NEWS CLIPS

April 27-May 3, 2019

Highlights of the Week@IITD

Reducing dirty fuels can help India curb air pollution: Research

May 3, 2019 https://www.theindianwire.com/environment/reducing-dirty-fuels-can-help-india-curb-air-pollution-research-125727/

3 Mitigating the use of household fuels could reduce air pollution-related deaths in India by approximately 13 per cent, which is equivalent to saving about 270,000 lives a year, an India-US joint study has stressed.

Nearly half of the country's population relies on dirty fuels such as wood, dung, coal and kerosene for cooking and heating, said *researchers from the University of California, Berkeley and the India Institute of Technology-Delhi.*

Eliminating emissions from these sources — without any changes to industrial or vehicle emissions — would bring the average outdoor air pollution levels below the country's air quality standard.

"Household fuels are the single biggest source of outdoor air pollution in India," said Kirk R. Smith, professor of global environmental health at UC Berkeley.

A study in the Lancet Planetary Health journal last year found that air quality in India is so poor that 1.2 million deaths in the country in 2018 can be attributed to air pollution.

"We looked at what would happen if they only cleaned up households, and we came to this counter-intuitive result that the whole country would reach national air pollution standards if they did that," Smith added in a paper published in the journal Proceedings of the National Academy of Sciences.

The co-authors of the paper are Sourangsu Chowdhury and Sagnik Dey of IIT-Delhi, Sarath Guttikunda of Urban Emissions in New Delhi, Ajay Pillarisetti of UC Berkeley and Larry Di Girolamo of the University of Illinois Urbana-Champaign.

As of early 2016, nearly half of the Indian population was reliant on biomass for household fuel.

"There are 3,000 chemicals that have been identified in wood smoke, and taken at a macro level, it is very similar to tobacco smoke," Smith informed.

In 2015, India's average annual air pollution level was 55 micrograms per cubic meter (ug m-3) of fine particulate matter.

Levels in New Delhi often soared beyond 300 ug m-3.

Complete mitigation of biomass as fuel – which could be achieved through widespread electrification and distribution of clean-burning propane to rural areas – would cut India's average annual air pollution to 38 ug m-3.

While this is still far above the World Health Organization (WHO) standard of 10 ug m-3, it could still have dramatic impacts on the health of the people.

"You can't have a clean environment when about half the houses in India are burning dirty fuels every day," Smith said.

"India has got to do other things to fix air pollution — they've got to stop garbage burning, they've got to control the power plants, they've got to control vehicles and so forth.

"But they need to recognise the fact that households are very important contributors to outdoor air pollution, too," he noted.

In 2016, India instituted a national programme to distribute clean burning stoves and propane to 80 million impoverished households, or about 500 million people.

Smith hopes the findings would bolster support for reducing outdoor air pollution, as well.

Similar programmes have been successful in China, where air pollution is now on the decline in 80 cities.

IIT Delhi opens CoE for promotion of computational abilities

May 2, 2019 https://news.careers360.com/iit-delhi-opens-coe-for-promotion-of-computational-abilities

Solutions to engineering problems using data analysis and data structures get a big boost as IIT Delhi opens a Centre of Excellence for Promotion of Computational Fluid Dynamics (CFD) on its campus. The inaugural function was attended by IITD Director, Prof. V. Ramgopal Rao and Rafiq Somani, Area Vice President, India and South Asia, ANSYS, among others.

The CFD has come up a part of IIT Delhi's Corporate Social Responsibility Agreement with ANSYS Software, the Indian arm of the US-based software developer. "ANSYS Software will fund the 3-year project to be carried out by the Foundation for Innovation and Technology Transfer at IIT Delhi," said Somani. "This collaboration will improve the employability of PhD candidates and equip them with industry-relevant knowledge and skills in CFD that can result in more environment-friendly solutions for the future," he added.

CFD is a tool that uses data analysis and data structures to translate solutions to a variety of engineering problems into products/processes in a faster, cost-effective way. CFD allows simulations of engineering processes, cutting across different disciplines, from aerospace, defence, automobile, power generation, chemical and mechanical engineering down to biomedical processes.

"This Centre will impart education to undertake cutting-edge research in Computational Fluid Dynamics and to harness the power of CFD-based simulation tools for the development of efficient and innovative products/processes," said Prof. Vivek V. Buwa, Department of Chemical Engineering, IIT Delhi, who is the coordinator for the CoE.

The project aims to promote education and research in CFD while focusing on improving the employability of PhD scholars with a focus on women scholars.

Indian Gov't and IIT-Delhi to set up a Center of Excellence for Waste to Wealth Technologies

May 2, 2019 https://siliconeer.com/current/indian-govt-and-iit-delhi-to-set-up-a-center-of-excellence-for-waste-to-wealth-technologies/

Above: A sand sculpture of father of nation Mahatma Gandhi's 150th birth anniversary is seen at the Bay of Bengal Sea's eastern coast beach at Puri, 65 km away from the eastern Indian state Odisha's capital city Bhubaneswar.

To commemorate the 150th birth anniversary of Mahatma Gandhi, the Office of the Principal Scientific Adviser (PSA) to the Government of India and Indian Institute of Technology Delhi (IIT Delhi) have come together to bring the best of science and technology to implement waste management in India.

Principal Scientific Advisor to the Govt of India, Prof K. Vijay Raghavan and Director, IIT Delhi, Prof V. Ramgopal Rao signed a Memorandum of Understanding today in New Delhi for setting up a Centre of Excellence for Waste to Wealth Technologies for implementation of sustainable, scientific and technological solutions for waste management, through validation and deployment of available technologies for transformation of waste to wealth.

The waste to wealth mission project has been approved under the recently constituted Prime Minister's Science Technology and Innovation Advisory Council (PM-STIAC), which is an overarching body for assessment, creation and implementation of major scientific, technology and innovation interventions for India. The partnership will provide an effective platform for stakeholders to bring together integrated approaches for effective recycle, reuse and resource recovery of waste.

Speaking about the MoU with the Office of the PSA, Prof V. Ramgopal Rao, Director, IIT Delhi, said that we have identified this as a focus area for the institute and many faculty members across the departments and centres at IIT Delhi are already working on a variety of projects related to waste management. "The Idea is to consolidate all possible Waste to Wealth Technologies, learn from the best practices followed worldwide, and implement them on the ground for Indian cities.", said Prof Rao.

IIT Delhi is already closely involved with the waste management aspects of Delhi and many faculty members are closely involved with the Delhi administration in addressing the waste management issues.

The immediate objective is to implement technologies that are available with various national and international academias, industries, research laboratories and other agencies by way of setting up pilot projects on-site effectively and successfully, and demonstrating the proof of concept of the technology under Indian condition. This will be carried out by creating a strong collaborating network between IIT Delhi, and other national and international stakeholders through the aegis of the office of the PSA. The long-term goal is to create circular economic models for waste management, by leveraging big data analytics and frontier technologies to streamline waste in India. The overall outcomes would involve treating waste and generating different forms of energy, thereby making India a waste free nation, with zero greenhouse gas emission and no health hazard. Under the initiative, a waste to wealth programme management centre will also be set up at IIT Delhi.

The office of the PSA acts as a 'think-tank' and 'action-tank' for science, technology and innovation activities. The office plays a catalytic and synergistic role to strongly connect government ministry, academia and industry, to evolve relevant policies, make recommendations for the relevant scientific departments and ministries, and implement scientific interventions in various sectors of national priority.

The Indian Institute of Technology Delhi (IIT Delhi) is one of the premiere educational and research institutions of India, offering a variety of world class bachelors, post graduate and research programs across multiple streams with an expert pool of 550 professors engaged in research important for the society and industry.

‘Mission Shakti proved India’s Space power’

April 28, 2019 https://telanganatoday.com/mission-shakti-proved-indias-space-power

‘Missile had the capability to target objects moving in space at a distance of 1,000 km’

Dr G Satheesh Reddy, Chairman DRDO addressing the audience. Shri U Rajababu, Programme Director, AD and Prof V. Ramgopal Rao, Director IIT Delhi are also seen.

Hyderabad: The Anti-Satellite (ASAT) missile test ‘Mission Shakti’ that catapulted India into an elite group of nations that can ‘kill’ live satellites in the space, has proved the ability of Indian space scientists to hit space targets with pin-point precision. The ASAT interceptor missile that was tested on March 27 hit the satellite with an accuracy of less than 8 cms of the geometric centre of the target that was moving at a speed of 8 kms per second at a height of 280 kms above earth.

Interestingly, the ASAT missile had the capability to target objects moving in space at a distance of 1,000 kilometres. “The interceptor missile had the ability of 1,000 kms but we were only interested to target an object located at much lower trajectory,” said U Rajababu, Programme Director (Air Defence), Defence Research and Development Organisation (DRDO).

Speaking at ‘Technical Meet and Aerospace Luminary Lecture’, organised by Aeronautical Society of India, attended by top space scientists across the country, here on Sunday, the scientist said that Mission Shakti featured the work of nearly 50 industries and involved production of over 2,000 components.

While the seeds of such a critical programme were sown in 2014, the go ahead for the operation came through in 2016. The target satellite that was brought down by ASAT missile was released into the orbit by ISRO in January 2019.

"The actual work of bringing critical technologies like algorithms, hardware, navigation systems and developing altitude control systems together were taken-up in the last six months. Over 150 scientists were actively involved in the mission," he said.

Chairman DRDO, Dr G Satheesh Reddy, who was the chief guest of the event, said that Mission Shakti was a critical milestone that proved the mettle of indigenous abilities of the country. He said the final operational clearance of Light Combat Aircraft (LCA) and Mission Shakti were the result of selfless hard work by Indian Defence scientists.

India's first indigenous microprocessor by IIT Madras

A team of researchers from IIT Madras designed country's first indigenous microprocessor that has the ability to reduce dependence on imported microprocessors that power mobile communication devices and computers.

Top companies like Intel, ARM and AMD are involved in the production of such microprocessors but such processors are patented, come with hefty licensing fee, royalties and are also prone to cyber-attacks.

Recognising these challenges, the IIT Madras team launched a project titled 'Shakti' to develop country's first indigenous microprocessor. "We have designed and developed an open source industrial grade microprocessor. The Shakti program will not assert any patent rights and thereby removes the burden of royalties," said V Kamakoti, Professor, IIT Madras, who delivered a talk on 'Shakti' in the event.

Heartfulness Meditation May Improve Well-Being and Health: Study by IIT-Delhi Researcher

April 27, 2019 https://indiaeducationdiary.in/heartfulness-meditation-may-improve-well-health-study-iit-delhi-researcher/

Dr. Narendra Kumar Arya is the first PhD graduate from IIT-Delhi in the area of Yogic Sciences. In his PhD thesis, which was awarded in November 2018, Dr. Arya, found Heartfulness meditation based programs to have a significant impact on the well-being in his research.

His thesis comprised of three sub-studies. These were conducted under the guidance of Prof. Kamlesh Singh and Prof. Anushree Malik at National Resource Centre for Value Education in Engineering (NRCVEE), IIT Delhi.

The first study, published in International Journal of Research in Management & Social Science in 2017, was conducted at CREST Bengaluru. The findings showed a significant improvement in the mental health, flourishing, positive experiences and Sat-Chit-Ananda of the participants.
The second study, published in the International Journal of Indian Psychology in 2017, was carried out at the Himalayan Ashram of Sahaj Marg. It was found that their meditation program has a positive impact on mental health and its dimensions such as emotional and social well-being, positive experience, Sat-Chit-Ananda, and was also negatively associated with depression anxiety and stress. However, psychological well-being, flourishing and mindfulness did not show any

significant change after the meditation sessions.

The heartfulness-based meditation programs at CREST and the Himalayan Ashram of Sahaj Marg were residential programs that spanned for 5 days. Daily activities for the participants included heartfulness meditation, cleaning, prayer, volunteer work, golden silence, physical activities etc.

The third study, published in the Indian Heart Journal in 2018, examined the impact of heartfulness cleaning and meditation on heart rate variability of the participants. It was carried out in collaboration with Dr Rahul Mehrotra, Head Non-invasive Cardiology Laboratory at Max Super Specialty Hospital, located in Saket, New Delhi (India). This study revealed that Heartfulness cleaning and meditation has a positive effect on sympathovagal balance.

These studies open new avenues for scientific inquiry on meditation and related practices in our culture. There are a number of spiritual practices prevalent within India, and empirical studies such as the ones mentioned above can help ascertain the impact of these practices on our physical as well as mental health.

NRCVEE actively pursues the agenda of value education in engineering across the nation. The center considers spirituality, meditation and related practices as one of the ways of inculcating values among engineers and improving the well-being at the same time. NRCVEE has been running various courses related to value education in IIT Delhi and has been organizing workshops and lectures related to positive life amongst the students of IIT Delhi.

Prof Rahul Garg, IIT Delhi, who is currently heading NRCVEE, said: “The center has also started Ph.D. in Yogic sciences with the objective of taking the ancient Indian wisdom and combining it with the best scientific methods to create a platform where the ancient Indian wisdom may be viewed with a modern scientific temperament.”

He also believes that NRCVEE can play a leading role in combining spirituality with science and spreading the values desired among engineers across India and the world.

Dr. Narendra Kumar Arya said, “I pursued the path of research in effect of meditation based programs so as to combine the good effects of spirituality with science and develop disciplines like Spirituality backed management and Happiness forever”.Heartfulness and other forms of meditation such as Vipassana can play a significant role in enhancing the well-being of people while inculcating values at the same time.

May 3

Times Higher Education Asia University Rankings 2019: IISc Bengaluru at 29 & IIT Indore at 50

https://www.jagranjosh.com/articles/times-higher-education-asia-university-rankings-2019-complete-details-1556868674-1

Times Higher Education (THE) Asia University Rankings has been recently announced. Read on for complete details.

Times Higher Education (THE) Asia University Rankings has been recently announced and this time the Indian Institute of Science (IISc) Bengaluru placed at 29th position and Indian Institute of Technology (IIT) Indore at 50th position. These are the only two institutes from India among top 50 universities of Asia.

Mysore-based JSS Academy of Higher Education and Research is placed at 62nd position. This year, IIT Bombay which ranked 44 last year, slipped 10 places to be ranked at 54th position whereas IIT Roorkee climbed from 65th position last year to 54th this year, IIT Kharagpur, IIT Kanpur, and IIT Delhi fell from 60, 81 and 86 ranks to 76, 82 and 91 ranks this year, respectively.

THE's Asia University Ranking 2019 rank universities based on five broad parameters as used in the overall World University Rankings although weightage is calibrated and standardised.

Out of 5 parameters, teaching carries a weightage of 25 per cent, while research and citations each carry weightage of 30 per cent, followed by international outreach and industry income carrying 7.5 per cent weightage each.

China also emerged as the Asian rankings leader for the first time this year, with its Tsinghua University pushing the National University of Singapore to second place.

Overall India's universities delivered a mixed performance due to significant changes at individual institutions in the 2019 Asia University Rankings released in London on Thursday.

Phil Baty, chief knowledge officer at 'Times Higher Education', said, "This year's table shows that the People's Republic of China is far from the only Asian country to make real higher education progress. Leading universities in Japan and South Korea have made significant gains, many institutions in Malaysia are soaring up the list and there are pockets of excellence in India and Indonesia."

The 2019 ranking comprises 417 universities, expanded from 359 last year, covering 27 countries and regions. Japan is the most-represented nation, with 103 institutions, and Malaysia makes its debut in the top 40 with the University of Malaya rising eight places to joint 38.

IIT-JEE Advanced 2019: Registration Process Begins Today, Will Continue Till May 9

https://www.news18.com/news/india/iit-jee-advanced-2019-registration-process-begins-today-will-continue-till-may-9-2126757.html

Students can apply for 2019 IIT-JEE Advanced through the official website at jeeadv.ac.in.

IIT-JEE Advanced 2019 | The online registration cum application process for IIT-JEE Advanced 2019 has begun today. The Registration Process for JEE Advanced 2019 for admission to various undergraduate courses in the Indian Institutes of Technology (IITs) has started Friday onwards. All the students who qualified in the JEE Main 2019 Examination can apply for the JEE Advanced Exam 2019 now. The students can apply for 2019 IIT-JEE Advanced through the official website at jeeadv.ac.in.

However, it is to be kept in mind that the window to apply for IIT-JEE 2019 Advanced will close on May 9 at 5pm. All the IIT-JEE Main 2019 qualified students can pay their JEE 2019 Advanced Application Fee online till May 10, 2019. The 2019 JEE Advanced Registration had already started for foreign students last week.

The JEE Advanced 2019 Exam will be conducted on May 27 in two shifts. The JEE Advanced Paper I will begin at 9 am and will conclude at 12 noon, whereas Paper II JEE Advanced will begin at 2 pm and end at 5 pm. The 2019 JEE Advanced will be conducted in computer-based testing (CBT) mode by IIT Roorkee this year.

JEE Advanced 2019: Here's How To Register

Step 1: Go to IIT-JEE Advanced 2019 official website jeeadv.ac.in

Step 2: You will be directed to a new login page to apply for JEE 2019 Advanced

Step 3: Login with JEE Main 2019 Roll Number and Date of Birth

Step 4: Create a new password for successful registration to IIT-JEE Advanced

Step 5: Fill in all the required details displayed on the screen for JEE Advanced

Step 6: Mention the details such as number of attempts, requirement of scribe (if any), exam center, language of exam and category

Step 7: Upload latest picture and signature to apply for JEE Advanced 2019

Step 8: Pay IIT-JEE Advanced 2019 Application Fees online

JEE Advanced 2019: Application Fees

All the SC, ST, PwD and Female candidates have to pay Rs 1300 as IIT-JEE Advanced Application Fee, whereas the IIT-JEE 2019 Advanced Application Fee for all other candidates is Rs 2600. The payment can be made by Credit Card/ Debit Card/ Internet Banking/ E-banking/ E-challan.

e-Governance Services India ties up with IIT-Kanpur to upscale Unnat Bharat Abhiyan

https://www.thehindubusinessline.com/info-tech/e-governance-services-india-ties-up-with-iit-kanpur-to-upscale-unnat-bharat-abhiyan/article27023528.ece

Unnat Bharat Abhiyan aims to find solutions to accelerate sustainable growth in rural India

Common Service Centre's (CSC) e-Governance Services India Limited, a special purpose vehicle under the Ministry of Electronics & IT, on Friday said it has tied up with Indian Institute of Technology (IIT)-Kanpur to upscale 'Unnat Bharat Abhiyan'.

'Unnat Bharat Abhiyan' is an initiative of the Ministry of HRD. It aims to find solutions to accelerate sustainable growth in rural India.

Under the Unnat Bharat Abhiyan, IIT-Kanpur has brought together 15 leading higher education institutions from Uttar Pradesh.

These institutions have agreed to work with CSC for the development of villages under the scheme.

IIT Kanpur has adopted five villages -- Hridayapur, Baikanthpur, Ishwariganj, Pratappur Hari and Saxupurva -- situated on the outskirts of Kanpur for its overall development.

"All the participating institutions have been informed about various services being delivered through CSC to citizens and further potential which CSCs offer in empowering communities and overall village development. We hope that this relationship of IIT-Kanpur and other leading institutions with CSCs will further strengthen the government's vision of Digital India.," Dinesh Tyagi, Chief Executive Officer (CEO), CSC, said.

As many as 15 affiliated educational institutions under Unnat Bharat Abhiyan will adopt gram panchayats and equip them with all citizen centric services through CSCs.

"These institutions will train village level entrepreneurs (VLEs) who run CSCs as part of the village development plan. The VLEs will also be skilled about the use of solar energy, cleanliness and use of modern technologies through interventions of IIT-Kanpur," Reeta Singh from IIT Kanpur who is heading Unnat Bharat Abhiyan project, said.

Prodapt Innovation Lab Launched at IIT Madras Research Park to Accelerate Telecom Research and Innovation

https://www.business-standard.com/article/pti-stories/prodapt-innovation-lab-launched-at-iit-madras-research-park-to-accelerate-telecom-research-and-innovation-119050300253_1.html

Prodapt announced the opening of its R&D innovation lab at the Indian Institute of Technology (IIT) Madras Research Park at Chennai, India. The research park facilitates a collaborative relationship

between corporate research labs and IIT Madras, connecting industry with academia and acts as a catalyst for industrial grade R&D and innovation.

Prodapt's R&D Labs will leverage this facility to create intellectual property (IP) and software products focused on the telecom industry, in the areas of Network Virtualization, SDN-NFV, 5G, AI/ML etc. By partnering with IIT Madras, Prodapt will access IIT Madras faculty, students and research programs and work together to solve complex business and technology challenges faced by digital service providers globally. More than 100 Prodapt engineers and telecom experts will be part of this innovation program to build IP-led products. Prodapt aims to achieve 25% of its revenue from IP-led assets by 2021.

Speaking on this occasion, Vedant Jhaver, the CEO of Prodapt stated, "This is an important milestone for Prodapt. As an organization, we're committed to providing innovative products and solutions to telecom operators and digital service providers. Our collaboration with IITM will enable us to leverage their state-of-the-art technology infrastructure and world-class faculty to significantly propel our innovation agenda."

"We're excited to have Prodapt as part of the IITM Research Park to help develop IP-led products," said Rajendra Mootha, Chief Operating Officer of IIT Madras Research Park. "This will help students gain crucial industry knowledge from Prodapt SMEs and work on some of the live projects to address the critical challenges faced by the industry."

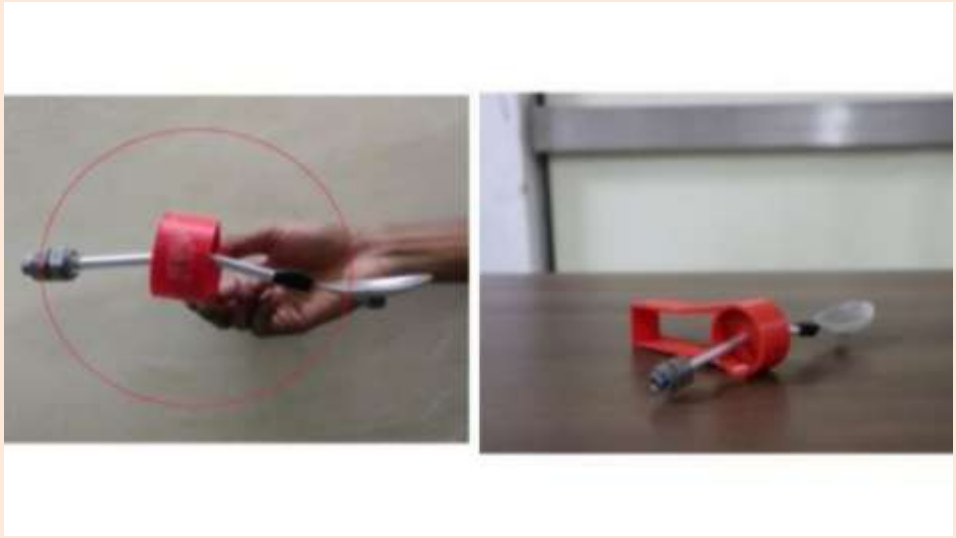
About Prodapt: www.prodapt.com

Prodapt, a global leader in providing IT, product, network, and operational services for the digital service provider (DSP) vertical. Many leading DSPs have been associated with Prodapt to strengthen their business and gain a competitive edge. Headquartered in Chennai, Prodapt has delivery centers in North America, Europe, India, and Africa and is an ISO 9001:2008, ISO 27001:2013, SSAE16, and CMMI Level 3 organization. Prodapt is part of a 120-year-old business conglomerate, The Jhaver Group which employs over 16,500 people across 64+ global locations.

This spoon designed by IIT Gandhinagar students can help Parkinson's patients by reducing food spillage

https://www.indiatoday.in/education-today/news/story/-this-spoon-designed-by-iit-gandhinagar-students-can-help-parkinson-s-patients-by-reducing-food-spillage-1516061-2019-05-03

The spoon designed by the students at IIT Gandhinagar aims to reduce the effect of pill roll tremors by using a gimbals' mechanism.



Neutra Spoon aims to reduce the issue of food spillage due to tremors.

In order to provide assistance to patients suffering from the most common movement disorder, Parkinson's disease, a group of students from the Indian Institute of Technology (IIT), Gandhinagar, have developed a special kind of spoon, named as Neutra Spoon, to reduce the issue of food spillage due to tremors. The students have won a gold prize for the same design in the BETiC Medical Innovation Challenge at the seventh Inter IIT Tech Meet for solving the problem statement.

What is Parkinson's disease?

A tremor in hands, arms, legs, jaw and face is one of the primary symptoms of Parkinson's disease.

According to Parkinson's Disease Foundation, Parkinson's disease is a chronic movement disorder caused by deteriorating motor senses where symptoms continue and worsen over time. The central nervous system of a person is affected by the disease where the neurons cannot transmit information among themselves, resulting in rigid and slow or even absence of physical movement.

Students who developed the design:

Team members and students of IIT Gandhinagar who developed the design of Neutra Spoon.

The design of Neutra Spoon has been developed by the team of seven students of IIT Gandhinagar.

The team members include Shireesh Raghunath Shelke (B Tech in Mechanical Engineering, 2nd year), Vedanta Krishna Bhutani (BTech in Electrical Engineering, 2nd year), Saurabh Kartik Muneshwar (BTech in Mechanical Engineering, 2nd year), Ankur Vaibhav (BTech in Chemical Engineering, 2nd year), Akshay Biju (BTech in Electrical Engineering, 2nd year), Janvi Thakkar (BTech in Material Science and Engineering, 1st year) and Maitreya Thakur (BTech in Material Science and Engineering, 1st year).

Here is all you need to know about the Neutra Spoon:

Cost of Spoon: The cost of the spoon was reduced by making the spoon fully passive while not compromising with its efficiency to a great extent.

Working of Spoon: The spoon aims to reduce the effect of pill roll tremors by using a gimbals' mechanism.

"For the efficient working of the spoon, the proper amount of counterweight required was figured out. Then, the spoon was also given a slight bend of 20 degrees to make it more stabilized. The orientation of the handle was an important factor and was found out by trial and error method. For each step, we had made a vibrating apparatus to check for improvements, based on their efficiency in relation to a normal spoon," said Shireesh Raghunath Shelke, a BTech 2nd year student at IIT Gandhinagar.

"We also had to include some novel feature - which was the geometric constraint. Due to this constraint, one could also slice food items like ice-cream and sweets using the spoon itself," Shelke added.

Challenges faced:

Talking about the challenges faced while developing the design of the Neutra Spoon, Akshay Biju, a BTech 2nd year student said, "Making an apparatus to measure the efficiency required tuning multiple servo motors to vibrate the spoon at a particular amplitude and frequency. Making the spoon as light as possible was also a challenge. We also had to ensure that while the orientation of the handle makes the spoon more efficient, it should not inhibit a person's natural style of eating."

"This was of utmost importance as our goal was to make sure that people diagnosed with Parkinson's are able to eat in public or with their families, just like any normal person would," Biju added.

What's next?

Since the design has been approved by the jury, the entire team of developers is all set to test it on patients suffering from the Parkinson's disease in order to get a clear idea about the efficiency of Neutra Spoon.

May 1

India Makes the Most Cost-Efficient Chip Ajit That Can Power Robotic & Automation

https://www.analyticsindiamag.com/india-makes-the-most-cost-efficient-chip-ajit-that-can-power-robotic-automation-systems/

India provides a worldwide opportunity for growth in consumer electronics. According to this report, revenue in the consumer electronics segment amounts to US$ 6,734 million in 2019 and is expected to show an annual growth rate of 16.2%, resulting in a market volume of US$ 12,281 million by 2023.

Indian Institute of Technology Bombay has been making continuous efforts to its research and development field with the national goal of achieving technological self-reliance. Researchers at IIT Bombay have designed, developed and fabricated the first ever microprocessor known as AJIT, a Sparc-V8 ISA compliant processor.

For the first time in the history of India, the academia, government and the industry have joined their hands to build India's first microprocessor. Professor Madhav Desai along with his team of nine researchers from the Tier 1 institute has made the project possible. The project was funded by the institute along with Ministry of Electronics and Information Technology (MeitY). A Mumbai-based company, Powai Labs has also made contributions and provided financial support to the product.

Specs

The microprocessor is the brain of an electronic device which contains a few millions of transistors fused on a semiconductor chip. This medium-sized processor is based on a 32-bit ISA and can run one instruction per clock cycle and can operate at clock speeds between 70-120MHz, comparable to its competitors in the market. The processor comes with a memory management unit, an arithmetic logic unit, and a floating point unit. The researchers used a tool which can convert an algorithm to hardware known as AHIR-V2.

The Bright Side

Such innovations will not only develop a cost-effective way with a decrease in imports but also make India a self-reliant country on electronic products. According to the sources, one of the processor's designers said, "We are planning to use AJIT in the receivers being developed for NAVIC or IRNNS (The Indian Regional Navigation Satellite System), an indigenous navigation system for the Indian subcontinent." He added, "It can be used inside as a set-top box, as a control panel for automation systems, in a traffic light controller or even robotic systems." SAMEER (Society for Applied Microwave Electronics Engineering & Research), an independent lab under MeitY, Govt. of India is planning to use AJIT in the receivers being developed for NAVIC or IRNNS. The researchers expect that AJIT will cost as less as ₹100 when it is produced en-masse.

Similar Development

Furthermore, it is worth mentioning, India has also developed its first RISC-V based processor Shakti last year. A team of researchers and students from Indian Institute of Technology (IIT) Madras have developed this chip and made the design open-sourced. The chip is clocking at 400MHz speed and a majority of the front-end design is done using Bluespec System Verilog. The Shakti Project includes a family of six types of microprocessors and has been broadly categorised into base processors, multi-core processors and experimental processors. This chip is basically aimed in using towards smartphones and the Internet of Things (IoT) devices.

Roadmap

According to the reports, the demand for electronic products in India is expected to grow at a CAGR of 41 percent during 2017-2020 to reach $400 billion by 2020. Most of the electronic devices we use are imported from outside and with such kinds of development, the future of India will be a brighter and a cost-effective one. Giants such as Intel, ARM, Nvidia, etc. are the older players in this market and with the advent of such processors, the future of technology will undoubtedly see a new phase.

April 30

JEE Main 2019 cut off for JEE Advanced 2019 released, more than 2.5 lakh candidates qualify for examination

https://www.timesnownews.com/education/article/jee-main-2019-cut-off-for-jee-advanced-2019-released-candidates-qualify-for-examination-nest-steps-for-iit-admissions/409576

After much wait, JEE Main Result 2019 is now released. Along with the JEE Main result, NTA has also released the JEE Main 2019 cut off for JEE Advanced 2019. More than 2.5 lakh candidates have qualified.

JEE Main 2019 cut off for JEE Advanced 2019

JEE Main 2019 result was released late last evening on jeemain.nic.in. Candidates who wish to appear for the JEE Advanced examination are required to appear for and score a minimum marks in JEE Main to qualify for JEE Advanced 2019. NTA has also released the JEE Main cut off for the IIT JEE

examination. As many as 24 candidates have scored a perfect 100 percentile to top JEE Main 2019 examinations (April and January combined).

Candidates may please note that unlike previous years, this year the cut off would be based on the NTA score which is a percentile measure of the students' performance. JEE Main 2019 cut off for JEE Advanced is tabulated below. Please note, the status of candidates to qualify from the various category would be available on their JEE Main 2019 Result window. Check your JEE Main 2019 result on jeemain.nic.in.

JEE Main 2019 Cut-off of Total NTA Score Based on Paper-I for JEE Advanced 2019

Common Rank List (CRL)	Economically Weaker Section (EWS)	Other Backward Class (OBC-NCL)	Scheduled Caste (SC)	Scheduled Tribe (ST)	People with Disability (PwD)
89.7548849	78.2174869	74.3166557	54.0128155	44.3345172	0.1137173

The exact number of candidates who have qualified for JEE Advanced 2019 has not been shared by NTA at present. However, a rough estimate suggests that more than 2.5 lakh candidates have qualified for the JEE Advanced which is the entrance test for Indian Institutes of Technology or IIT.

All the candidates who have qualified for JEE Advanced are now required to fill the online application forms on the official website jeeadv.ac.in. Please note, the online application forms for JEE Advanced would open from May 3, 2019 and close on May 8, 2019. Candidates are required to apply online and pay the fees.

JEE Advanced 2019 examination date was postponed. Due to general elections 2019, JEE Advanced would now be conducted on May 27, 2019. The paper would be completely Computer Based Test. Results for JEE Advanced 2019 would be released in June.

Zinc oxide supplements may prevent fat build up in liver: IIT study

https://www.business-standard.com/article/pti-stories/zinc-oxide-supplements-may-prevent-fat-build-up-in-liver-iit-study-119043000580_1.html

Scientists at IIT Mandi have found that zinc oxide nanoparticles can help prevent fat accumulation in the liver, a finding that may pave the way for new therapies against non-alcoholic fatty liver disease (NAFLD).

Liver, the largest internal human organ, secretes bile, stores glucose in the form of glycogen, and converts vitamins, minerals and amino acids into their biologically absorbable forms.

While hepatitis viral infections and alcohol-induced liver malfunctions used to be the main cause of liver diseases in the past, the dramatic shift towards sedentary lifestyles and unhealthy food habits has caused them to be outpaced by NAFLD.

"NAFLD is a condition in which the body creates too much fat that gets stored in the liver cells, called steatosis, which could lead to scarring or cirrhosis, and eventual liver failure," said Prosenjit Mondal, Assistant Professor at Indian Institute of Technology (IIT) Mandi.

WHO reports that the number of deaths due to liver diseases in India was 259,749 in 2017. Nearly 120 million Indians are estimated to suffer from NAFLD, with a higher incidence rate amongst obese and diabetic people.

Insulin resistance is one of the hallmarks of NAFLD, researchers said.

In addition to converting blood glucose into storable forms such as glycogen, insulin also induces lipid generation from non-fat sources, a process called lipogenesis.

A complex array of cellular factors and enzymes regulate lipogenesis. When this signalling becomes faulty, due to bad lifestyle and/or genetic predisposition, insulin function is impaired and there is excess lipogenesis, resulting in increased fat accumulation in the liver.

The research team has shown using cell and mice models that zinc supplementations either in the form of nanoparticles or salts are effective in reducing fat accumulation in the liver and inducing peripheral insulin sensitivity.

The researchers first treated human hepatocellular carcinoma cells with zinc oxide nanoparticles and tested the lipid accumulation in the cells in comparison to untreated cells.

They also injected the nanoparticles into the bodies of mice fed with fatty diet and monitored cell signaling, gene expression and also assessed the cellular energy levels.

The mice were also subjected to glucose tolerance tests to assess insulin function and compared with mice fed with normal diet and fat-fed mice not treated with the nanoparticles.

In the cell tests, the researchers found that the presence of zinc oxide nanoparticles prevented accumulation of fat in them.

In the mice models, they found that the zinc supplements prevented the cellular factors that enhance fat storage in the livers of fat-fed mice.

The above observations of the team may help in formulating therapeutic strategies to improve insulin sensitivity and ameliorate liver steatosis associated with type 2 diabetes.

"ZnO nanoparticles can improve the physiological homeostasis during obesity and its associated metabolic abnormalities," said Surbhi Dogra, a research scholar at IIT Mandi.

IIT Kharagpur researchers: Economic growth helping keep diseases at bay

https://www.mynation.com/india-news/iit-kharagpur-researchers-economic-growth-helping-keep-diseases-at-bay-pqrrat

A study by researchers at IIT Kharagpur has claimed that economic growth is reducing faecal pollution in groundwater in North India. Faecal pollution is considered to be the key factor for the spreading of water-borne diseases in the densely populated Indo-Ganges-Brahmaputra river basin.

About 100,000 children in India die every year from waterborne enteric diseases like diarrhoea, researchers said.

The study, published in the International Journal of Information Management, made first-time observations on significant reduction of faecal coliform pathogen concentration in the spatially variable groundwater from 2002 to 2017.

"Looking beyond the country globally, more than two billion people, mostly living in economically stressed areas of Africa and South Asia still do not have access to basic sanitation, and more than one billion still opt for open defecation," said Professor Abhijit Mukherjee, from the Department of Geology and Geophysics at IIT Kharagpur in West Bengal.

"The resulting unsafe disposal of faecal waste to nearby drinking water sources poses an extremely serious environmental crisis and public health concern," said Mukherjee, who led the research project.

The researchers studied data for the densely populated Indo-Ganges-Brahmaputra river basin, across 234 districts in Rajasthan, Haryana, Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, West Bengal, Assam and also Delhi and NCR.

The data was collected from National Rural Drinking Water Programme, Ministry of Drinking Water and Sanitation, and covered almost last three decades to delineate the long-term improvement trends of groundwater quality across India, as consequence of development.

The study determined the economic development trends and correlations using nigh-time light data instead of gross domestic product (GDP) or other economic growth data.

"Night-time light is regarded as a secular proxy for economic growth and in recent times are regularly used as a modern technique for characterising micro-GDP -- GDP for a small area," Mukherjee told PTI.

"We have used satellite-based night-time light information based on Defence Meteorological Satellite Program of the US Air Force, archived by NOAA/NASA for the period 1992-2013, said Srimanti Duttagupta, PhD scholar at IIT Kharagpur.

"In most areas economic development, suggested by increasing satellite-based nightlight correlated to the reduction in faecal coliform concentration and alleviation of water quality, said Duttagupta, first author of the research paper based on the study.

The other dataset used was high-resolution geographically spatial information of water-borne faecal pathogen concentration in groundwater from the period 2002-2017.

Numerical and statistical analyses were performed on datasets to understand the efficiency of development in alleviating the water quality and public health, and relationship with economic development.

The study showed that the spatially variable groundwater faecal pathogen concentration from 2002-2017 has significantly decreased across the basin.

From 2002-2013, night-time light on the surface area as seen from satellites increased by 3.05 per cent per year and faecal coliform pollution decreased 1.39 per cent per year.

The research group observed significant decrease of groundwater faecal coliform concentration after 2014, in the acquired data.

"Nevertheless, in areas with inferior water quality, improper human practices outweigh economic development in affecting human health," he added.

It was observed that areas with lower literacy rate and very high population density suffer from poor groundwater quality because of faecal coliform pollution, irrespective of economic development.

The issue of overpopulation and slums is an intricate problem which is reflected on all life aspects in countries like India, researchers said.

The study reflects through results that higher faecal coliform concentration in urban and peri-urban areas, suggesting economic progress may not be the only influencing factor on water quality alleviation, they said.

The researchers noted that social behaviour and practices, use and disuse and beliefs are mostly related to lower literacy rate.

In turn, this result in lack of awareness and encourage malpractice on sanitation, eventually leading to increased faecal waste into drinking water sourced to groundwater, according to the study.

IIT Hyderabad incubated startup to launch high performance electric two-wheelers

https://www.jagranjosh.com/news/iit-hyderabad-incubated-startup-to-launch-high-performance-electric-two-wheelers-148768

PuREnergy, a start up incubated by Indian Institute of Technology, Hyderabad has developed Pure EV, a long range high performance electric two wheeler specifically for Indian conditions which will be launched next month commercially across the country.

The startup will be launching 10,000 electric vehicles in four models which are Egnite, ETrance, EPlute, and ETron. These vehicles are set to be launched this year itself. The electric vehicles were developed in an 18,000 sq-ft facility collated at IIT Hyderabad for research and development and for the large scale production of electric vehicles and electric batteries.

The startup has designed the PureEV batteries to work under tough environmental conditions, with lesser weight for better portability and is bound to deliver high discharge currents for fast pickup.

Nishant Dongari, founder Pure EV and who is also the assistant professor at the Department of Mechanical and Aerospace Engineering at IIT Hyderabad mentioned that they have developed strong capabilities in the assembly of lithium battery packs, active balancing management system and active testing standards for deployment in the electric two-wheelers.

The company has also deployed hundreds of test samples across the country over the last year to various distributors, corporate firms and professional test riders. The company is also under the process of developing a strong network of channel partners across the country.

The chief executive officer of Pure EV, Rohit Vadera highlighting the business plans for the company mentioned that the company has obtained the approval of ARAI (Automotive Research Association of India) for electric bikes and two-wheelers. Also, the company has invested a significant amount of resources for on-road testing of the products for its market readiness.

The electric vehicles offer significant cost savings over traditional ICE vehicles with running cost less than 5 paise/Km.

The company is also in collaboration with other EV startups to develop and supply high voltage lithium batteries for three and four wheeler applications. The startup is also working to launch high-speed electric vehicles in the future. Dongari also added that the company is working to further develop active thermal management systems, vehicle aerodynamics, and lightweight faster chargers which will enable the development of high-speed electric vehicles.

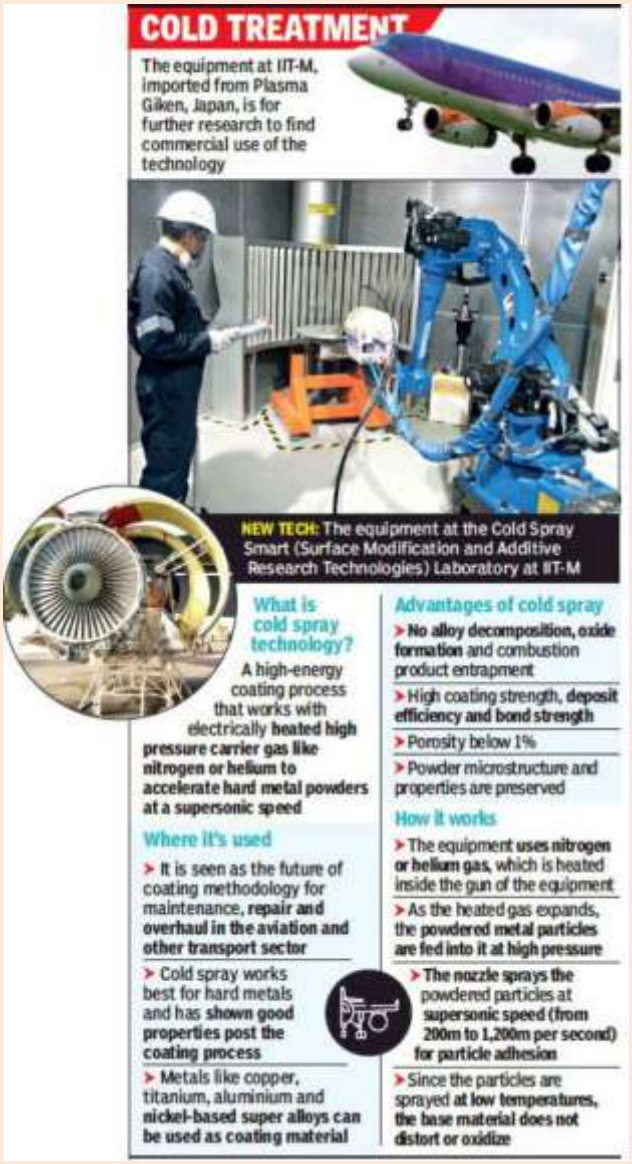
April 28

IIT Madras to tweak repair technology to help planes fly longer

https://timesofindia.indiatimes.com/city/chennai/iit-madras-to-tweak-repair-technology-to-help-planes-fly-longer/articleshow/69078081.cms

Cold spray technology is expected to be hot property in the aviation industry for fixing damages in aircraft engines and gas turbines without distorting or oxidizing the base material. To bring the technology to the Indian market, IIT Madras (IITM) in collaboration with the Centre and General Electric (GE) has set up the equipment in its lab to research on its application to increase life expectancy of an aircraft and make flying safer.

The equipment, set up in a Cold Spray Smart (Surface Modification and Additive Research Technologies) Laboratory, is the first-of-its-kind in an academic institution in the country, say experts. Professor M Kamaraj of metallurgical and materials engineering department at IIT-M said students will study the coating process and improve it to increase the life expectancy of the components. “Students will also learn about methodology, material and testing, which will help them find jobs in aviation and other related sectors,” the professor said.



The equipment can spray powdered metal particles in high pressure and low temperatures at supersonic speeds to fix damages in the aircraft. Though the technique is at least three decades old, it has recently piqued the interest of the civil aviation industry after the US military began using it. “It

can spray hard metals like nickel-based alloys at a maximum speed of 1,200m per second and soft metals like aluminium as low as 300m per second. The higher the pressure, the higher the velocity of spray and better the powdered particles bond with the base material," said engineers at the laboratory, which was also funded by the government of India.

At present, 90% of the maintenance, repair and overhaul of Indian civil aircraft is done abroad, said Alok Nanda, CEO, GE India Technology Centre, CTO, GE South Asia.

"Components in an aircraft are made of expensive super alloys. If they are damaged irreparably, they need to be replaced. This technology, though at a nascent stage enables us to repair the component. Repair is 30% to 40% cheaper than replacement. We expect IIT-M to help us industrialize the technology," he added.

IIT-M plans to have thermal spray coating techniques like high velocity oxygen fuel coating, used in repairing hydro turbine components in dams. "We will have two or three techniques under one roof that could be used in the transport and aviation industry.

April 27

Universities to have model syllabus from next session

http://www.newindianexpress.com/states/odisha/2019/apr/27/universities-to-have-model-syllabus-from-next-session-1969656.html

The Higher Education Council which had planned to introduce a uniform syllabus for Under Graduate (UG) courses from 2019-20 academic session has decided to make it a model syllabus.

The Higher Education Council which had planned to introduce a uniform syllabus for Under Graduate (UG) courses from 2019-20 academic session has decided to make it a model syllabus. A decision to this effect was taken at a meeting convened by the Higher Education Council on Friday with Vice-Chancellors of State universities in which it was opined that implementation of a common and uniform syllabus will not be possible for all universities as some institutions will have to make changes in certain graduation courses as per the need.

Vice-Chairperson of the Council, Prof Ashok Das said, "Following a uniform syllabus is not possible for certain universities for which it has been designed as a model syllabus." The model syllabus will act as a framework which other universities can follow while framing their own curriculum, he said adding that universities can also implement the model syllabus for UG courses with necessary modifications to it.

Prof Das said during the Vice-Chancellors' conclave other academic matters were also discussed, including a reforms in the exam patter in universities. "We are planning introduce exam pattern similar to NET and other University Grants Commission (UGC) test to improve the examination system of State universities from this academic session to make Odisha students more competitive for the national-level exams and increase their chances of employability," he said.

Das said the common entrance test (CET) for admission of Post-Graduate students will be introduced in all State universities from 2020-21 academic session. The election process and exams affected implementation process of the common entrance test from 2019-20 academic session, he said.

During the conclave, the Council Vice-Chairperson and VCs also discussed the issue of implementation of incentive for research scholar in higher education institutes from the coming academic session. The grant will be provided to some selected NET qualified students, who failed to get junior research fellow (JRF) awarded by the UGC.