Arush Gaur
Chemical Engineering
Indian Institute of Technology Bombay

210020022
B.Tech.
Gender: Male
DOB: 28/10/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	

Pursuing a **Minor** degree in the Department of **Energy Science and Engineering** at IIT Bombay

Scholastic Achievements

- Ranked **12th** academically in the Chemical Engineering Department consisting of **140+ students** [Present]
- Awarded **perfect 10 (AA grade)** for outstanding performance in **6** out of 12 core courses till date [Present]
- Percentile of **98.91** in JEE Advanced | Percentile of **99.43** in JEE Mains amongst **1 million+** candidates [2021]

Professional Experience

R & D Intern | **IFP Petro** | **Used Oil Re-refining** [Jun - July 2023]
Guide: Sahil Bhargava, Aman Singh | *IFP Petro Products Pvt. Ltd. Plant, Ghaziabad*
- Studied re-refining of used lubricant oils with Indian market size of **1.4 billion+ USD** and its role in maintaining a sustainable **circular economy** guided by Extended Producer Responsibility **(EPR)**
- Performed **mass and energy balances** on oil inventory data of existing plant assuming **75%** electrical efficiency
- Reviewed literature on solvent extraction and catalytic hydro treatment of oil in proposed **pilot plant**

Key Projects and Activities

Modelling and Optimisation of Sustainable Solar Heat Pipe Collectors [Jan - April 2023]
Guide: Prof. P Sunthar, Chemical Engineering, IIT Bombay | *Heat Transfer* | *Course Project*
- Led a team of **8** in modelling heat transfer in an evacuated heat pipe achieving a water heating rate of **6 min/kg**
- Computed heat transfer coefficient using **Nusselt number** correlations for free convection boiling and
- Plotted conduction **temperature profile** within copper heat pipe using **MATLAB** software

Is Climate Engineering a Solution to Climate Change? [Dec 2022 - Present]
Guide: Prof. Angshuman Modak, Climate Studies, IIT Bombay | *In-Semester UG Research Program*
- Reviewed **2** research articles **Bala et al. 2008** and **Bala Caldeira 2000** on geoengineering's impact on climate
- Imported NetCDF climate data from **CMIP6** simulation on precipitation and temperature into Python
- Performed **time series analysis** of parameters using libraries **NetCDF4, Xarray** and **Matplotlib**

Metal recovery from Spent Batteries and Electronic Waste [Dec 2022 - Present]
Guide: Prof. Abhijit Chatterjee, Chemical Engineering, IIT Bombay | *ChemETL - Reactorious*
- Developed a **Daniel cell** from scratch with materials from Chemical Engineering Tinkerer's Laboratory
- Measured concentration of dilute **copper sulfate electrolyte** in electrolysis using **UV spectrophotometer**
- Developed a calibration curve between concentration and absorbance of dilute sample using **linear regression**

Summer of Science Project | **Solar Thermal Power** | Maths & Physics Club, IIT Bombay [May-July 2022]
- Comprehensively reviewed physics of solar radiation, design and functioning of **6** types of solar thermal collectors
- Comparatively analysed solar collectors for efficiency and cost, and learnt basic functioning of **solar PV cells**

Team Shunya Trainee Program | Team Shunya, IIT Bombay [Apr-Aug 2022]
- Learnt about global scenario of economical and **carbon footprint** aspects of **sustainable housing**
- Studied material selection, Life Cycle Analysis, HVAC, solar PV and home automation systems in housing

Startup Pitching on Electric Vehicles | EnB Buzz Competition | E-Cell, IIT Bombay [Dec 2021]
- Proposed an **app based startup** to solve problems of lack of charging stations and long charging time for **electric vehicles**, which informs user on nearest available station and provides battery bookings in advance

Positions of Responsibility

Department Research Coordinator | Undergraduate Academic Council, IIT Bombay [Jun 2023 - Present]
*Responsible for boosting research culture in Chemical Department involving **40+ professors and 800+ students***
- Coordinating between **7 professors** and **10+ students** for smooth selection and execution of **SURP** projects
- Working with **DAMP** team and **ChEA** to collate research reviews and related videos, impacting **400+ students**
- Working with **Enpower** to create **core research groups** and promote research activities in chemical department

Team Member | **Student Satellite Program** | Mechanical Subsystem [Apr - Jul 2022]
- Worked in a team of **5+** members and performed simulations on **SPENVIS** software on satellite trajectory, radiation dosage effects(ionising and non ionising) on satellites, and used **Sector Shielding Analysis Tool**
- **Designed** basic structure of a cube shaped satellite (**CubeSat**) on **SolidWorks**, with literature review

Technical Skills

Programming - MATLAB, C++, Python (Numpy, Pandas, Matplotlib, Xarray, NetCDF4 libraries)
Softwares- OpenFOAM, ParaView, SolidWorks, Latex, SPENVIS, MS Office, Canva, Jupyter IDE