Manish Ratna **110020069**
Chemical Engineering **UG Third Year (B.Tech.)**
Indian Institute of Technology Bombay **Male**
DOB: 26.02.1993

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2014	5.98
Intermediate/+2	C.B.S.E.	Chinmaya Vidyalaya, B.S. City	2010	82.00
Matriculation	C.B.S.E.	R K Mission Vidyapith, Deoghar	2008	91.40

SCHOLASTIC ACHIEVEMENTS

- Recipient of **Merit-cum-Means Scholarship** for Under Graduate study from **State Bank of India**
- **One of the 30 students** from all over India selected for fully sponsored Industrial Visit by **BASF**
- Ranked amongst **top 1 percent** of about 5 Lakh candidates appeared in IIT-JEE 2011
- Ranked amongst **top 0.4 percent** of about 10 Lakh candidates who appeared in AIEEE-2011
- Awarded **Gold Medal** by school for good academic performance at Matriculation examination

PUBLICATIONS

- **Manish Ratna, Akshay Saxena and Ganesh Kale*,** Analysis of Autothermal Reforming of Methane at Reactor and Process TNPs: A Comparative Study (Under Submission Stage)
- **Manish Ratna, Akshay Saxena and Ganesh Kale*,** Design of a 1 MW Chemical Looping Combustion Plant using a Fe-based Oxygen Carrier (Under Submission Stage)

RESEARCH EXPERIENCE

National Chemical Laboratory, Pune [May'13-July'13]

Guide: Scientist Ganesh Kale, Chemical Engineering and Process Development Division

Project 1: ***Analysis of Autothermal Reforming of Methane at Reactor and Process TNPs: A Comparative Study***

- Analysed the **formation of Syngas at Thermoneutral points** in ATR using Methane as fuel
- Compared the equilibrium data of Reactor and Process TNPs after **maximizing the Syngas Output** and **minimizing Carbon formation**, as Syngas has application in industry in petrochemical and fuel cell sectors
- Used **HSC Chemistry** software for this thermodynamic equilibrium composition study
- Presented the results in **Undergraduate Research Symposium** 2013, IIT Bombay

Project 2: ***Design of a 1 MW Chemical Looping Combustion Plant using a Fe-based Oxygen Carrier***

- Thermodynamically studied **Chemical Looping Combustion** using Ethanol as fuel and Fe_2O_3 as the oxygen carrier and designed the process for 1 MW plant setup
- Formulated a **Heat Exchanger Network System**, which utilised the heat emerging in the product stream to preheat the input stream, thus making the process more energy efficient
-

INTERNSHIP

Kisan First, Mumbai [Dec'12-Jan'13]

- Market Sizing : Surveyed **over 30 five star restaurants** in learning the **quality and quantity of tomatoes** they used which is now being used by Kisan First
- Designed a **detailed flow chart** explaining all the basic processes of the Flow Unit
- Procured **machine parts** for the Process Flow Unit for **peeling and canning tomatoes**

PROJECTS UNDERTAKEN

Solar Decathlon Europe -2014 [Nov'12 – Present]

Team SHUNYA *- IIT Bombay & Rachna Sansad Academy of Architecture*

- Working with a team to **design and build a solar house that is independent in terms of energy usage**
- Formulated a **Price Cost Proposal** for the **Plumbing** section of the house
- Fabricating the **Water & Wastewater Treatment** system of the house

Wall Painting Robot [May'12 - Jul'12]

Institute Technical Summer Project, IIT Bombay

- Conceptualized and assembled a robot using a **single D.C. motor**
- Designed and fabricated the mechanical structure, electronics hardware along with implementation of control algorithms
- Used **Arduino** microcontroller and custom designed motor driver circuit to implement controlling and navigation techniques

Rashtriya Chemical Fertilizers, Mumbai [Jan'12 - Mar'12]

Guide: Prof. Vinjamur Madhu, Department of Chemical Engineering

- Studied the **design and working of Sulphuric Acid Plant** based on Double Absorption Double Contact Process
- Studied and observed the process incorporated and the various techniques used to optimise the energy requirements of the plant including

POSITIONS OF RESPONSIBILITY

MANAGER, Hospitality and Public Relations, AZeotropy 2014 [April'13-present]

Annual Festival, Department of Chemical Engineering

- Leading a 2 tier team of **20 Volunteers** and Coordinating with **75 Ambassadors** from various colleges across India to publicize AZeotropy 2014
- Revamped the Ambassador recruiting process leading to **50% increment** over last year's count

CORE TEAM, Energy Technologies Vision 2035 - Student Initiative [Mar'12-April'13]

TIFAC, Government of India

- Worked with a team to collaborate research and practice for **better energy future** for India
- Presented a thorough **report** on India's present and future energy prospects
- Publicised and managed the Initiative using **Facebook and Twitter**

COORDINATOR - Techfest 2013 [Jul'12-Jan'13]

- Led a group of 5 Organisers to organise the **Exhibitions** in Techfest,2013
- Managed and maintained a rapport between **16 Exhibitors** and Core Organising Team

COMPUTER SKILLS

- **Programming Languages :** C++, Matlab, Scilab
- **Web Tools :** HTML, CSS
- **Productivity Tools :** Microsoft Visio, Microsoft Office, Adobe Photoshop
- **Packages:** Arduino , LabView, HSC Chemistry

COURSES COVERED

- ***Core Courses***: Thermodynamics, Solid Mechanics, Transport Phenomenon, Heat and Mass Transfer, Process Fluid Mechanics, Chemical Reaction Engineering, Mass Transfer Operations, Molecular Cell Biology
- ***Additional Courses***: Energy Resources, Environment and Economics, Water and Wastewater Management, Micro and Macro Economics, Modern Physics, Chemistry, Environmental Science and Engineering, Computer Programming and Utilization, Philosophy, Electrical and Electronic Circuits
- ***Maths Courses***: Calculus, Linear Algebra, Differential Equations, Data Analysis and Interpretation, Complex Analysis
- ***Labs***: Electronic Devices Lab, Workshop Practice Lab, Engineering Graphics and Drawing

EXTRA CURRICULAR ACTIVITIES

Social Service

- Volunteered for **Avanti Fellows**, a Non-Profit Organisation aimed at mentoring brilliant students from financially weak background for competitive exams

Cultural

- Qualified first two level examination of **Tabla** with **Distinction**
- Secured third position in **Treasure-Hunt** in Freshiezza-2011 at IIT Bombay

Sports

- Achieved **Yellow Belt in Judo** under Bombay Judo Club Association
- Successfully completed **Cross Institute Marathon** which was approximately 6 Kms
- G
- G
- G
- G
- G
- G
- Gg
- G
- G
- G