PRATHAMESH PATIL 16D110012
Metallurgical Engineering and Material Science UG Third Year
Indian Institute of Technology Bombay DOB : 27/05/1998

| Examination | University | Institute | Year |
|---|---|---|---|
| Graduation | IIT Bombay | IIT Bombay | 2021 |
| Intermediate/+2 | MSBSHSE | SP College, Pune | 2016 |
| Matriculation | MSBSHSE | Sinhagad Spring Dale School, Pune | 2014 |

Currently pursuing a **Bachelors degree** in Metallurgical Engineering and Material Science with a **Masters degree** in Ceramics and Composites as part of dual degree program at IIT Bombay

## ACADEMIC ACHIEVEMENTS

- Secured **AIR 3248** in IIT JEE Advance among 0.2 Million candidates (2016)
- **99.6 percentile** in JEE Mains among 1.2 Million people (2016)
- In **top 1 percentile** in the state wise conducted National Standard Exam in Chemistry (2015)
- **Won** Prof. Brahm Prakash memorial materials quiz organized by IIM, Pune Chapter (2015)
- Represented the Pune chapter and **Semi Finalist** in Prof. Brahm Prakash memorial **materials quiz** conducted by Indian Institute of Metals, Kalpakkam (2015)
- Scored the highest grade **AA** in Transport Phenomenon, Experimental Techniques in Materials Science and Electronics and Machines Laboratory. (2018)
- Completed **80 hours** of social work under National Service Scheme. (2018)

## COURSES UNDERTAKEN

### Additional Courses (sit through/out of interest)

- **Thermoelectric Materials**
  - Thermoelectric Effects : **Seebeck** and Peltier Effects
  - **Semiconductor Physics** : Conduction processes, energy spectrum, transport equations, charge carriers and phonon scattering, Drude model, Sommerfeld Model
  - **Band Theory** : Band formation, doping and effects of doping on band structure.
  - Direct and indirect **Measurement** of thermoelectric properties.
  - Choosing and optimizing materials :**Thermoelectric Systems** and applications.
  - **Modeling** of thermoelectric transport using **MATLAB**
  - **Critic review** of a research paper related to a topic covered in the course

- **Experimental Techniques in Materials Science**
  - Learnt about and used various material characterization techniques like **XRD**, **BET**, **SEM, EDS, FTIR, Porosimetry, Nano-Indentation etc**
  - Methods to determine structure, size, shape of particles, pore size and its distribution
  - Did a course project in which characterized an egg shell

## SKILLS

- **Programming Skills**: C++, MATLAB and/or GNU Octave, HTML
- **Software Skills :** MATLAB, Octave, Wolfram Mathematica, Stellarium, AutoCAD, SolidWorks, Origin, MS: Word, Excel, Powerpoint, Access, Adobe Premier Pro.
- **Languages known :** English, German, Hindi, Marathi.

| Core Courses | Practical and other courses |
|---|---|
| • Structure of Materials<br>• Thermodynamics of Materials<br>• Data analysis and Interpretation<br>• Materials and Technology<br>• Mechanics of Materials<br>• Transport Phenomena<br>• Colloids and Interfacial Science<br>• Phase Transformations<br>• Mechanical Behavior of materials<br>• Kinetics of Processes | • Experimental and Measurement Lab<br>• Introduction to Electrical and electronic circuits<br>• Computer programming and Utilization<br>• Engineering Drawing and Graphics<br>• Metallography and Structural Characterization<br>• Computation Lab<br>• Electronics and Machines Lab<br>• Economics<br>• Introduction to Sociology |

## PROJECTS

- **Synthesis and characterization of thermoelectric materials**
  - Analyzed the commercially available industrial grade Mn-Si and Fe-Si powders
  - Working on commercialization and utilization of the same in thermeoelctric generators
  - Working on measurement systems like DSC, Thermal diffusivity measurement, Seebeck Measurement, Electrical conductivity, XRD, ICP-AES, SEM
  - Measured thermoelectric properties of pellets prepared from powders
- **Characterization of an Eggshell**
  - Used tools like SEM, XRD, FTIR to test an egg shell for certain properties
  - Analyzed the data we got from all instruments and interpreted it to get sensible results
  - Correlated the results we got with physical and chemical properties

## POSITIONS OF RESPONSIBILITY HELD

- **Convener at Materials Club, IIT Bombay**
  - Created awareness about Material Science in the student community
  - Kept posting about a new material or a phenomenon related to material science
  - Circulated projects for undergraduates to get them interested in material science
  - Created a platform for people interested in Material Science to discuss about it
- **Volunteer at Astronomy Club, IIT Bombay**
  - Mentored newcomers to the club and taught them to use various concepts in Astronomy
  - Conducted overnight sky gazing sessions focused on constellations and Messier objects in the night sky which entertained around 100 people every time

## EXTRA CURRICULAR ACIVITIES

- Playing sports: represented school and college in sports like Football, Volleyball, Hockey
- Doing Astronomical Observations. Have completed a half Messier Marathon
- Reading books on fictional and non fictional themes, reading and writing poetry

## CONTACT DETAILS

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