

University

**IIT Bombay** 

**MSBSHSE** 

**MSBSHSE** 

Examination

Matriculation

Intermediate/+2

Graduation

Year	Score
2021	6.54
2016	78

16D110012

**UG Third Year** 

DOB: 27/05/1998

2014

90

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

# **CONTACT DETAILS**

Institute

**IIT Bombay** 

SP College, Pune

Sinhagad Spring Dale School, Pune

Email: prathameshpatil149@gmail.com, 16d110012@iitb.ac.in

	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 10/10 in <u>Transport Phenomenon</u> , <u>Experimental Techniques in</u>	
	Materials Science and Electronics and Machines Laboratory.	(2018)
•	Completed <b>80 hours</b> of social work under National Service Scheme.	(2018)

#### PROJECTS UNDERTAKEN

### Synthesis and characterization of thermoelectric materials

(May to Nov 2018)

- Analyzed the commercially available industrial grade Mn-Si and Fe-Si powders
- Worked on commercialization and utilization of the same in thermoelectric generators
- Worked on measurement systems like DSC, Thermal diffusivity measurement, Seebeck
  Measurement, Electrical conductivity measurement, XRD, ICP-AES, SEM
- Measured thermoelectric properties of pellets prepared from powders

#### • Analysis of different geometries for Thermoelectric generators

(Sept 2018 to present)

- Working on thermoelectric efficiency of two different geometries for Thermoelectric generator
- Measuring TE properties like thermal and electrical conductivity, Seebeck coefficient
- Simulating thermoelectric phenomenon in COMSOL multiphysics and comparing with results
- Analyzing factors for scalability like strength, formation and properties of contact

## • Characterization of an Eggshell (course project)

- 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

### **COURSES UNDERTAKEN**

# **Core Courses**

- Structure of Materials
- Thermodynamics of Materials
- Data analysis and Interpretation
- Materials and Technology
- Mechanics of Materials
- Transport Phenomena
- Colloids and Interfacial Science
- Phase Transformations
- Mechanical Behavior of materials
- Kinetics of Processes
- Experimental techniques in materials science

# **Practical and other courses**

- Experimental and Measurement Lab
- Introduction to Electrical and electronic circuits
- Computer programming and Utilization
- Engineering Drawing and Graphics
- Metallography and Structural Characterization
- Computation Lab
- Electronics and Machines Lab
- Economics
- Introduction to Sociology

# **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
- Direct and indirect **Measurement** of thermoelectric properties.
- Choosing and optimizing materials: Thermoelectric Systems and applications.
- Modeling of thermoelectric transport using MATLAB

#### **SKILLS**

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

#### 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