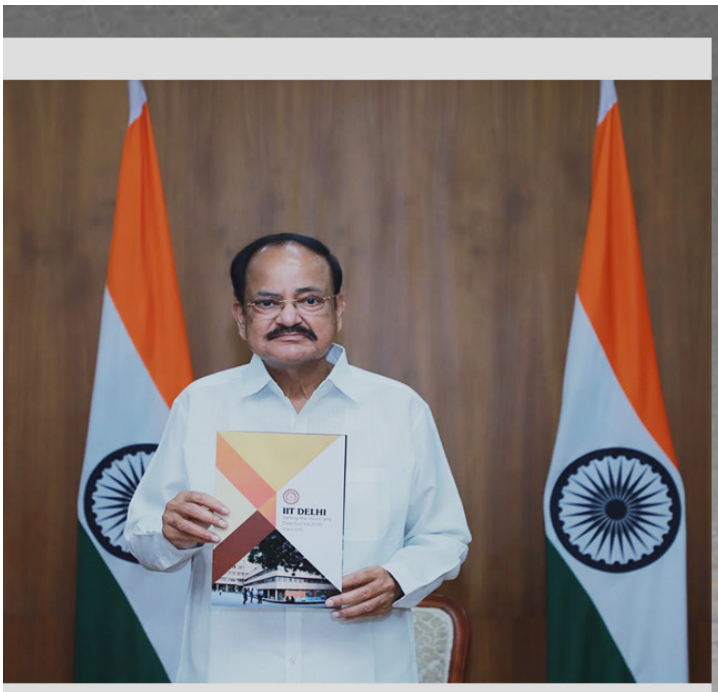
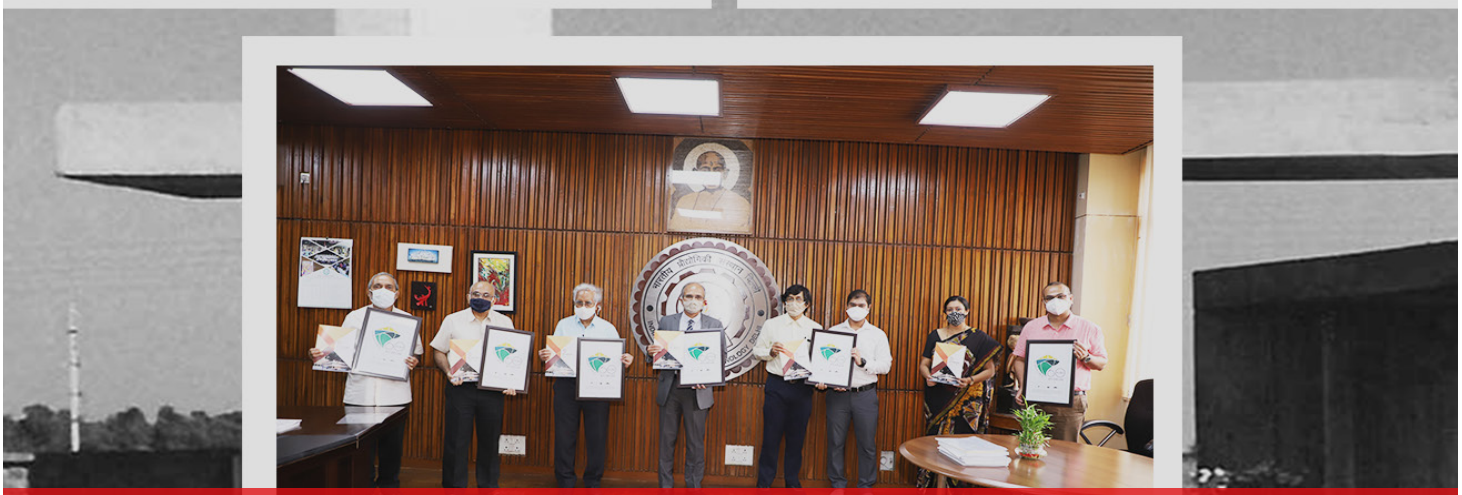
IIT Delhi

NEWSLETTER

August 2020 ISSUE





INDIAN INSTITUTE OF TECHNOLOGY DELHI

WORD FROM THE Director

Dear IIT Delhi friends and well-wishers,

I am happy to present the August 2020 Issue of the Institute Newsletter to you.

It highlights some of the major COVID-19 research initiatives by the institute, academic achievements, collaborations and Alumni contribution.

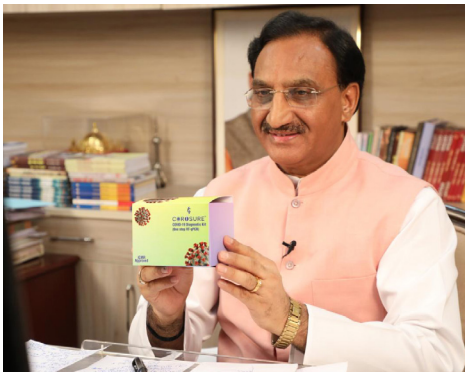
Your comments and suggestions are welcome to make the next issue of the newsletter more interactive.

Warm regards,
V. Ramgopal Rao
Director, IIT Delhi

News & Events

Vice President of India inaugurates IIT Delhi's Diamond Jubilee celebrations

Hon'ble Vice President of India, Shri M. Venkaiah Naidu inaugurated the year-long Diamond Jubilee celebrations of IIT Delhi via video conferencing. Hon'ble Union Education Minister, Shri Ramesh Pokhriyal 'Nishank' graced the memorable occasion as the Guest of Honor. On this occasion, Shri M. Venkaiah Naidu released the Diamond Jubilee logo and the institute's strategy document- 'IIT Delhi- Setting the Vision and Direction for 2030'. Addressing the inaugural session of the Diamond Jubilee celebrations, the Vice President of India congratulated IIT Delhi for completing the 60 years of journey and for the numerous contributions the institute has made to the national development.



World's most affordable COVID-19 diagnostic kit Corosure developed by IIT Delhi launched

Shri Ramesh Pokhriyal 'Nishank', Union Education Minister, launched the World's most affordable RT-PCR based COVID-19 diagnostic kit 'Corosure' developed by IIT Delhi and approved by ICMR and DCGI via video conferencing on July 15, 2020. Shri Sanjay Dhotre, MoS for Education; Sh Amit Khare, Secretary, Higher Education and Prof V. Ramgopal Rao, Director, IIT Delhi were present during the e-launching. Delhi-NCR based Newtech Medical Devices has manufactured Corosure. The base price of the RT-PCR assay is Rs 399. Even after adding the RNA isolation and laboratory charges, the cost per test will be considerably cheaper compared to currently available diagnostic kits in the market.

CSIR, UBA-IIT Delhi and VIBHA Sign MoU for Rural Development

An MoU was signed between Council of Scientific and Industrial Research (CSIR), New Delhi; Unnat Bharat Abhiyan (UBA), IIT Delhi and Vijnana Bharti (VIBHA), New Delhi in July to provide UBA access to CSIR's rural technologies on non-exclusive basis as per extant CSIR guidelines for the benefit of the rural people of the country. The UBA nodal centers consisting of institutes like IITs, NITs, and Agricultural Universities etc. will act as solution facilitators and as link to connect R&D institutions and organisations like CSIR to the rural masses and development agencies, Participating Institutes, NGOs, and Panchayati Raj Institutions.

Placement season 2019-20 concludes with over 1100+ job offers

The placement season at IIT Delhi for the academic year 2019-2020 culminated while surpassing the previous year benchmarks with 1100+ job offers (includes multiple job offers and pre-placement offers) to the students. Approximately 85.6% undergraduate and postgraduate students who availed placement services of the institute got placed. Over 430 national and international organisations had registered for the placement season offering 600+ job profiles. The second phase of the placement continued in an online mode amid the pandemic and around 100 students bagged job offers.

B. Tech students of NIT Trichy to get direct admission to IIT Delhi's PhD programmes

IIT Delhi and National Institute of Technology Trichy (NITT) have signed an MoU for collaboration on academic activities. The MoU will facilitate direct admission of NITT's B.Tech students to IIT Delhi's PhD programmes, foster academic and research collaboration in the areas of mutual interest and lead to exchange of faculty and students.

The MoU was signed by Prof V. Ramgopal Rao, Director, IIT Delhi and Dr. Mini Shaji Thomas, Director, NIT Trichy.

UNWFP and IIT Delhi sign MoU for strategic partnership

The United Nations World Food Programme (UNWFP) India and IIT Delhi have agreed to combine forces to develop innovative solutions for enhancing the efficiency and effectiveness of the Government's food safety nets through operations research. The overall aim of this partnership is to create sustainable models that can be replicated across the country, the region and beyond. Mr. Bishow Parajuli, Country Director of World Food Programme India and Prof. V. Ramgopal Rao, Director, IIT Delhi signed the MoU.

India Today ranks IIT Delhi #1 Engineering Institution in India

India Today's India's Best Colleges Survey 2020 has declared IIT Delhi, an Institution of Eminence, No.1 Engineering Institute in the country for fifth time in a row. The India Today Group conducted the survey in association with Delhi-based market research agency 'Marketing & Development Research Associates (MDRA)' between November 2019 and June 2020. According to the Group, MDRA carefully attuned 112-plus performance indicators in each stream to provide the most comprehensive and balanced comparisons of colleges.

IIT Delhi, Sona Comstar join hands to support innovative startups

FITT (IIT Delhi), India's foremost technology transfer organisation, and Sona Comstar, a multinational automotive major, have signed a multi-year agreement wherein Sona Comstar shall support innovative IIT Delhi incubated and other startups with funds and mentorship. Startups working in the area of e-mobility can apply under this program. Each selected startup can get upto Rs 80 lakh grant with the option to retain its IP.

IIT Delhi, NIT Warangal sign MoU for academic collaboration

IIT Delhi and National Institute of Technology (NIT) Warangal have signed an MoU for collaboration on academic and research activities. Under the MoU, NIT Warangal students will get an opportunity of direct admission to IIT Delhi's PhD programmes. Both the institutes will also exchange students, research scholars and faculty. Prof. N.V. Ramana Rao, Director, NIT Warangal, while welcoming the MoU with IIT Delhi said: "This MoU would create an opportunity for the students of NIT Warangal to pursue their PhD and get exposure to a highly competitive environment at a very young age."

India Rankings 2020: IIT Delhi bags 2nd rank in engineering category

IIT Delhi bagged 2nd rank in the Engineering category in the India Rankings 2020 (NIRF) announced by Shri Ramesh Pokhriyal 'Nishank', Union Education Minister. IIT Delhi also secured place among top three educational institutions in the country in the overall category. Speaking of the achievement, Prof V. Ramgopal Rao, Director said, "IIT Delhi is happy to be recognized for its efforts. It will always strive to do better. We also want to see our technologies help solve problems in the society and we wish to see our students become socially conscious citizens."

Webinar series launched on IIT Delhi's COVID-19 research initiatives

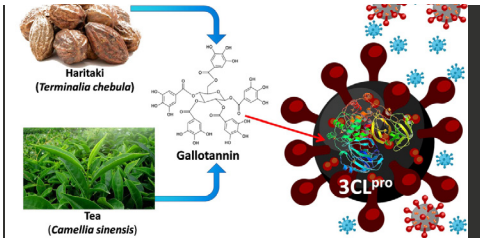
Every month the institute is organising a webinar on significant COVID-19 related research done by its faculty members. So far following webinars have been delivered.

(i) A Diagnostic Assay for COVID-19 developed by IIT Delhi- Delivered by Prof. Vivekanandan Perumal, KSBS, in May 2020.

(ii) Kawach mask- A Service to the Nation (making India proud) delivered by Prof. Bipin Kumar, Dept of Textile and Fibre Engineering in June 2020.

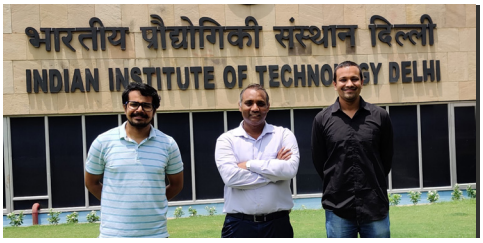
(iii) COVID-19 Dashboard 'PRACRITI'- PRediction and Assessment of CoRona Infections and Transmission in India delivered by Prof N.M. Anoop Krishnan, Civil Engineering Dept in July 2020.

Research & Innovation



Tea, Haritaki may act as potential therapeutic options against SARS-CoV-2 targeting 3CLpro protease: Study

A team of researchers led by Prof Ashok Kumar Patel from KSBS, IIT Delhi screened about 51 medicinal plants on 3CLProprotease (3-chymotrypsin-like protease) of the virus, which is necessary for processing the viral polyproteins and therefore has emerged as an interesting premise for the development of drugs targeting the virus. The targeting of this protein may therefore be able to halt the replication of the virus.



The experimental findings showed that aqueous extracts from Tea (Black and Green Tea, Scientific name- Camellia sinensis) as well as Haritaki (Terminalia chebula, which is commonly known as Harad in Hindi) have potential anti-viral activity via in-vitro inhibition of the proteolytic activity of the main protease of the virus 3CL pro showing potential therapeutic candidates for the SARS-CoV-2 infection, which should be further validated in in-vivo models. The research work was recently published in Phytotherapy Research, an impactful journal in the area (Article DOI: 10.1002/ptr.6802).

IIT Delhi startup Chakr Innovation launches 'Chakr DeCoV' to decontaminate N95 masks

Cleantech startup, Chakr Innovation, has developed Chakr DeCoV, an ozone-based decontamination device to enable safe reuse of N95 masks. Shri Ashwini Kumar Choubey, Hon'ble Minister of State for Health and Family Welfare, launched the decontamination device 'Chakr DeCoV'. Designed in the shape of a cabinet, Chakr DeCoV is built with an innovative decontamination mechanism, which utilises the high penetrability of Ozone gas for cleaning the pores of the N95 mask, ensuring complete decontamination of its intricate layers.

Ozone is a strong oxidizing agent that destroys viruses by diffusing through the protein coat, resulting in damage to the viral RNA. Proper dosage and exposure of Ozone can result in inactivation of SARS CoV-2 and a 99.9999% reduction in bacterial load, after which an N95 mask can be reused for up to 10 times without any impact on the filtration efficiency (as tested by SITRA).

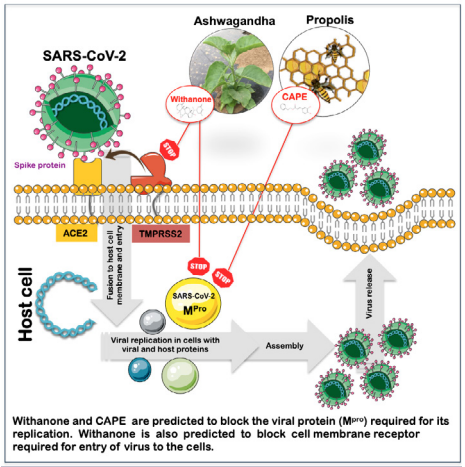
IIT Delhi researchers develop affordable PPE coverall that reaches adequate levels of breathability

Dr. S.M. Ishtiaque, Professor Emeritus, Department of Textile and Fibre Engineering, IIT Delhi and his student, Dr. Biswa Ranjan Das, Scientist 'D' & Assistant Director, DMSRDE (DRDO), Kanpur, have developed an advanced version of PPE coverall, which meets the criteria specified by the Ministry of Health and Family Welfare. Available in four sizes (both Body Suit - S, M, L & XL and Shoe Cover - 1, 2, 3 & 4) to fit the complete range of users, as opposed to Universal/ Limited size in commercially available coverall, it can be reused three times; hence, the effective cost is very low, compared to others. Key features of the advanced level PPE Coverall are as follows:

- Special coating and treatment formulation, applied over very light and compact polyester woven fabric, which has permitted to maintain the weight of PPE coverall to 300 gm against commercially available 400-500 gm.
- Special grade PU coating, providing very smooth surface feel and adequate clothing breathability, which provide comfort to users [BS: 7209 (1990)]. This feature is not available with other commercially available PPE coveralls.
- The outer face of the coverall displays excellent water repellency (rating = 90) and oil repellency (10/10), hence the coronavirus falling over the fabric rolls off with ease.

IIT Delhi startup Nanosafe Solutions launches 'Reusable Antimicrobial Mask'

"Nanosafe Solutions" has launched an antimicrobial and washable face mask "NSafe", which is reusable up to 50 launderings, thus greatly cutting down the cost of use. The team consists of Dr. Anasuya Roy, an IIT Delhi Alumnus, Founder and CEO of Nanosafe Solutions Pvt. Ltd. and Prof. Mangala Joshi, Department of Textile and Fibre Engineering, IIT Delhi. NSafe mask is a highly engineered triple-layered product consisting of an inner hydrophilic layer for comfort, middle layer having antimicrobial activity and outer most layer having water and oil repellent behaviour. NSafe mask has 99.2% bacterial filtration efficiency (at 3 microns) and complies with ASTM standards of breathability and splash resistance. The mask is extremely comfortable and breathable. Elastic band in the chin region and wire in the nose region provides adequate fit of the mask to the wearer.



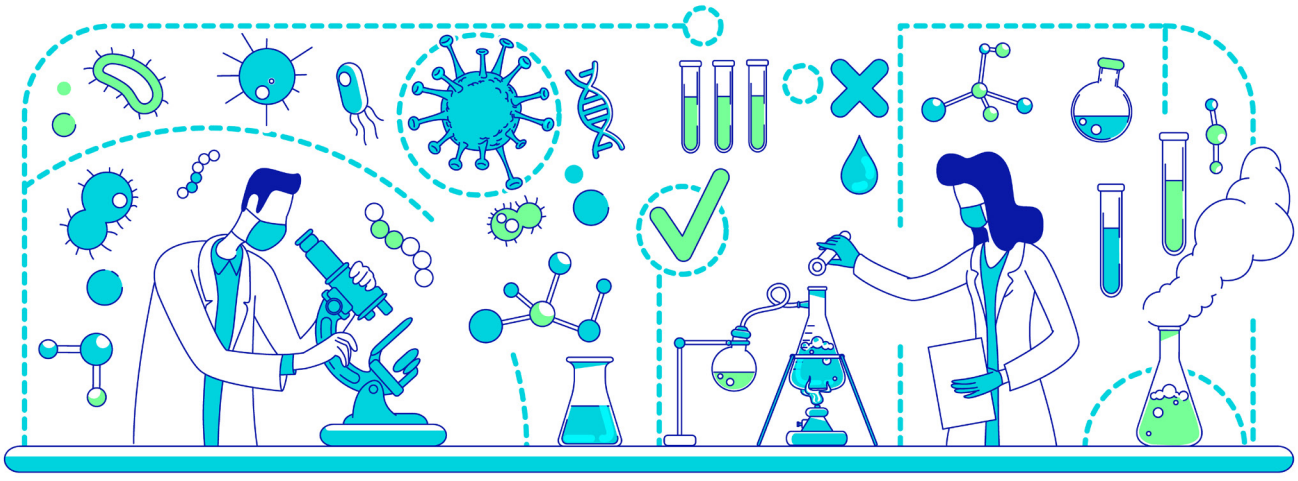
Ashwagandha takes the lead to be mother nature's COVID-19 warrior: Study

A collaborative research study by DAILAB @ IIT Delhi and DAILAB @ AIST (National Institute of Advanced Industrial Science and Technology), Japan has discovered that Ashwagandha may hold an efficient anti-COVID-19 drug. The researchers targeted the main SARS-CoV-2's enzyme for splitting proteins, known as the Main protease or Mpro that plays a key role in mediating viral replication. This is an attractive drug target for this virus, and as humans don't naturally have this enzyme, compounds that target Mpro are likely to have low toxicity. They discovered that Withanone (Wi-N), a natural compound derived from Ashwagandha (Withania somnifera) and Caffeic Acid Phenethyl Ester (CAPE), an active ingredient of New Zealand propolis, have the potential to interact with and block the activity of Mpro.

Prof. D. Sundar, Coordinator of DAILAB @ IIT Delhi & Head of the Department of Biochemical Engineering and Biotechnology at IIT Delhi said, "The traditional medicine system 'Ayurveda' has been practiced for thousands of years in India. Unlike modern medicine, the mechanism of action of natural drugs has not been resolved so far. IIT Delhi and AIST researchers have been working together for more than a decade and trying to contribute to strengthen this avenue by merging traditional knowledge with modern technologies."

COVID Research @ IIT Delhi

Products Developed	09
Startups	04
Ongoing Short Term Projects	07
Ongoing Long Term Projects	09
More details available at- https://home.iitd.ac.in/covid19-response.php	



Industrial **Research & Development**

Sponsored research projects & Consultancy jobs undertaken through Industrial Research & Development (IRD) Unit during April-June 2020

48 Sponsored Projects with a total sanctioned value of Rs 35.29 Crores
39 Consultancy jobs with a total sanctioned value of Rs 2.85 Crores

High Value Sponsored Projects (with sanctioned value Rs. 50 Lacs and above) undertaken during April-June 2020

- ASEAN PhD Fellowship Programme Secretariat- Sponsored by MHRD (Sanctioned Value: Rs. 927.80 Lacs).
- Neurocomputing and Cognitive Intelligence - Sponsored by Ministry of Electronics and Information Technology (Sanctioned Value: Rs. 231.31 Lacs).
- Spin Orbit Torque Driven Domain Wall Synapse based Hardware Neural Network- Sponsored by MHRD- Scheme for Transformational and Advanced Research in Sciences (STARS) and implemented through IISc Bangalore (Sanctioned Value: Rs. 99.64 Lacs).
- Catalyst Development for Methanol and DME Production via CO2 Hydrogenation- Sponsored by GAIL (Sanctioned Value: Rs. 90.29 Lacs).
- Development of a Health and Usage Monitoring System (HUMS) for Defence Equipment- Sponsored by SERB, DST (Sanctioned Value: Rs. 89.27 Lacs).
- Development of Automated Basti Yantra- A comprehensive tool for Therapeutic Induction of Enema - Sponsored by Central Council for Research in Ayurvedic Sciences (Sanctioned Value: Rs. 83. 21 Lacs).
- Efficient Food Grain Supply Chain for FCI and Uttarakhand- Sponsored by United Nations World Food Programme (Sanctioned Value: Rs. 76.32 Lacs).
- MEMS RF Power Amplifier with High Figure of Merit- Sponsored by SERB, DST (Sanctioned Value: Rs. 75.99 Lacs).
- Sustainable Processing of Agro-residual Waste to Produce Acoustic Materials and Biorenewable Chemicals using Green Solvents- Sponsored by DST (Sanctioned Value: Rs. 75.87 Lacs).
- Design and Development of Plasmonic Interconnects and Switches- Sponsored by SERB, DST (Sanctioned Value: Rs. 66.71 Lacs).
- Next-generation Indoor Communication Networks (NICNet)- Sponsored by SERB, DST (Sanctioned Value: Rs. 66.13 Lacs).
- Influence of High-Strength Reinforcing Steel and Concrete on Seismic Performance of RC Beam-Column Joints- Sponsored by SERB, DST (Sanctioned Value: Rs. 58.50 Lacs).
- Synthesis of Artificial Sweeteners and High Value Chemicals from Biorenewable Resources using Noble Metal Aerogel Catalysts- Sponsored by SERB, DST (Sanctioned Value: Rs. 55.50 Lacs).
- Use of Artificial Intelligence to Detect Breast Cancer on Mammogram and its Use in the Indian Population- Sponsored by DBT (Sanctioned Value: Rs. 54.32 Lacs).
- Sustainable Network Communication through Cognitive Intelligence at the Edge- Sponsored by SERB, DST (Sanctioned Value: Rs. 53.86 Lacs).
- Advanced Vision Technologies for Road Mobility and Safety- Sponsored by SERB, DST (Sanctioned Value: Rs. 51.27 Lacs).

Other significant research activities:

- Five FIRP projects were initiated on short term COVID-19 related areas to support institute researchers having potential leads.
- Two FIRP projects on Locust Control Initiative have been approved for support.
- University College of London (UCL) UK funded Summer School: Five IIT Delhi students were supported by UCL Medical Image Computing Summer School (MedICSS) 6-10 July, 2020 under UCL-IRD MoU.

Faculty Awards & Academic Positions

Prof. Virendra K Vijay

Centre for Rural Development & Technology (CRDT)

Nominated for Academic Committee of Indian Naval Academy (INA) Kerala for the next two years w.e.f. June 23rd, 2020.

Prof. Sagnik Dey

Centre for Atmospheric Sciences

Joined Atmospheric Environment (Elsevier Journal) as Associate Editor, and joined Editorial Board of the journal Scientific Reports (Nature).

Prof. Samrat Mukhopadhyay

Dept. of Textile & Fibre Engineering

Selected as the Chairman of the Board of Academic Affairs of the ten institutes of IIHT (Indian Institute of Handloom Technology) spread throughout the country.

Prof. Nomesh Bolia

Dept. of Mechanical Engineering

Nominated for the DAAD 'Research Stays 2020' programme, where he will be hosted by UDE (Germany) for the summer to pursue research on reverse logistics of EV batteries.

Prof. Arpan K. Kar

Dept. of Management Studies

Awarded second place in India for the prestigious "B. K. Birla Distinguished Research Scholar Awards for Social Science and Management 2019".

Prof. Vibha Arora

Dept. of Humanities & Social Sciences

Invited to join the Editorial Board of Sociological Bulletin, the flagship journal of the Indian Sociological Society published by Sage.

Faculty Awards & Academic Positions

Prof. Jayan J. Thomas

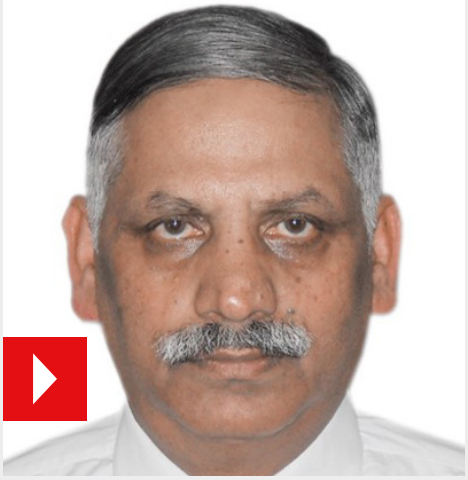
Dept. of Humanities & Social sciences

Awarded the first China-India Visiting Scholars Fellowship 2020. This is a fellowship instituted jointly by Ashoka University and China-India Foundation.

Prof. Bhim Singh

Dept. of Electrical Engineering

Declared as the winner of the 2020 IEEE IAS Outstanding Educator/ Mentor Award.



Prof. Shashank Deep

Dept. of Chemistry

Elected as a fellow of Royal Society of Biology (FRSB).

Selected for NASI membership

Prof. (Ms) Shalini Gupta

Dept. of Chemical Engineering

Selected for NASI membership

Prof. (Ms) Mani Mehra

Dept. of Mathematics

Selected for NASI membership

Prof. Saswata Bhattacharya

Dept. of Physics

Elected as Associate of the Indian Academy of Sciences, Bangalore

Prof. Manan Suri

Dept. of Electrical Engineering

Prof. Sayan Ranu

Dept. of Computer Science & Eng.

Corporate Relations

Industry - Academia Collaboration for COVID-19 Research by Corporate Relations

Faculties, researchers, students, startups across IIT Delhi are leaving no stone unturned in the quest to beat COVID-19, as they pivot from their usual work to seeking groundbreaking solutions spanning from diagnostics, therapeutics to support equipment (like PPE, ventilators). Corporate Relations, IIT Delhi helped accelerate and expand collaborations for these COVID-19 research, thus allowing our experts to move forward quickly with high priority projects- including indigenously developed test kits, infection proof fabric, face shields to name a few.

Highlights:

1. Actively engaged and collaborated with Principal Scientific Advisor's Office, CII, 45+ Faculties and IIT Delhi Incubated Startups.
2. Reached out to 100+ companies for possible collaboration opportunities.
3. Total 37 projects spanning across Support Equipment (14 projects) to Diagnostics (10 projects) to Therapeutics (13 projects).
4. Funds worth Rs 07 Cr generated.

PI	Project	Funding (In Lakhs)	Company
 Prof. Bipin Kumar	Research and development of personal protective equipment	126	pnb Housing Finance Limited
 Prof.Samrat Mukhopadhyay	Infection-proof fabric which is able to kill 99.9% of the bacteria within 2 hours	100	HUAWEI PLAN INTERNATIONAL
 Prof. Anurag Rathore	Development of ELISA based assay for detection of COVID-19	72	Microsoft WELLS FARGO
 Prof.Vivekanandan Perumal	Optimisation and validation of a one-step RT-PCR test for COVID-19	33	Microsoft
 Prof. Arnab Chanda	Scalable manufacturing of low-cost face shields as effective intervention against COVID-19 transmission	10	CLIFFORD CHANCE
 Dr. Avinash Mishra	Development of a novel peptide-based therapy for COVID-19	3	KisanKraft®

Corporate Relations is making a coordinated effort to curate a repository of the initiatives/projects on COVID-19 being carried out by IIT Delhi research fraternity. To know more, follow us on Linkedin at http://linkedin.com/company/14558819/

Alumni Affairs & International Programmes

Major International online meetings:

- Fourth Valley Concierge Corporation, Japan conducted a weeklong programme on Japanese Technology & Business for students at IIT Delhi
- Meeting with Prof. Richard Davies, Pro Vice Chancellor, Global New Castle University was held on 21st May 2020.
- Meeting with Mr. Oran Shagrir, Vice President for International Affairs HUJI-Jerusalem held on 8th June 2020 to discuss possibilities of research/teaching collaboration.
- Participation in joint session of group of higher education institutions with H.E. Mr. Emmanuel Lenain, Ambassador of France held on 11th June 2020 to reflect an Indo-French academic exchanges and contemplate future strategies for cooperation.
- Meeting with Prof. Avraham Yaron & Dr. Iris Good from Weizmann Institute, Israel held on 23th June 2020 to discuss possibilities of research/teaching collaboration.

Memorandum of Understanding (MoU) signed with:

- University of Leeds for academic exchange
- Sh. Vivek Vaidya and IIT Delhi for creation of Vaidya Sola Purker Chair

Contribution by Alumni & Others

IIT Delhi Alumni have come forward in an impressive number to contribute very generously to support various initiatives of the institute. Some major contributions received during April to June 2020 are as follows:

Particulars	Amount (in INR)	Donar Details
1979 RUBY REUNION	187,636	MULTIPLE DONORS
CS&E RESEARCH ACEELERATION FUND	67,952	MULTIPLE DONORS
GIVING WEEK 2020	730,171	MULTIPLE DONORS
GLOBAL ALUMNI ENDOWMENT FUND	1,000,000	MR PARAG DHOL
IIT DELHI BENEVOLENT FUND	1,511,178	MULTIPLE DONORS
PROF. SOUMITRA DUTTA CHAIR	1,970,182	PROF SOUMITRA DUTTA
STAY CON	1,446	MULTIPLE DONORS
YES BANK CHAIR	500,000	YES BANK
Grand Total	5,968,565	

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