 degree Celsius. These are the conditions present in deep space.

This discovery of hydrates is highly unexpected at extremely low pressures and ultra-cold temperatures and may have several implications for the chemistry of such atmospheres, Pradeep said.

An experimental UHV was specially built for such studies, which housed several spectroscopic probes. Nanometre thin layers of ice and methane were prepared by condensing a mixture of the gases on a specially made single crystal of ruthenium metal.

The ruthenium metal surface was cooled to low temperatures initially.

The formation of hydrates was studied by spectroscopy. At first, when the gases were deposited, the spectroscopic features resembled solids of methane and water ice.

However, as the hydrate cage formed with methane trapped in it, the molecule became 'free' as in the gas phase.

The observed changes were compared with theoretical simulations which confirmed the hydrate formation. The results were verified with the hydrate formed by standard methods.

Cages of water are not expected to form under such conditions as the water molecules are frozen and cannot move at very low temperatures.

"Normally, in UHV experiments, spectroscopic changes are monitored only for minutes, may be an hour. I thought that why not wait for days and keep observing the changes. After all, ice and methane have been sitting in the space for millions of years," said Pradeep.

"The excitement happened after 3 days. New features started coming. Then of course, several experiments were done under controlled conditions," he said.

Such hydrates were also formed with carbon dioxide, researchers said.

"Trapping carbon dioxide in hydrates is a way to reduce global warming. One can sequester carbon dioxide gas as solid hydrates under the sea bed," said Rajnish Kumar, co-author in this study.

In hydrates, molecular confinement can result in new chemistry, especially in presence of cosmic light present in interstellar environment. Understanding this chemistry may be important to better understand the origins of life.

January 8

UGC plans to add agriculture in basic tenet of higher education

https://timesofindia.indiatimes.com/city/pune/ugc-plans-to-add-agri-in-basic-tenet-of-higher-edu/articleshow/67427968.cms

The UGC has hinted at considering inclusion of introduction to agriculture in the basic tenet of national education to boost the agro-based economy of India at a time the farmers are in distress.

Currently, agriculture education is not a part of courses offered at higher education institutes under the UGC (University Grants Commission). Deliberations on including "A" in STEM — science, technology, engineering and mathematics — the prime need in industries and the source of maximum jobs in India — have started. The main objective of this move is to break silos and widen the scope of agriculture through the platform of mainstream education for the inclusive growth of rural India.

The discussions about including agriculture in the basic tenet of education under choice-based credit system started at the 3rd National Teachers' Congress last week in Pune. The transition from "STEM" to "STEAM" could be a reality in near future.

UGC vice-chairman Bhushan Patwardhan told TOI, "The idea of STEAM is aimed at sensitizing students about the processes, perspectives and problems of agriculture sector. It may also bridge the urban and rural gap, taking knowledge to the farmlands miles away from the city with a hope to push the 'engine' for the growth of the agro-based Indian economy. When about 58% of rural households depend on agriculture as principal means of livelihood, basic introduction to agriculture as part of higher education curriculum makes lot of sense."

He said, "India has an agrarian economy, but agriculture has hardly been at the forefront of the higher education. I see no reason why a student of BA, BSc, BCom or even BE, MBA and MBBS should not get a chance to know at least the basics of agriculture during their college education."

Education experts stressed STEAM would take knowledge to remote farming areas. "The move can help increase farmers' returns," said science graduate Jaideep Kute (31), whose father is an onion-grower in Pune district.

Onion-growers in the state are passing through a tough time this financial year. Its wholesale price in Lasalgaon dropped to as low as Re1/kg. Several sugarcane producers are also in distress this fiscal.

“STEAM has the potential to address the farmers’ woes,” said Patwardhan.

He said, “Scientific researches will help them select the correct cash crop to grow. Mathematical theories will also percolate to them. More importantly, young students would be more sensitive to the farmers’ hardships.”

He said, “Right from Radhakrishnan Commission in 1949, educational reforms are sought to transform and relate it to people’s life and aspirations. Concepts like STEAM can add momentum to the trans-disciplinary approaches.”

January 7

What are you smoking? Study to monitor pollutants on the ground

https://timesofindia.indiatimes.com/city/delhi/what-are-you-smoking-study-to-monitor-pollutants-on-the-ground/articleshow/67411529.cms

An IIT-Kanpur source apportionment study for Delhi is being planned with real-time analysis to provide a better understanding of the sources of pollution plaguing the capital. Experts at IIT-Kanpur are already in talks with the Central Pollution Control Board for funding the study with the Environment Protection Charge fund.

Sachchidanand Tripathi, senior scientist at IIT-Kanpur, said the idea is to work on real-time monitoring of pollutants for a detailed picture of the sources affecting Delhi. “We plan to take real-time measurements using a device called an ‘aerosol mass spectrometer’. This device can give chemical analysis of every organic matter, except dust particles. Every few seconds, we will get to know what the exact composition of pollutants are,” Tripathi told TOI, adding that the study will be carried out at three locations — Rajendra Nagar, IIT-Delhi and Faridabad.

According to the last source apportionment study by IIT-Kanpur in 2015, the top four contributors to PM2.5 emissions in Delhi were road dust (38%), vehicles (20%), domestic fuel burning (12%) and industrial point sources (11%). The top four contributors to PM10 emissions were road dust (56%), concrete batching (10%), industrial point sources (10%) and vehicles (9%).

So what is the difference between the earlier study and the one proposed by IIT now?

According to Tripathi, earlier studies followed a sampling storage analysis format. Researchers collected samples in filters and bought it back to the lab for analysis. Offline chemical analysis was then carried out on these samples, collected for 8 hours or twice a day, after a couple of months.

“There are a few issues with this. When you keep the samples stored, some of it goes back into gaseous state. From filter to different instruments, losses occur. There are also actual limitations related to offline analysis in terms of complex particles. Plus how does one differentiate between solid fuel and crop residue, local source and distant sources? This proposed study will help in that,” said Tripathi.

The proposal is to conduct the study over two seasons, April-May-June and October-November-December, to study the different nature and composition of pollutants in both the seasons.

Delhi government, too, had last year approved the environment department’s proposal to conduct a round-the-year air quality study to ascertain the sources of pollution in the capital.

The project, Real-Time Source Apportionment Study for Air Pollution in Delhi, will be carried out by the department of energy, environmental & chemical engineering, University of Washington in St. Louise and will be completed at a cost of about Rs 1.2 crore within a period of 18 months.

NSE and IIT Kanpur to strengthen cybersecurity solutions

https://www.financialexpress.com/education-2/nse-and-iit-kanpur-to-strengthen-cybersecurity-solutions/1435338/

The National Stock Exchange of India (NSE) has signed an MoU with IIT Kanpur to work together on industry-leading cybersecurity solutions and practices.

IT Kanpur has established the C3I Centre (Cyber Security and Cyber Defense of Critical Infrastructures) funded by the Department of Science and Technology. (IE)

The National Stock Exchange of India (NSE) has signed an MoU with IIT Kanpur to work together on industry-leading cybersecurity solutions and practices. “The NSE-IIT Kanpur partnership aims to create an environment to not only negotiate and deal with the current and future cybersecurity challenges in the Indian financial and capital markets ecosystem, but also to develop tools to strengthen the cybersecurity framework,” NSE said in a statement. Through this engagement, IIT Kanpur faculty will help NSE in the areas of cybersecurity.

IIT Kanpur has established the C3I Centre (Cyber Security and Cyber Defense of Critical Infrastructures) funded by the Department of Science and Technology. The centre is engaged in research on cybersecurity and cyber-defense of critical infrastructure, including financial markets infrastructure.

January 6

IIT-JEE Mains from Today till 20 January; CAT 2018 Results Declared

https://swarajyamag.com/insta/iit-jee-mains-from-today-till-20-january-cat-2018-results-declared


Students, after appearing for JEE Advance 2018 exam

The Joint Entrance Examination or JEE Mains 2019 conducted by the National Testing Agency will start on Sunday (6 January) and will end on 20 January, reports The News Nation.

Over 900,000 candidates have registered for JEE mains. This is reportedly the first time the national-level online competitive examination will be conducted entirely on a computer-based mode. The test carries 360 marks and has a duration of 3 hours. The result of JEE Mains exam will be declared on 31 January.

The NTA has made the admit cards available on its official website since 17 December, downloadable from jeemain.nic.in.

Meanwhile, IIM Calcutta has announced the results of CAT 2018, reports The Times of India. The results are available at www.iimcat.ac.in.

Eleven candidates, all male and engineers, have scored overall 100 percentile in CAT 2018. Seven out of the 11 were reportedly from various IITs and two from Jadavpur University.

Out of 22 candidates who scored overall 99.9 percentile, 19 of them were from an engineering background. "This indicates that attempts to end the monopoly of engineering and technology students in India's top B-Schools and diversification bore no fruit," TOI quoted a senior IIM-C professor as saying.

January 5

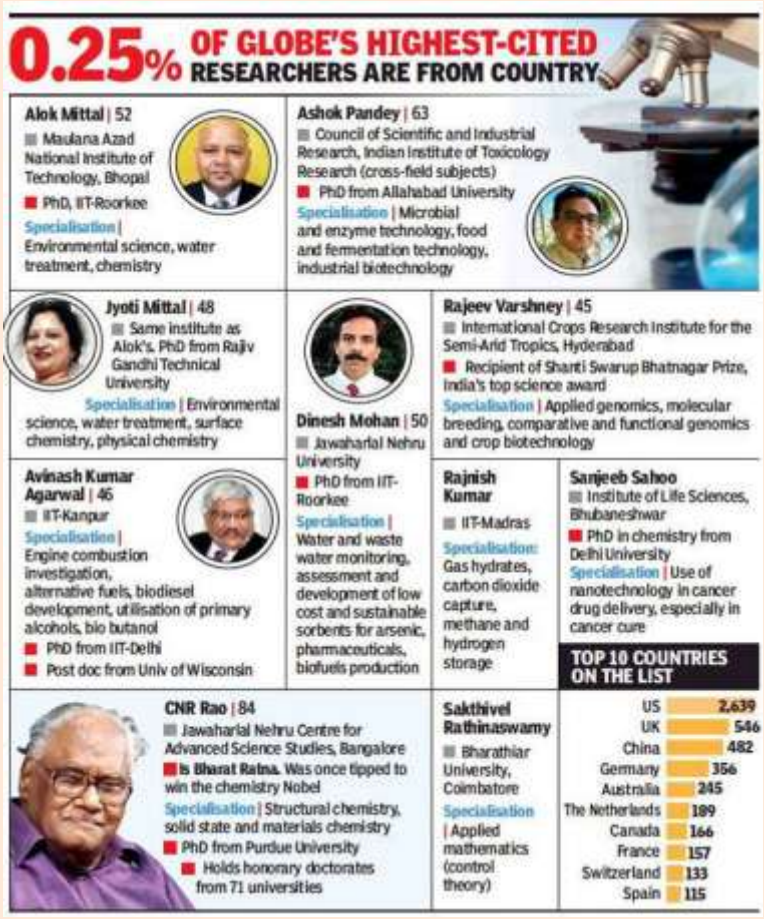
Only 10 Indians on list of world's 4,000 top scientists, but this is double last year's

https://timesofindia.indiatimes.com/india/only-10-indians-on-list-of-worlds-4000-top-scientists-but-this-is-double-last-years/articleshow/67359217.cms

India boasts of eminent science and social science institutes like IISc, the IITs, TIFR, JNU and Tiss. Yet, only 10 Indians figure among the world's top 1% highly-cited researchers (HCR) in the two fields. To top it, some of the 10 are not from the country's leading institutes. The list, comprising over 4,000 of the globe's most 'influential' researchers, in its fifth edition, has been released by the firm Clarivate Analytics.

Eminent scientist and former head of the scientific advisory council to the prime minister, CNR Rao, figures on the list. A professor each from IIT-Kanpur, IITMadras, and JNU and two from NIT-Bhopal, too, are on the global HCR list, which covers over 60 countries, though more than 80% of the names come from only 10. Remarkably, 70% are from just five countries (see box). Among institutions, Harvard University has the highest representation on the list, with 186 names.

While India's representation is negligible, neighbor China is third on the list, ahead of Germany.



JNU's Dinesh Mohan, who figures on the list, said that till last year, less than five Indians would be

on the list. “This year, they have included an additional category of ‘cross-field’, which took the number to 10,” he said. “Citations also depend on the nature of work. Areas such as climate change, water and energy are areas where research is more relevant nowadays. Where you publish your work is also important for impact.” Mohan’s team at JNU’s School of Environmental Sciences has come up with a sustainable solution to biomass burning by converting agricultural residue into biochar, which can improve soil fertility and crop production.

Rao, who has been on the HCR list in its earlier editions and has over a lakh citations, said India must improve its quality of research, along with quantity to improve citations. “About 15 years ago, China and India were at the same level. But now China contributes to 15-16% of science in the world and ours is only about 3-4%.”

Ashok Pandey, from CSIR’s Indian Institute of Toxicology Research, is the only HCR from CSIR, which has a network of over 5,000 scientists. “It is a matter of concern, and needs to be addressed by the government, and stakeholders, including scientists,” he said.

IIT-Kanpur professor Avinash Agarwal, a Shanti Swarup Bhatnagar awardee, who is also on the list, said applied research does not get enough respect in a country like India, which is obsessed with fundamental research. “We need to improve our research ecosystem... Predatory journals, where you pay and publish, need to be heavily penalised. There is a lack of focus on quality research in Indian academia,” he said. “Also, teaching and research are two sides of the same coin. If teachers do not do high quality research, they will not be updated with new developments.”

The other Indian names on the HCR list are: Alok and Jyoti Mittal (a married couple; Jyoti is the only woman researcher on the list) from NIT Bhopal; Rajnish Kumar from IIT-Madras; Sanjeeb Sahoo from Institute of Life Sciences, Bhubaneshwar; Rajeev Varshney from International Crops Research Institute for the Semi-Arid Tropics, Hyderabad; Sakthivel Rathinaswamy from Bharathiar University, Coimbatore.

The reasons why India has minuscule representation on the list include socio-economic and cultural factors, the nature of academics in the country, and also brain drain. Also, India’s top institutes are primarily centres for theoretical research. “The pure science research has become highly specialised. Scientists from pure sciences tend to have a very small peer group. There will not be many researchers from pure sciences even on the global HCR list,” said Mayank Vahia, a former TIFR professor who is now the dean of the School of Mathematical Sciences, NMIMS, explaining why researchers from the pure sciences do not have good citation indices. “On the contrary, research in applied sciences is directly related to industry, is of immediate utility value and also has larger reach.”

In India, even in applied research, Vahia said, industry investments for long-term projects are not significant, compared to the US. Commenting on the list, he said, “Technology is patented and put to use, and the focus is not much on publications, leading to the poor numbers.”