



Dear Friends,

Greetings from IIT Bombay!

I hope you are all healthy and safe.

This September saw IIT Bombay acquire a new lease of life. It welcomed new PG students to the IIT Bombay family, with a flurry of 'online' orientations for the new entrants to enliven the atmosphere. We heartily welcome all the new students and wish them all a prosperous and successful term ahead.

Along with this new hush, there was noise, clamor, and frenzy, too, as current students engaged in preparations for their mid-semester examinations (starting in the first week of October) with utmost dedication aplomb. Our professors' and students' immense efforts who have worked hard over the last two months paid off as students and professors alike started to fit into this alien mode of education.

JEE Advanced and JEE Main were held in September when the COVID cases were peaking, and our alumni came to the rescue yet again. To help the JEE (Main) and NEET candidates in various locations across the country, several students and alumni of IIT Bombay came forward to connect needy candidates with the volunteers willing to help transport or monetarily through an online portal. To provide the safest, most pleasant experience to each of the 26,000 IIT Bombay zone JEE aspirants, 187 centers in 49 cities in Maharashtra, Gujarat, Karnataka, and Goa were selected as opposed to last years' 95 centers in 25 cities.

I thank you for the nominations sent by you for Distinguished Service Awards and Chapter Service Awards. I am glad to announce the Distinguished and Chapter service awardees (DSA and CSA) for this year. The committee has selected the following Alumni for DSA 2020 -. Raghunandan Krishnamurthy: M. Tech.1972 Mechanical Engineering and Sachin Galgalikar: B.Tech.1986 Mechanical Engineering. The committee has selected the following Alumni for CSA 2020: Bhalchandra Gopal Deokule: M.Tech.1977 Aerospace Engineering (Chapter: Hyderabad), Dr. Shankar Moni: B.Tech.1984 Electrical Engineering (Chapter: Bengaluru), Sharat Chandra K: B. Tech.2001 Chemical Engineering (Chapter: Hyderabad), Dr. Chandan Mozumder: Dual Degree- B.Tech. and M.Tech.2005, Aerospace Engineering (Chapter: Michigan), Gaurav Porwal: Dual Degree - B.Tech. and M.Tech.2005, Chemical Engineering (Chapter: Hyderabad), Mudit Jain: B.Tech.2011, Electrical Engineering (Chapter: Jaipur). My heartfelt congratulations to all the awardees.

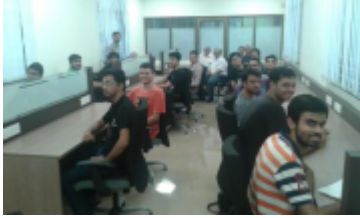
Two of our faculty members, Prof. Suryendu Dutta of the Department of Earth Sciences and Prof. U. A. Anandavardhanan of the Department of Mathematics, have been selected to receive the most prestigious Shanti Swarup Bhatnagar Prize for the year 2020 in their respective areas. We wish them continued success in their research endeavours.

We are also happy to announce the names of faculty members who have been awarded the Prof. S. P. Sukhatme Excellence in Teaching Award for the year 2020 during the Teachers' Day function on September 5, 2020: Prof. Gajendra Kumar Adil (SJMSOM); Prof. Sudesh Balan (IDC School of Design); Prof. S. Baskar (Mathematics); Prof. Anurag Mahesh Kumar Garg (ESED); Prof. Suvarn Subhash Kulkarni (Chemistry); Prof. Malay Mukul (Earth Sciences); Prof. Sahana Murthy (ET); Prof. Suresh C. Patel (Earth Sciences); Prof. Nithyanand Prabhu (MEMS); Prof. Vaijyanthi Mala Sarma (HSS); Prof. Dinesh Sharma (SJMSOM); Prof. Nishant Sharma (IDC School of Design); Prof. Sanjeeva Srivastava (BSBE); Prof. Vikram Singh Sirola (HSS); Prof. Perumal Vedagiri (Civil)

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News from IIT Bombay

Alumni Initiatives at IIT Bombay - Hostel Study Room Project



The alumni batch of 1969 of IIT Bombay has initiated the 'Hostel Study Room Project' to provide better facilities to the students for their academic progress. The study room in the hostels would help the students prepare better for exams and projects.

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Prof. S. C. Sahasrabudhe Award for Teaching Excellence



On Teacher's Day, September 5, 2020, IIT Bombay announced their proposed plan to institute the 'Prof. S. C. Sahasrabudhe Award for Teaching Excellence' in honor of a professor who inspired many of us to reach for our very best.

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IIT Bombay- WashU Executive MBA (Batch 6)



This is India's first and the only joint degree MBA program aimed at senior-level professionals and entrepreneurs who are keen to accelerate their career and emerge as global leaders of tomorrow.

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Faculty Research at IIT Bombay

A Strong Focus on Excellence, has remained unchanged over decades at IIT Bombay

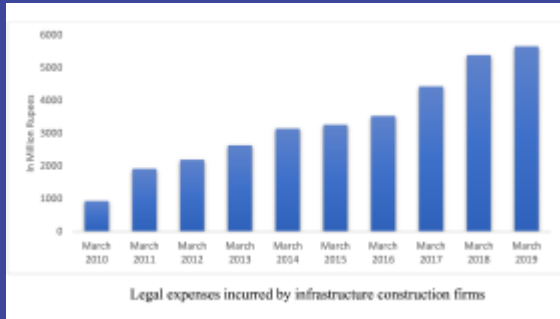
Prof. Devang Khakhar is the former Director and a Professor at Department of Chemical Engineering at IIT Bombay. He has been recently conferred with Honorary Doctorate by Monash University, Australia on Oct 24, 2019 in their graduation ceremony. The Honorary Doctorate is the highest award of the University given in recognition of professional contributions. Congratulations to Prof. Devang Khakhar!

He is an inspiration to all of us!

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Student Research activities at IIT Bombay

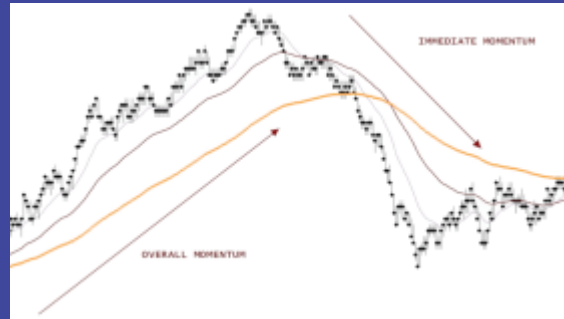


Conditions leading to the decision to litigate contractual disputes in construction

Name: Murali Jagannathan | **Guide:** Prof. Venkata Santosh Kumar Delhi |
Department: Civil Engineering (Ph.D.)

Construction operations, considering their capital & stakeholder intensive, unique, & project-based nature, is an exclusive research domain. Conflicts followed by dispute resolution processes are an integral part of a majority of construction operations. Dispute resolution is, therefore, a topic of research interest since many decades. Various dispute resolution mechanisms have evolved over years focussing on both time & cost-effective resolution and sustenance of working relationship between parties. However, disputes continue to plague construction projects even to this day.

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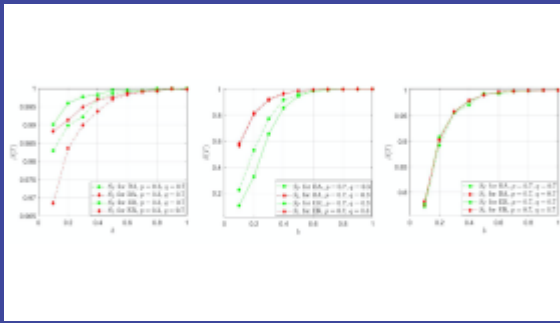


How Smart is Momentum Strategy? An Empirical Study for Indian Equities

Name: Apurv Nigam | **Guide:** Prof. Piyush Pandey | **Department:** Shailesh J. Mehta School of Management (M. Phil.)

Smart Beta Investing has revolutionized Investment Management with the ability to offer higher returns with lower costs. The Momentum factor in the Smart Beta Universe has outperformed other popular factors, besides being well documented in the literature, it is found to be pervasive across different geographies and asset classes. In this paper, we practically implemented a long-only Momentum based Investment strategy for the Indian Equity Markets that deliver superior risk-adjusted performance, derived upon comparing multiple strategies across time frames.

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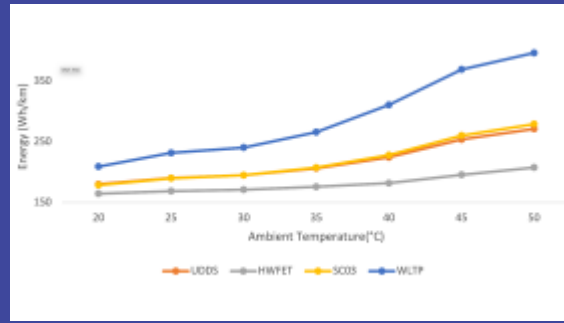


Influencing Opinion Dynamics in Networks with Limited Interaction

Name: Anmol Gupta | **Guide:** Prof. Sharayu Moharir | **Department:** Electrical Engineering (Dual degree - B. Tech + M.Tech.)

Opinion Dynamics has been an increasingly popular field of study in recent years with the rising usage of social media - leading to people being more connected to each other, & simultaneously becoming more accessible to an external agency aiming to influence the public opinion on a particular topic. Social media has enormous potential to shape public opinion, which in turn significantly affects the future of various communities. The focus of this work is on designing influencing strategies to shape the collective opinion of a network of individuals.

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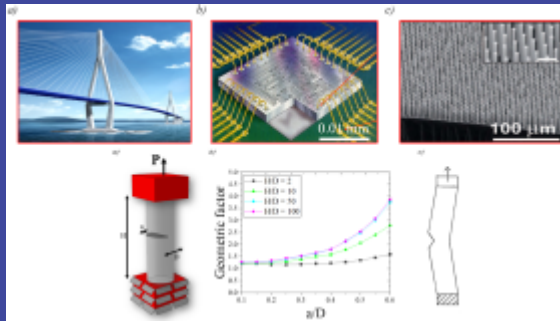


Thermal Management System for Battery Electric Vehicle

Name: Vinayak Kulkarni | **Guide:** Prof. Shankar Krishnan | **Department:** Mechanical Engineering (M.Tech.)

This thesis is an attempt to answer two questions regarding electric vehicles. First one is 'What is the impact of external and environmental conditions like ambient temperature, humidity, cabin initial temperature, road gradient etc. on energy consumption or range of a battery electric vehicle for different driving cycles?'. The second question is 'How to model internal temperature of a cylindrical lithium ion battery cell provided only the current profile of the cell?'

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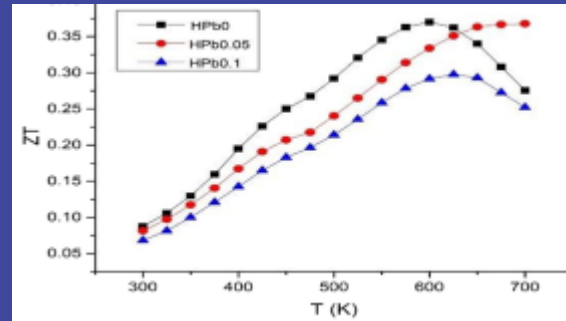


Effect of aspect ratio on geometric factor solutions for SENW fracture test specimen

Name: Hrushikesh Sahasrabuddhe | **Guide:** Prof. Nagamani Jaya Balila | **Department:** MEMS (Dual Degree - B.Tech + M.Tech)

Wires and rods have long been used for several bulk commercial applications including high strength steels in suspension bridge cables, tyre cords, elevator cables, nonferrous alloys etc. In an age where miniaturisation has progressed rapidly, fibre optics are used for telecommunication, magnetic sensors, gas sensors. In this work, we are modifying fracture toughness testing techniques for wire specimen by standardising the single edge notched wire (SENW) test to make it length scale compatible.

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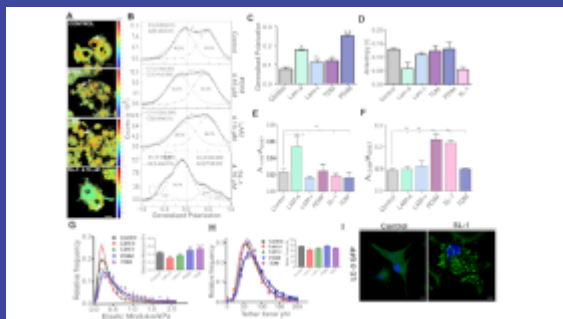


Synthesis & Study of TE properties of p-type Mg₂(Si_{1-x-y}Sn_xP_y) materials

Name: Debanjan Sarker | **Guide:** Prof. Titus Dasgupta | **Department:** Metallurgical Engineering & Materials Science

Thermoelectric power generation is considered as one of the most impactful non-conventional energy generation method. The major reason behind this is mainly no carbon footprints & an amazing effort to convert the low grade heat energy into useful electrical energy. Mg₂Si based materials are proven materials for n-leg of TE power generation modules due to their high ZT coupled with low cost. In our experiment attempt was made to increase the ZT of p-type Mg₂Si using an alloying approach.

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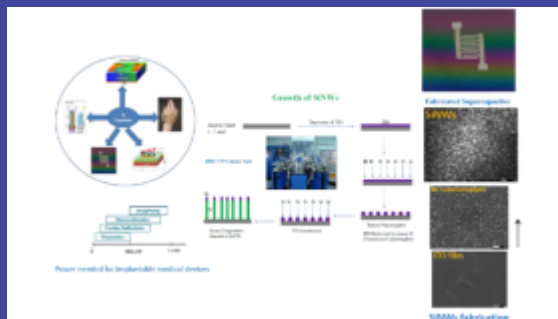


Cross-Talks of Virulent Bacterial Lipid Biomolecules with Host Cell Signaling Pathways: A Quantitative Approach for Therapeutic Interventions

Name: Manjari Mishra | **Guide:** Prof. Shobhna Kapoor | **Department:** Chemistry (Ph.D.)

Lipids play critical roles in infectious diseases by intervening in cellular signaling, membrane trafficking, and protein function during host-pathogen interactions. Seminal contributions exemplify the role of lipids in altering cell membrane properties modulating lipid/protein diffusion, and membrane organization. Thus, changes in membrane properties control the proper functioning of cells, and are harnessed by pathogens for their survival and infection. Our work is centered on lipids from *Mycobacterium tuberculosis* (Mtb) which serves as an epitome of how lipids—next to proteins—are utilized as central effectors in pathogenesis.

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Room temperature synthesis of In-catalyzed Silicon nanowires (SiNWs) on a flexible substrate for electronic applications

Name: Nitin Arya | **Guide:** Prof. R. O. Dusane | **Department:** Metallurgical Engineering & Materials Science (Ph.D.)

World is moving fast towards flexible electronics. Almost all existing Si wafer-based electronic devices are reproducible on flexible substrates. SiNWs-based single & hybrid devices such as wearable health systems, supercapacitors & solar cells etc. have been successfully fabricated on flexible substrates with remarkable performance. The most challenging aspect of material synthesis on a flexible substrate is the processing temperature. Therefore, the choice of substrate is limited by the highest possible processing temperature it can withstand. Keeping this in mind, efforts have been made to synthesize SiNWs on a polymer sheet at room temperature.

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