

QUARTERLY

NEWSLETTER

APRIL 2020 ISSUE



INDIAN INSTITUTE OF TECHNOLOGY DELHI

02

NEWS & EVENTS

QS World University Rankings by Subject 2020: IIT Delhi amongst top 50 in Engineering & Technology

04

COVID-19 RESEARCH @ IIT DELHI

ICMR approves probe-free COVID-19 detection assay developed at IIT Delhi



WORD FROM THE **Director**

Dear IIT Delhi friends and well-wishers,

I am happy to present the April 2020 Issue of the institute's quarterly newsletter to you. It highlights the major academic achievements, research work, collaborations and extra-curricular activities in the institute. It also showcases the accolades our alumni have received.

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



HRD minister felicitates IIT Delhi scientists for developing probe-free COVID-19 detection assay

Union HRD Minister Shri Ramesh Pokhriyal 'Nishank' felicitated the IIT Delhi scientists involved in the development of COVID-19 probe-free real-time PCR-based detection assay. Led by Prof V. Ramgopal Rao, Director, IIT Delhi; the research team members Prof. Vivekanand Perumal and Prof. Manoj Menon met the Hon'ble Minister on 24th April, 2020 and informed him that this is the first probe-free assay approved by ICMR. The other research team members include Mr Prashant Pradhan (PhD Scholar), Mr Ashutosh Pandey (PhD Scholar), Mr Praveen Tripathi (PhD Scholar), Dr. Akhilesh Mishra, Dr. Parul Gupta, Dr. Sonam Dhamija, Prof. Bishwajit Kundu and Prof. James Gomes.

IIT Delhi Benevolent Fund



Benevolent Fund instituted to help people of the lower economic strata

The IIT Delhi Benevolent Fund has been instituted amid COVID-19 lockdown to receive voluntary contributions in a formal and transparent manner for meeting the needs of people of the lower economic strata who depend on the campus community. Beneficiaries would include the informal service providers of the campus like rickshaw pullers, night mess workers, construction workers etc.



QS World University Rankings by Subject 2020: IIT Delhi amongst top 50 in Engineering & Technology

QS (Quacquarelli Symonds) released the World University Rankings by Subject 2020 on 4th March. IIT Delhi secured 47th position in Engineering & Technology category. The institute moved a massive 14 places from last year's 61st position. With this, IIT Delhi is now among the world's top 50 Engineering and Technology institutions. Prof V. Ramgopal Rao, Director, IITD said the significant improvement in the ranking is the result of various measures taken in the institute.



New Zealand Deputy Prime Minister endorses strengthened education ties with India

Mr. Winston Peters, New Zealand's Dy PM and Minister of Foreign Affairs, who visited IIT Delhi on 26th February, officially endorsed the New Zealand Centre in the institute and recognized the growing research connections between the New Zealand universities and IIT Delhi. The Dy PM was accompanied by a high-ranking government delegation from New Zealand.



MoS HRD Shri Sanjay Dhotre inaugurates exhibition on clean air technologies

Union Minister of State for HRD Shri Sanjay Dhotre inaugurated an exhibition on clean air technologies organised by the Centre of Excellence for Research in Clean Air (CERCA), IIT Delhi on 25th February. The exhibition showcased clean air technologies developed by IIT Bombay, IIT Delhi, IIT (ISM) Dhanbad and IIT Ropar.



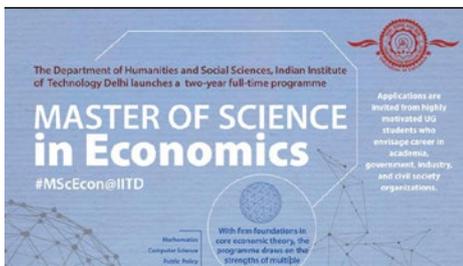
Geoenvironment 2020, an international seminar on contaminated sites, held

Geoenvironment 2020, a 3-in-1 event, comprising an International Seminar on Contaminated Sites along with Demonstration Workshop on Subsurface Investigation Methods as well as a Concurrent Conference on Geoenvironment and Sustainability, was organized in February at IIT Delhi. On this occasion, field demonstration of state-of-the-art equipment, procured by IIT Delhi and capable of providing continuous core samples of soil without cross-contamination, was given.



IIT Delhi, NIT Agartala sign MoU for collaboration on academic activities

The MoU, signed by Prof V. Ramgopal Rao, Director, IIT Delhi and Prof H. K. Sharma, Director, NIT Agartala, will provide an opportunity to NIT's B.Tech and Dual Degree (Integrated B.Tech. and M.Tech.) students to explore the option of semester-long internship (project) and undertake courses in IIT Delhi and be considered for direct admission to the IITD PhD programmes without the need to qualify GATE or any other national level examination.



IIT Delhi announces M.Sc. in Economics and M.Sc. in Cognitive Science

IIT Delhi is launching two new Full-Time Masters Programmes (02-year) i.e. M.Sc. in Cognitive Science and M.Sc. in Economics in the Department of Humanities & Social Sciences from this year. With the starting of these programmes, the institute aims to capitalize on the expertise of its faculty members from multiple departments, to promote teaching and research while also establishing critical links with industry.



IIT Delhi signs MoU with USA's Open Health Systems Laboratory

In February, IIT Delhi entered into an agreement with Open Health Systems Laboratory (OHSL), USA to set up an International Centre of Excellence (CoE) on Computational and Biomedical Sciences with an initial funding of Rs 10 Cr from the OHSL. The objective is to build a global team science consortium by leveraging the best of biomedical informatics to address key questions of biomedical sciences.



Annual international students' dinner organised

The annual international students' dinner event 'Celebrating global culture- An Orchestra of Diversity' was organized at IIT Delhi by Dean, Alumni Affairs & Int'l Programmes (AAIP) along with Dean, Student Affairs. The dinner, hosted by the Director on 27th February, was a great get together opportunity for the international students from over 25 countries who are studying in the institute. On this occasion, the foreign students offered a glimpse of their country's culture through their performances.



Social Innovation Challenge held at IIT Delhi's social fest Kaizen'20

The Social Innovation Challenge, held during IIT Delhi's social fest Kaizen'20 in February, was focused on ideating solutions to tackle the issues of social isolation faced by elderly and having innovative solutions to increase accessibility to perform day to day activities at public places. NSS, IITD has also started three new projects in the education domain. Two of them, Kilkari and Umeed, are for helping underprivileged children of age group 10-15. SheCodes, another new project, is for teaching programming and computer coding to girls of class 7-8th in Delhi government schools.



International media witness world-class technical education provided at IIT Delhi

A delegation of 20 journalists from different media organisations of Mauritius and Seychelles visited IIT Delhi on 28th February, 2020 as part of the familiarization programme organized by the Ministry of External Affairs, Govt of India, for foreign media. The delegation visited Advanced Flow Characterization Laboratory and interacted with Prof Vivek Buwa, who briefed them about the research work(s) being done at the lab.



IIT Delhi celebrates 61st Foundation Day

IIT Delhi celebrated its 61st Foundation Day on 27th January 2020. On this occasion, Prof. Gagandeep Kang, Executive Director, Translational Health Science and Technology Institute, Faridabad delivered the Foundation Day lecture on "Measuring What Matters in Public Health". The Foundation Day also witnessed IIT Delhi faculty members getting honored with Faculty Research Awards.

Research & Innovation

Glimpse of COVID-19 related research @ IIT Delhi



ICMR approves probe-free COVID-19 detection assay developed at IIT Delhi

Researchers at the Kusuma School of Biological Sciences (KSBS), IITD have developed a probe-free detection assay for COVID-19. The assay has been validated at ICMR with a sensitivity and specificity of 100%. This makes IIT Delhi the first academic institute to have obtained ICMR approval for a real-time PCR-based diagnostic assay. Using comparative sequence analyses, the research team identified unique regions (short stretches of RNA sequences) in the COVID-19 / SARS COV-2 genome. These regions are not present in other human corona viruses providing an opportunity to specifically detect COVID-19. This method uses primers targeting unique regions of COVID-19 that were designed and tested using real time PCR. These primers specifically bind to regions conserved in over 400 fully sequenced COVID-19 genomes. This highly sensitive assay was developed by extensive optimization using synthetic DNA constructs followed by in vitro generated RNA fragments. It will be useful for specific and affordable high throughput testing. This assay can be easily scaled up as it does not require fluorescent probes.



Supercomputer-based COVID-19 research: Rs 1 Cr worth of computational time offered for FREE

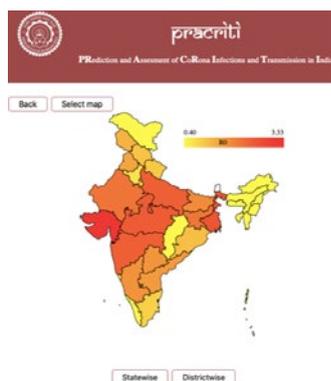
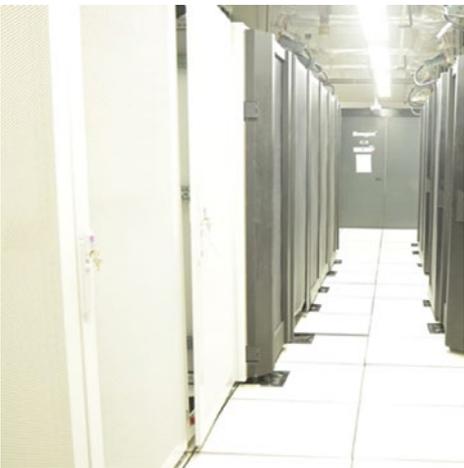
IIT Delhi invited proposals from the government and private academic institutions as well as private companies in association with an academic partner from all over the country to use its supercomputer resource PADUM for COVID-19 research. 10 external projects and 5 from IIT Delhi are sanctioned for top priority allocation at the institute's High Performance Computing (HPC) facility.



Ongoing supercomputer-based COVID-19 research work by IIT Delhi scientists

a) Researchers from the Department of Chemistry and the KSBS are attempting to identify potential drug molecules against the novel coronavirus. These molecules are expected to interfere with different steps in the life cycle of the virus and prevent its proliferation. Researchers are searching through databases of existing drugs that can be repurposed, natural product libraries as well as new molecules.

b) Single ventilator design modification for optimal multi-patient use - A Computational Fluid Dynamics study: The aim of this study by researchers from Chemical Engineering Dept. and Centre of Energy Studies is to find a "Plug & Play" solution that caters to surge in demand for ventilators in the face of medical emergencies such as COVID-19; a design proposal to accommodate multiple patients on a single ventilator, thus increasing the ventilator capacity of our hospitals manifold, that too with minimalistic and easy design changes, which can be applied universally to all makes and built of ventilators.



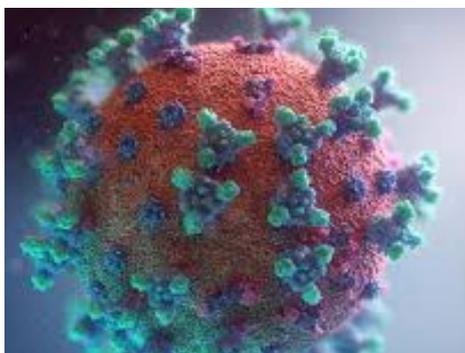
Web-based dashboard 'PRACRITI' developed for predicting spread of COVID-19

IIT Delhi researchers have developed a web-based dashboard for predicting the spread of COVID-19 in India. The mobile-friendly dashboard, named as PRACRITI (PRediction and Assessment of CoRona Infections and Transmission in India) gives detailed state-wise and district-wise predictions of COVID-19 cases in India. The projections are given for a three-week period, which is updated on a weekly basis. The research team, led by Prof N.M. Anoop Krishnan from Civil Engineering Department, believes that such a platform will be highly useful for healthcare bodies, local and central authorities, to efficiently plan for different future scenarios and resource allocation.



Affordable & effective face mask, KAWACH, launched to provide protection against COVID-19

ETEX, an IIT Delhi startup, has developed and launched an affordable and effective face mask 'KAWACH' under the mentorship of Prof Bipin Kumar for protecting and safeguarding people from the risk of COVID-19. KAWACH mask is at par with N95 in terms of proper fitting, and engineered filtration layer that could provide up to 98% filtration efficiency (3 micron size particle; ASTM F 2101). The mask price is kept affordable (below Rs.45) so that it can reach masses for enhanced protection.



Development of formulations for viral decontamination of inanimate surfaces

In view of the spread of COVID-19 infections in India, DST-SERB had announced several special research project calls to urgently ramp up national R&D efforts against the epidemic. The first set of five selected projects, which will be supported for further development into implementable technologies, include development of formulations for viral decontamination of inanimate surfaces by Prof. Bhupendra Butola, IIT Delhi. This will help develop material, which may be used as a virus tactic and be applied to mops to disinfect the surfaces to remove any adhering viruses or bacteria.



Manufacturing and supply of 3 ply surgical and N95 masks

Prof. Ashwini Agrawal and Prof. Manjeet Jassal (Dept. of Textile and Fibre Engg.) through their startup Nanoclean Global modified existing machines to manufacture 3 ply surgical masks with a capacity of 1 lakh pieces/day. They have so far supplied over 2 lakh pieces of N95 masks to various state governments and a large quantity of 3 ply surgical masks to various agencies. The researchers are also developing coveralls in association with Maulana Azad Medical College (MAMC), AIIMS, New Delhi and Pearl Academy, New Delhi.



Effect of restricted emissions during COVID-19 on air quality in India

The effect of restricted human activities due to the COVID-19 pandemic in India on air quality in 22 cities was estimated. PM_{2.5} had maximum reduction in most regions. The air quality index (AQI) reduced by 44, 33, 29, 15 and 32% in north, south, east, central and western India, respectively. This substantial decrease in concentrations resulted in a four times reduction in total excessive risk. Similar lock down during unfavourable meteorology could increase the average PM concentrations, but it would still be under CPCB limits. (Sharma, S., Zhang, M., Gao, J., Zhang, H., and Kota, S. H.: Effect of restricted emissions during COVID-19 on air quality in India, Science of The Total Environment, 728, 138878, 2020)



Alcohol based hand sanitizer as per WHO parameters prepared

The Department of Chemistry prepared alcohol based hand sanitizer, which has been prescribed by WHO for destroying coronavirus and its spores from surfaces and hand for use by the campus community. The formulation contained three chemicals along with Aloe Vera and the major component was isopropyl alcohol (around 75%).

Industrial **Research & Development (IRD)**

Sponsored research projects & Consultancy jobs undertaken through IRD Unit during January-March 2020

- 69 Sponsored Projects with a total sanctioned value of Rs 3168 Lacs
- 50 Consultancy jobs with a total sanctioned value of Rs 427 Lacs



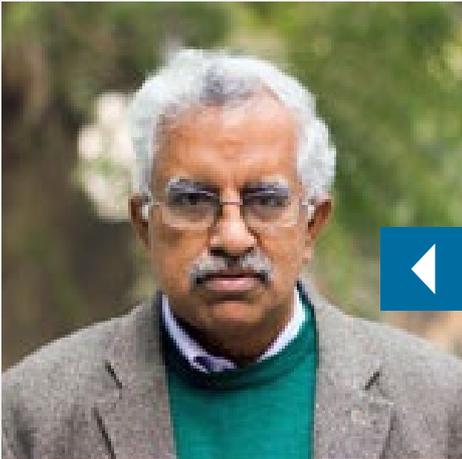
High Value Sponsored Research Projects (with sanctioned value Rs 100 Lacs and above) Undertaken During January-March 2020

- "Technology Innovation Hub on Cobotics" at IIT Delhi under National Mission on Interdisciplinary Cyber Physical Systems, sponsored by DST, Govt. of India (Sanctioned Value: Rs.15000 Lacs).
- "IIT Delhi and Open Health Systems Laboratory (OHSL) have set up an International Centre for Excellence towards research on Biomedical & Bioinformatics including Ayurveda. OHSL will be supporting the Centre (Sanctioned Value: Rs 1000 Lacs for 5 years).
- "Study of the Erythroid and Megakaryocyte Lineages under Normal Development and Pathological Myeloproliferation" sponsored by The Wellcome Trust/ DBT India Alliance (Sanctioned Value: Rs 374.19 Lacs).
- "DST Grant for Improvement of S&T Infrastructure of School of Biological Sciences" (Sanctioned Value: Rs 165 Lacs).
- "DST Grant for Improvement of S&T Infrastructure of School of Biological Sciences" (Sanctioned Value: Rs 165 Lacs).
- "GenomeIndia: Cataloguing the Genetic Variation in Indians" sponsored by DBT (Sanctioned Value: Rs 140 Lacs).
- "Technical Textile Industry in India: Challenges and Opportunities" sponsored by Ministry of Textiles (Sanctioned Value: Rs 120.79 Lacs).
- "Establishing a research program in India focused on evaluating safety of rural roads and highways" sponsored by National Institute of Health, USA (Sanctioned Value: Rs 102.60 Lacs).

Other significant research activities:

- Eighteen M-FIRP projects have been initiated between faculty members of IIT Delhi and National Chiao Tung University (NCTU), Taiwan with funding by respective institutions.
- Four M-FIRP projects have been initiated between faculty members of IIT Delhi and University College of London (UCL), UK with funding by respective institutions.

IIT Delhi-IRD launched '14 Challenge: Ideation at Isolation; Implementation at Institution' for its students, amid suspension of academic activities due to COVID-19 lockdown. The students were invited to participate in the challenge and find out modern solutions to challenges in topical areas of innovation, design & society.



Faculty Research Awards 2019

Prof. M. Balakrishnan

Dept. of Computer Science & Engineering, IIT Delhi

Sulochana and Col. A Krishnaswami Vrc, VSM Faculty Research Award in the Category of Lifetime Achievement Award: Prof. Balakrishnan, Dept. of Computer Science & Engineering, IIT Delhi



Faculty Research Awards 2019

Prof. Ashwini K. Agrawal

Dept. of Textile and Fibre Engineering

Professor K. L. Chopra Faculty Research Award in the Category of Applied Research Award: Prof. Ashwini K. Agrawal, Dept. of Textile and Fibre Engineering, IIT Delhi



Faculty Research Awards 2019

Prof. Amit Kumar

Dept. of Computer Science & Engineering, IIT Delhi

Professor P.C.P. Bhatt Faculty Research Award in the Category of Basic Research Award: Prof. Amit Kumar, Dept. of Computer Science & Engineering, IIT Delhi

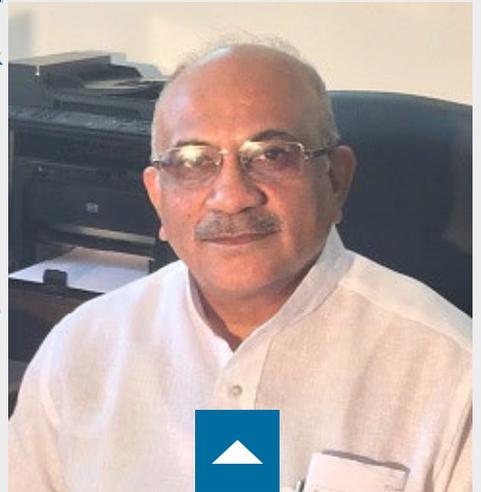


Faculty Research Awards 2019

Prof. Samaresh Das (CARE) & Prof. Rajendra Singh Dhaka (Dept. of Physics)

Centre for Applied Research in Electronics & Dept. of Physics

Veena Arora Faculty Research Award in the Category of Early Career Award (Jointly): Prof. Samaresh Das (Centre for Applied Research in Electronics, IIT Delhi) and Prof. Rajendra Singh Dhaka (Dept. of Physics, IIT Delhi)



Prof. Sanjeev Sanghi

Applied Mechanics Department

Prof. Sanjeev Sanghi has been selected as a member of the editorial board of Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy.



Prof. Ashok K Ganguli

Deputy Director (Strategy & Planning) & Professor, Chemistry Department

Prof. Ashok K Ganguli has been elected as Vice President of the Chemical Research Society of India (IISc Bangalore) for 2020-2023



Prof. Shalini Gupta

Dept. of Chemical Engg.

On National Science Day, President of India, Shri Ram Nath Kovind honored IITDelhi Prof. Shalini Gupta, Dept. of Chemical Engg., with National Award for Young Woman Showing Excellence through Application of Technology for Societal Benefits.



Prof Swades De

Electrical Engg. Dept.

Prof. Swades De, Electrical Engg. Dept., has been conferred with Om Prakash Bhasin Award in the field of Electronics & IT. The Award carries a citation, plaque and cash prize of Rs 1 lakh.



Prof. Vasant Matsagar

Civil Engineering Dept.

Prof. Vasant Matsagar, Civil Engineering Dept., has joined the editorial board of the Structures and Buildings journal published by the Institution of Civil Engineers (UK). He has also been elected as a Fellow of the Institution of Engineers (India).



Prof. Sreedevi Upadhyayula

Chemical Engineering Dept.

Prof. Sreedevi Upadhyayula, Chemical Engineering Dept., has been honored with "Innovation Award 2018-19" for "K-Model: Quick and Accurate Prediction of Crude Oil Blend Compatibility and Blend Optimization of N-Number of Crude Oils" by Ministry of Petroleum & Natural Gas, Govt. of India.



Prof. Kavya Dashora

Centre for Rural Development & Technology

Prof. Kavya Dashora has been awarded "SRBS Women Scientist Award 2020" by Society for Research in Biological Sciences in recognition of 15 years of her outstanding research and teaching in the field of agriculture, nanotechnology and rural development in India and globally.



Prof. Shashank Deep

Chemistry Dept.

Prof. Shashank Deep, Chemistry Dept., has been elected as the "Fellow of Royal Society of Chemistry" (FRSC).

Corporate Relations



Denso Day

Denso Day was organized on 28th January 2020. The event focused on setting Technology Collaborations and Student Recruitment. The Day included discussions and deliberations around three key focus areas:

1. FloT: Factory IoT
2. MaaS: Mobility as a Service
3. Autonomous Vehicles

The event was attended by Denso's Vice President, Mr. Hiroyuki Wakabayashi, and various IIT Delhi faculty members including Prof. Chetan Arora (CSE), Prof. Subodh Sharma (CSE), Prof. Sunil Jha (ME), and Prof. Arpan Chattopadhyay (EE). There was also a Denso booth that showcased cutting edge technology that Denso is actively working on.



Agilent to set up incubator site for bioanalytical science

On 29th January, Agilent and IIT Delhi signed an MoU under which, Agilent, a leader in the biopharma space, is contributing funds to set up an incubator at IIT Delhi to support researchers at the institute to establish global best practices for identifying and characterizing biopharmaceuticals. The research conducted by IIT Delhi examines and reports on the quality of biotherapeutic products for the Indian market. Agilent CEO, Mike McMullen, discussed about Agilent's history of innovation, focus on research and academia, and vision for the future. Likewise, IITD Director, Prof. V. Ramgopal Rao, spoke about the institute's mission and role in promoting collaborations between academia and industry.



Creche inaugurated under 'Share the Care' programme for construction workers

One Porta Cabin, modified for its use as Creche for the children of construction workers, has been sponsored by National Buildings Construction Corporation Limited (NBCC). The creche facility was inaugurated on 3rd Feb at the NBCC project site of faculty housing. This initiative aims to promote welfare of small children of the construction workers deployed at execution of various project sites that are spanned over campus for next 4-5 years and entails the following objectives: a day care center for children who accompany their parents to the construction site; mid-day meal for the children, regular teaching.



Nano 2020 @ IIT Delhi

In the run-up to the 11th edition of 'BENGALURU INDIA NANO 2020', India's biggest nanotechnology event, 'Nano 2020: An Industry-Academia Interaction' was organised at IIT Delhi on 5th February. It was inaugurated by Prof. V. Ramgopal Rao, Director, IIT Delhi. The attendees got a glimpse of the research at IIT Delhi in the area of nanotechnology. The daylong event saw an active participation from the IITD faculty and research scholars.



Twitter team visits DA/ML lab

On 14th February, Twitter team led by Mr. Parag Agarwal (CTO), Mr. Manish Maheshwari (MD), Ms. Pretha Athrey (Marketing Head) along with Public Policy team members at Twitter visited the DA/ML lab at SIT building and interacted with research scholars. They also delved upon future collaboration opportunities with IIT Delhi.

Our **ALUMNI**



1979 Batch Celebrates Ruby Reunion

The alumni of 1979 batch celebrated their Ruby Reunion from 31st January to 1st February, 2020. The event began with a talk on "Driving Digital Strategy" by Prof. Sunil Gupta on the first day. The second day witnessed an interaction between the alumni and the Director; then AAIP Dean Prof Sanjeev Sanghi and other senior functionaries of the institute. Prof. V. Ramgopal Rao, Director, briefed the alumni about recent developments in the institute and urged them to contribute to the IIT Delhi Endowment Fund. Prof Sanghi thanked the 1979 batch alumni for contributing more than Rs 1 Cr to the institute as part of the reunion.

Alumni Interaction Events in Australia

On March 13, 2020, an alumni interaction event was organised in Sydney, Australia. More than 35 IITD alumni attended this event and interacted with a delegation led by the institute Director. The other members of the delegation included Prof. A. K. Ganguly, DD (S&P); Prof. Sanjeev Sanghi (then AAIP Dean); Prof. Shantanu Roy (Dean, Academics) and Prof. Naveen Garg (Dean, AAIP). The event was organised with the support of 1977 batch alumnus, Mr. Pradeep Khanna (B. Tech, Electrical Engg). The meeting deliberated on ways to steer the IIT Delhi Endowment Fund towards its goal. Before Sydney, another alumni meet took place in Melbourne on March 11th in which over a dozen alumni participated. This meet was organised with the support of 1970 batch alumnus, Mr. Ravi Bhatia.



IIT Delhi Giving Week 2020

Giving Week'20 commenced on 16th March. As of 31st March more than 145 alumni have contributed over Rs. 12.5 Lakh. The contribution is being utilised to support the informal service providers, daily-wage and contractual employees in the campus who are severely impacted due to COVID-19 lockdown.

Contributions by Alumni & Others (Jan-March 2020)

Particulars	Amount (in INR)
Batch Reunions	9,345,292
Chair	13,433,190
Endowment Fund Account	205,381
Scholarship and Awards	9,403,529
Other Campaigns	5,650,215
Grand Total	38,037,607

Visits By **International Delegations**



KU Leuven Science, Technology & Engineering group - 06th Jan 2020



Wesleyan University, US - 10th Jan 2020



City University, Hong Kong - 16th Jan 2020



New York University, US - 21st Jan 2020



15-member delegation from The University of Auckland - 10th Feb 2020



Two-member delegation from Kyoto University - 11th Feb 2020



Two-member delegation from IMT Atlantique - 21st Feb 2020



Five-member delegation led by Dr. C.C. Mushowe, Executive Director for Presidential and National Scholarships, Zimbabwe - 04th March 2020



Four-member delegation from Switzerland - 06th March 2020

Sports & Culture

Inter hostel sports competition for men & women was organised in which all the 13 hostels participated (11 men and two women).

Outdoor sports such as athletics, hockey, cricket, basketball, football, badminton, table tennis, weight lifting, squash, tennis, volley-ball and indoor sports (chess, carom & pool) were part of the competition.

IIT Delhi contingent participated in Aahvaan'20, the annual sports fest of DTU held in February, and proved their dominance once again. The team won silver in basketball (men and women), cricket, football, table tennis (women). The men's team also bagged silver in 4*100 men's relay.



71st Republic Day celebrations 26th Jan 2020



Follow IIT Delhi on social media:

 : twitter.com/iitdelhi

 : facebook.com/IITDelhi/

 : linkedin.com/school/iitdelhi/

Compiled & Published by:

Public Relations Division

Indian Institute of Technology Delhi

Hauz Khas, New Delhi

Phone: 011-2659-1729

Designed by:

Communication Cell, CSC

Indian Institute of Technology Delhi

Hauz Khas, New Delhi

Phone: 011-2659-7124

For any suggestions, please contact us at: pro@iitd.ac.in