Aman Garg | **193020050**
Chemical Engineering | **M.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 23-03-1995

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	8.64
Graduation	UPES, Dehradun	University of Petroleum & Energy Studies	2017	84.60%
Graduation Specialization: Chemical Engineering(Refining & Petrochemical)				
Intermediate	ISC	Christu Jyothi Convent Sr Sec School	2013	89.80%
Matriculation	I.C.S.E	Christu Jyothi Convent Sr Sec School	2011	89.40%

PROFESSIONAL EXPERIENCE

Southern Petrochemical Industries Corporation Limited| Thoothukudi, Tamil Nadu [Jul' 17-Apr' 18]

Engineering Management Services Trainee, Process Engineer

- **Troubleshoot** vacuum in steam condenser resulting in INR **1+ Lac per Day** savings by improving ejector performance
- Performed **Hazard & Operability** studies over P&IDs of Ammonia Plant to **ensure process safety**
- Freed up **1.5+ man hours/day** by developing an excel model for equipment performance calculations**(Macros)**
- Prepared annual report of the performance and **inspected** heat exchanger cleaning during operational **turnaround**
- **Experienced** unloading and loading of **pyrophoric catalyst** of high temperature water gas shift vessel through dense loading method and reformer catalyst through **UNIDENSE** technology

Nagarjuna Fertilizers and Chemicals Limited | Kakinada, Andhra Pradesh [Jun' 16-Jul' 16]

*Received **Letter of Recommendation** for an exemplary performance during the internship*

- Reviewed layout & **functioning** of various units involved in ammonia and urea production; studied catalysts involved in process
- Performed **Material Balance** at each unit operation's exit of 900MTPD ammonia & 1500MTPD urea plants; scrutinised P&IDs

MASTER'S THESIS

Mathematical Modeling of Fuel Cell based Energy Plant| IIT Bombay [Jan'20- Present]

Under the supervision of Prof. Madhu Vinjamur (HOD Chemical Department)

Motivation	▪ Energy Efficiency is an integral part of an industry & works to reduce energy consumption ▪ **Fuel Cell** using hydrogen as alternative fuel delivers high efficient power generation device ▪ Phosphoric Acid Fuel Cell can work with **~1.5%** Carbon Monoxide impurity in hydrogen fuel ▪ DRDO to implement this technology to increase the endurance time of submarines
Current Work	▪ **Conversion** of 2-D partial differential equations to algebraic differential equations for oxygen, water vapour flow and overpotential at anode by **discretization** using **Finite Element Method** ▪ Numerical solution of the mathematical model using **MATLAB** codes ▪ Investigating the effects of parameters like temperature, pressure & humidity
Future Work	▪ **Validation** of results using the data available from a working fuel cell ▪ Combining the developed model with hydrogen production & study working of the **combined** strategy ▪ Developing a **control strategy** to produce hydrogen based on power requirement load on fuel cell
Impact	▪ Better understanding and control of phosphoric acid fuel cell for power generation

TECHNICAL PROJECTS

Construction of Orifice Meter| B. Tech Project| Prof. Santosh Kumar Gupta [Aug '15- May '16]

- Built a working Lab Scale **Orifice meter** setup to **calibrate** the coefficient of discharge(C_d) as per **ASME** standards
- **Correlated** C_d vs Reynolds number graph of experimental values with theoretical; resulting in C_d=**0.67**, with maximum **11%** error

Solution of transient chemical reaction in MATLAB| Course Project| Prof. Mani Bhushan [Oct'19-Nov'19]

- **Solved PDEs** in MATLAB using Euler finite element & orthogonal collocation Runge-Kutta4 methods; compared both methods
- Explicit Euler with finite-difference worked **7 times** faster than the second-best i.e. RK4 with orthogonal collocation

Designing of a reactor producing 127 MTPD Ammonia| Course Project| Prof. P. Wangikar [Oct'19-Nov'19]

- Solved governing equations of **Ammonia reactor** and plotted temperature profile along reactor length using MATLAB

Hydrogen Production using Steam Methane Reforming| Prof. Kumargaurao [Aug '16-May '17]

- Developed Process Flow Diagram of the manufacturing process of hydrogen using **Aspen Plus**
- Drafted a theoretical plant for H_2 production of **40 Kmol/hr** & optimised energy consumption and cost estimation

Wonder Cement |Summer Internship| Nimbahera, Rajasthan [*July '15*]

- In-plant trainee, undergone **30+ hours of DCS training**; assessed in-line Calciner pre-heating method & **solid handling** techniques

SCHOLASTIC ACHIEVEMENTS

- Acquired **AA** grade in Techno-Commercial aspects of **Fine Chemicals** gaining insights of specialty vs bulk chemical ['20]
- Ranked among **Top 2** Percentile in national exam of Graduate Aptitude Test in Engineering(**Chemical**) ['19]
- Recipient of funding of **INR 7500** for presenting a working orifice lab setup to fluid mechanics lab UPES ['16]
- Received **Achiever's award** at CJAA and Gold Medal by Dainik Jagran for being a **District topper** in ISC boards ['13]
- Claimed **1st** position in Chemistry and Physics at **District** level in ISC board examination ['13]
- Awarded **Best** Discipline Inspector out of **40+** candidates for maintaining decorum in the school ['11]

KEY COURSES & SKILLS

Specialisation	**Refining and Petrochemical**
Downstream Engineering	**Natural Gas Engineering & Processing**, Introduction to Petroleum Operations, Particulate Technology, Pipeline Transportation of Oil & Gas
Process & Plant Analysis	**Advanced Process Synthesis***, Artificial Intelligence in Process Engineering*(audit), Process Modeling & Simulation, Catalyst Design & Catalysis Process, **Process Plant Simulation**, Optimisation(audit), Advanced Transport Phenomena, Chemical Project Economics
Management	Safety, Health & Environment Management, Industrial Management
Technical Skills	▪ **Software: MS Excel**, MS PowerPoint, **Aspen Plus**, ImageJ, Busy, Minitab, Solidworks ▪ **Languages:** Java, Python, C, Cpp ▪ **Analytics: MATLAB**, SQL

LEADERSHIP & ORGANISATIONAL SKILLS

Associate Placement Coordinator| Placement Office, IIT Bombay [Aug'19-Dec'19]

*Felicitated with **Certificate of Special Mention** for invaluable contribution during the tenure*

- **Streamlined** interview process for **250+** firms and **1750+** students in a **team of 6**; achieving all time highest **1171** selections
- Managed **120+** organisation job applications as a sole point of contact; systemized **200+ Tests** and **70+ PPTs**
- Spearheaded & trained a team of **140+** coordinators to oversee **6000+** interviews for **14** days
- **Organised** career fair, resume verification and tracked Pre-Placement Offers resulting in **160+** selections
- Executed Placement Common Aptitude Test saving **2+** student-hours/test for **1000+** students and convincing **75+** firms

Academic Unit Representative for Academic Affairs| Chemical Department, PGAC [June '20-Present]

- Resolved academic grievances, taking up **policy** related issues for **120+** department students at institute level
- Collaborated with the team of **ISCP** to conduct **departmental orientation** & guidance for registration to **80+** new entrants
- Planned to conduct series of **workshops** helping students to gain upper-hand with technical software

Teaching Assistant | Chemical Department, IIT Bombay [Jan'20- Present]

- Mentored **100+** UG students in batches of 8, supervised and performed **Esterification** experiment(CL 335)
- Maintained and graded assessments of over **60+** UG students in Mass Transfer 1(CL319)

VIRTUAL LEARNING

- Safety in Utility Industry, SQL for Data Science
- Data Processing and Feature Engineering in MATLAB
- Foundations for Big Data Analysis with SQL
- Case Studies in business analytics with ACCENTURE
- Exploratory Data Analysis with MATLAB*
- Introduction to Data Science in Python*

EXTRA-CURRICULAR ACTIVITIES

Seminar Presented	▪ **Hydrogen Fuel Cell based energy plant :** [June' 20] Conducted an extensive literature survey on various hydrogen sources & fuel cells Compared the catalysts available & concluded with advantages of phosphoric acid fuel cell ▪ **Usage of Gas Turbine in ammonia plant:** [Sep' 17] Surveyed available gas turbine and its use for natural gas feed in **energy integration**
Certifications	▪ Certificate of Achievement for 3 days workshop on **Python with Data Science** ['20] ▪ Completed lean six sigma **Green Belt** certification by **KPMG India** ['19]
Sports	▪ Represented chemical department in PG **Football GC** at IIT Bombay ['20] ▪ Achieved **First runner-up** in intra-mural **football** competition among 48+ teams ['14] ▪ **Led** football and basketball **team** & secured **1st** position in intra-school competition ['12] ▪ Secured **3rd** position in 400m and 800m **track-events** at school level ['12]
Misc.	▪ Completed 15 Days in-plant trainee to study manufacturing of **ethanol** in a distillery [May '15] ▪ Won **1st** position in **Sketching** at the "World Suicide Prevention Day" workshop ['13] ▪ Secured **1st** position in intra-school **debate** competition for **3 successive** years ['10-'12]

*ongoing

Scholastic achievements and extracurricular activities are not verified by the Placement Cell