

## SCHOLASTIC ACHIEVEMENTS AND AWARDS

- Ranked **2nd** among the Dual Degree batch of the Department with an **SPI of 9.5** in 3<sup>rd</sup> Semester.
- Pursuing **Honors** in Metallurgical Engineering and Material Science Department with **CPI (10)**
- Secured perfect **10 (AA grade)** in **4 core** courses out of possible **6** in 3<sup>rd</sup> semester
- Among **Top 0.12 %** out of 15,00,000 candidates at the IIT – Joint Entrance Examination Main 2013
- Amongst **top 300** students of the **country** by Clearing National Standard Examination of **Chemistry**
- Part of **VIJYOSHI CAMP**, held at **IISC BANGALORE** for **KVPY (A NATIONAL FELLOWSHIP, by GOVT OF INDIA)**
- Among **top 0.1%** students in **QUANTITATIVE REASONING** assessment by **CBSE GOVT OF INDIA**
- Awarded '**Subodh Ratna**' for being the **Best in Academics** in Science at intermediate+2 in school

## TECHNICAL PROJECTS

### DUST MITIGATION AND ANTI REFLECTIVE COATINGS FOR SOLAR PANELS

[May'16 - Present]

Guide | Prof. Parag Bhargava, IIT BOMBAY

- Conducted research on **dust repellent** & easy to clean **transparent** coatings to enhance solar efficiency and longevity by embedding **Silica, Titania** nanoparticles in PDMS(Polydimethylsiloxane)
- Using **Dip coating** technique to coat tempered glass samples and results with **500 nm thick** coatings
- The coating produced is **hydrophobic** with contact **angle 115 degree** with **98% transmission** efficiency
- Literature survey on making the coating **non-polymeric** to enhance **Easy to clean** behavior.
- Employed characterization techniques such as: SEM, Cryo SEM, XRD , DLS, probe sonicator, UV spectroscopy, scratch test , EQE(quantum efficiency measurement), Ellipsometry, UV stability test

### CONTINUOUS SYNTHESIS OF ALUMINA BASED CERAMIC FIBER

[May'16 – Jul'16]

Guide | Prof. Parag Bhargava, IIT BOMBAY

- Worked on project to get an **in-house fiber production machine** to produce fibers for **ceramic fiber boards** used as refractory material in industries which are majorly exported to India.
- Produced fibers through **centrifugal spinning** of the polycondensed alumina sol synthesized by **sol-gel** method
- **Enhanced the productivity** of the machine **6 times** with increased yield per unit sol spun, reducing industrial production time by optimizing parameters like viscosity, refractive index, density, humidity, temperature
- Characterization techniques & devices used: SEM, optical imaging, Nano indentation, Rheological study
- Devices used: Zahn Cup for viscosity, IR GUN for temperature profile and other basic laboratory equipment

### CORE MEMBER OF ELECTRICAL SUB-DIVISION | AUV-IIT Bombay

[Oct'15 - Feb'16]

Autonomous Underwater Vehicle that localizes and performs realistic naval missions

- It is a student body with **35 members** which develops AUV [*matsya4.0*] participating in **AUVSI ROBOSUB, San Diego, CA** (Organized by *U.S. Office of Naval Research*).
- Worked on design and layout of the PCB's using Eagle software and implemented PWM on AVR for LED light signals

### TERM PAPER ON FLEXIBLE SUPER CAPACITORS

[Jan'16-Apr'16]

Course Instructor | Prof. Aparna Singh, IIT BOMBAY

- Carried out Rigorous literature study on flexible supercapacitors, their uses and applications, deduced that graphene based substrates impart flexibility to supercapacitors; Selected as best group presentation for the same
- Analysed and compared the Mechanical and Electrical properties of the different substrates used

### CHARACTERIZATION OF MATERIALS | CURRENCY NOTE

[Jan'16-Apr'16]

Course Instructor | Prof. T.R.S Prasanna & Prof. Parag Bhargava

- Found crystalline character in the polymeric part of currency note by Analysing XRD data with X'pert HighScore software.
- Observed surface morphology and identified the various elements present using SEM and EDX Spectroscopy

## MARKET RESEARCH IN DENTAL CERAMICS INDUSTRY

[Dec'15]

Materials Club Project

- Conducting **market survey** on **zirconia (CAD-CAM)** based dental crowns and bridges, with a team of 3 across Mumbai City
- Studied about various **dental materials** used in the industry and dental labs equipped with specialized machines meeting the needs **900+** dental clinics throughout the city.

## AIR MOUSE, INSTITUTE TECHNICAL SUMMER PROJECT

[May'15-Jun'15]

*Student Technical Activities Body (STAB), IIT Bombay*

- **Led a team** of four to design a glove based wearable mouse which works on gestures of hand without any need of surface by using accelerometer and Arduino Leonardo as motion sensors

## LEADERSHIP ROLES

### MANAGER | ABHYUDAY - SOCIAL ACTIVITIES BODY, IIT BOMBAY

[Apr'16-Present]

*Leading a 2-tier team of 100+ volunteers | 9k+ likes on Fb | 50,000 footfall | founded in 2012*

- Abhyuday is the social organisation of IIT Bombay with a vision to channelize youth towards India's societal challenges providing a platform for social initiatives coherent with the mission of social leadership, to bring about a change in the nation
- Spearheaded a **three tier team** consisting of **50+** volunteers for planning and execution of collection drive campaign in institute for **10 days** under **RAHAT** initiative by **Goonj** NGO and received over **400+** bags worth of **850+** kg of collection

### ACADEMIC MENTOR

[May'16 – Present]

*Department Academic Mentorship Program*

- Selected from over **50** applicants from the department after **interviews** and **peer-reviews** on the basis of **balanced** academics, extracurriculars and mentoring skills
- **Counselling** students with weak academic performance to help them achieve academic and overall stability

## TECHNICAL SKILLS

- **Softwares:** Eagle, PSpice, Origin, MS Excel, Solidworks, AutoCAD, Adobe Photoshop, X'pert HighScore (plus)
- **Programming languages:** MATLAB, GNU Octave, C++

## COURSEWORK

DEPARTMENT COURSES		
Transport Phenomena (AA)	Experimental Techniques in Material Science (AA)	Phase Transformations (ongoing)
Materials & Technology (AA)	Mechanical Behavior of Materials (ongoing)	Colloidal and Interfacial Science (AA)
Structure of Material (AA)	Thermodynamics of Materials (AB)	Kinetics of Processes (ongoing)

**Other courses:** Computer Programming and Utilization, Electrical and Electronic Circuits, Quantum Physics, Economics, Operations Analysis, Data Analysis and Interpretation, Numerical Analysis, Linear Algebra, Introduction to Study of Language

**Labs:** Computational Lab, Experimental & Measurement Laboratory, Metallography & Structural Characterization Lab, Mechanical Testing Lab, Heat Treatment Lab.

## EXTRA-CURRICULAR ACTIVITIES

- **Execution Panelist**, *Insight-IIT Bombay*, Worked on articles in the main newsletter in online editions of the official media body of the institute, having a reach of **8000+** people
- **Editorial Board Member** of '*Dhatuki*' – Department magazine, being printed after 3 years in collaboration with Insight
- **Framed** rules and **ideated** dramatics events as a coordinator at *Mood Indigo 2015*
- **Enacted** a play '*asmanjas(confusion)*' in Sophie Productions Organized by **Dramatics club** IIT Bombay
- Received **Appreciation** from the 'Rotary Club of Jaipur Heritage' for the **outstanding** contribution made in the **successful implementation** of "*Environment Awareness program*"
- Coordinated Industrial Visit to **JSW Steel Plant**, Reinitiated after 5 years as **Convener of the Materials Club**
- Successfully completed one year of training in **Lawn Tennis** under National Sports Organisation
- Learnt Basic skills and techniques by undertaking **Basketball** beginner's camp for two months during the summers
- Developed study material for JEE ADVANCED and MAINS aspirants as an **INTERN** at **Plancess Edu solutions Pvt LTD**. Received personal letter of **Appreciation** by my mentor for the **Dedication** and **Quality** of work done