



Dear Friends,

Greetings from IIT Bombay!

Wishing you all a very happy and prosperous new year 2021!

It gives me immense pleasure to inform you that we celebrated E- Alumni Day on December 27.

As a part of the event, Distinguished Service Awards 2020 were bestowed on two of our alumni this year, who have contributed in a notable and sustained manner to the progress of the Institute. Chapter Service Awards were also conferred upon six of our alumni who have contributed in a very notable and sustained manner to the progress of the Chapter and also to the progress of the Institute. The celebration witnessed personalized 'avatars' of awardees receiving awards from the personalized avatar of Director, Prof. Subhasis Chaudhuri.

On December 26, class of 1995 celebrated its silver jubilee reunion virtually. On the Alumni day, the Batch (class of 1995) came together to pledge a sum of ₹20.3 Crores towards their legacy project, as a way of giving back to the alma mater and to leave behind a lasting legacy. The event also witnessed exchange of MoU with Mr. Ashank Desai, an IIT Bombay alumnus (Class of 1974) and Founder, Vice-Chairman and MD of Mastek/ Majesco for a substantive financial contribution of ₹15 Crores towards the 'Center for Policy Studies' at IIT Bombay. The Centre will contribute towards India's need for talent, research and advisory to achieve holistic approach to policy making, particularly with emphasis on technology. Please see the [link](#) for Alumni Day-2020 Function which was held on December 27, 2020.

30th Reunion of the Class of 1990, 'Pearl Jammin' was held online on Zoom, on December 12. It was the first large-scale virtual reunion of any IITB batch. It started off with nostalgia, an audio-visual of IITB from the late '80s. Around 175 batchmates attended the reunion.

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## News from IIT Bombay



### Alumni Initiatives

Every year Legacy batches have been contributing a part of their fund to the following purposes to support the Institute.

- Retired Faculty Wellness Fund (Gurudakshina)
- Student Scholarships
- Young Faculty Award (YFA)
- Financial Aid Program (FAP)

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# Faculty Research at IIT Bombay

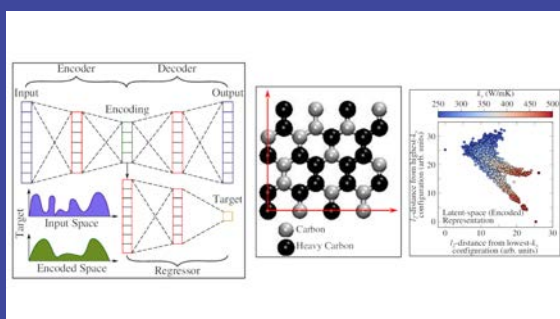
## Simple Inquisitiveness and Persistence are the Basic Ingredients of a Good Research

We are honored to present a short interview with Prof. G Naresh Patwari, one of the leading scientists in chemistry and a professor at the Department of Chemistry, IIT Bombay. He was awarded Shanti Swarup Bhatnagar Prize in 2017 for his exceptional work in chemical sciences. He is known for his studies on vibrational spectroscopy, and his work has widened the understanding of the fundamental concepts in hydrogen bonding. We want to congratulate him for his success and thank him for talking to us about his research, current work, some moments in his career, and his philosophies through this interview.



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## Student Research activities at IIT Bombay

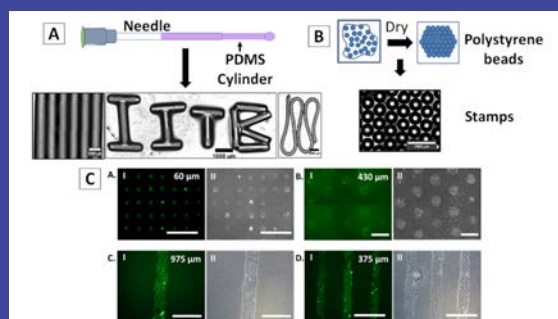


### Machine-learning-accelerated novel materials discovery

**Name:** Dhvaneel Visaria | **Guide:** Prof. Ankit Jain | **Department:** Mechanical Engineering (Ph.D.)

With the advent of superior technology, the need for materials with desired properties (mechanical, electrical, thermal, optical, etc.) has increased appreciably. The work on materials discovery is relevant and prevalent in all domains from drug discovery and thermoelectricity to electrochemical energy storage and nuclear fuel systems. In this study, we focus on a hypothetical system consisting of two-dimensional, graphene-like materials composed of carbon and heavy carbon (twice as heavy as carbon i.e. 24 a.m.u.) atoms in a 32-atom unit cell.

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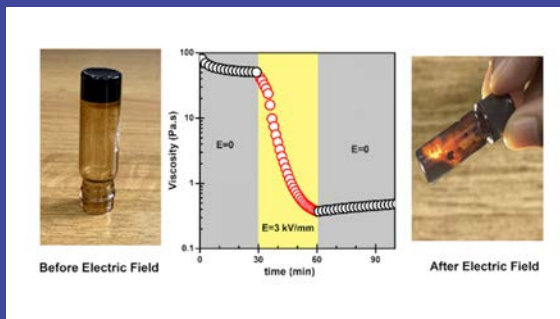


### Cost-effective method for stamp fabrication used for protein patterning

**Name:** Akshada Jayant Khadpekar | **Guide:** Prof Abhijit Majumder | **Department:** Chemical engineering (Ph.D.)

The cells in our body come in different shapes & sizes. This shape & size is necessary for the functionality of cells. For e.g. a neuron's elongated shape is required to collect signals far away from the brain. To study the effect of shape & size of cells on its growth & behaviour in laboratory, a well-established method called micro contact printing ( $\mu$ CP) is used. In this method, protein is printed on the glass or plastic surface using a stamp fabricated. The cells are grown on these protein islands printed in different shapes & sizes to study cell migration, differentiation & other cellular behaviour.

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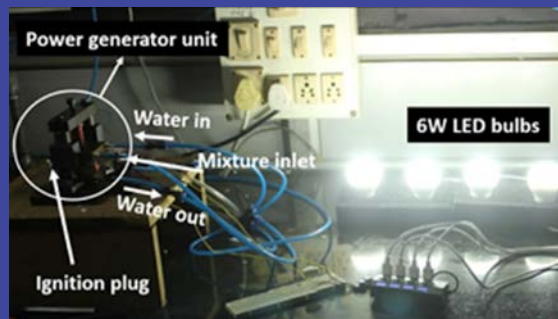


## Remarkable Decrease in Viscosity of Waxy Crude Oil under Electric Field

**Name:** Ankita Jain | **Guide:** Prof. Jyoti R. Seth & Prof. Vinay A. Juvekar |  
**Department:** Chemical engineering (Ph.D.)

Crude oil is a complex mixture of many components, in which paraffin waxes, asphaltenes, and resins are predominantly responsible for the problem of flow assurance. The waxes which are non-polar compounds, crystallize when the ambient temperature falls below pour point of crude oil, to form a solid-like structure. Asphaltenes and resins are relatively high molecular weight polar compounds. These polar particles act as the nuclei for the crystallization of waxes and help forming a strong network, which can impede the flow of crude oil in pipelines. Crystallization also increases the viscosity of the crude oil due to the gel-forming tendency of the wax crystallites. Mitigation of these problems involve a significant spending of capital by petroleum industries.

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## Development of a Hydrocarbon Fuel based Micro Thermoelectric Power Generator

**Name:** Aravind B. | **Guide:** Prof. Sudarshan Kumar | **Department:** Aerospace Engineering (Ph.D.)

Around 40% of rural households in India do not have access to electricity, which is a basic need for the rest of the country. Deprivation of electricity to the rural community acts as a roadblock in their overall development. Many industries & the government is trying to solve this problem with the help of renewable energy. But the problem persists because of the operational dependability of these resources on the environment & high maintenance cost. Hence there is a need for a device that can solve the problem of generating sufficient power to electrify essential household devices. Also, the miniaturization of electrical and mechanical devices for applications such as wireless equipment, micro space vehicles, & robots has led to the research of small-scale power generation devices.

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