Barkha Bansal | **10D170021**
Energy Systems Engineering | **UG Third Year(Dual Degree)**
Indian Institute of Technology, Bombay | **Female**
Specialization: Energy Systems Engineering | **DOB: 02/12/1992**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2012	8.58
Intermediate/+2	C.B.S.E.	N.C. Jindal Public School	2010	91.40
Matriculation	C.B.S.E.	N.C. Jindal Public School	2008	96.40

Pursuing **Minor Degree** in **Environmental Science Department**, IIT-Bombay

ACADEMIC ACHIEVEMENTS

- Selected for **CSIR** Program for Youth Leadership in Science for securing a state rank amongst **top 25 students** in the **CBSE Board Examination** of class 10th in New Delhi *(2008)*
- Received a **certificate of merit** in **National Standard in Chemistry** examination conducted by Indian Association of Physics Teachers, awarded to **top 1%** of the participating students *(2009)*
- Secured an **All India Rank** of **986** in IIT-JEE *(2010)*
- Secured a **state rank** of **29** in Junior Science Talent Search Examination, New Delhi *(2007)*
- Secured a **state rank** of **14** in the Ramanujam Mathematics Olympiad, New Delhi *(2008)*

PRACTICAL TRAINING

Applied Materials *(Summer 2012)*

Advanced Technology Group (Mumbai)

- Investigated the utility of **Initiated Chemical Vapor Depositon** technique for deposition of **thin films of alkyl-acrylate polymers** at low temperature
- **Assembled** the setup for I-CVD and **calibrated** it for optimal working conditions
- Analyzed regional **market** for **Energy Storage/Battery Space** in **India** and analyzed opportunities for growth and development of a business plan

Silicon Nanowires *(Dec 2011)*

Prof. Sagar Mitra, Department of Energy Science and Engineering, IIT Bombay

- Developed and optimized a cost effective method to produce **free standing Silicon Nanowires** via **metal assisted wet chemical etching** combined with **nanosphere lithography**
- Analyzed the application of the same for developing high capacity Li-Ion batteries and solar cells

Energy Harvesting Application of Piezoelectric Material *(Summer 2011)*

Electronics Club Summer Project, Electronics Club, IIT Bombay

- Developed a prototype which utilizes **action of walking** to **generate energy** from piezoelectric material
- Conceptualized and designed a circuit to **store** this energy in a **battery**
- Documented recommendations for the future utility of the prototype

TATA Power Plant *(Spring 2011)*

Industrial Visit

- Analyzed the working of TATA Power Plant and prepared a detailed report on various proposals to improve the **energy efficiency** of the plant

International Conference for Advances in Energy Research *(Dec 2011)*

Department of Energy Science and Engineering, IIT Bombay

- Participated in the 3 day conferences to learn about the advancements in the field of Energy Science happening around the world
- Attended a workshop on **Advanced Characterization Techniques** conducted during the conference

COURSE PROJECTS

Solar Powered Automatic Railway Crossing *(Spring 2012)*

Guide: Prof. Rajesh Gupta, Department of Energy Science and Engineering, IIT Bombay

- Developed a **solar powered** automated system, using **IR sensors** and **micro-controllers** to regulate the railway crossing junctions for effective management of time and resources
- Conceptualized a **robust accident proof smart system** with sufficient safety precautions

Energy Harvesting from a Rubik's Cube *(Spring 2011)*

Guide: Prof Rangan Banerjee, Department of Energy Science and Engineering, IIT Bombay

- Developed a model to demonstrate generation of energy from the **rotation of a Rubik's Cube** by investigating the concept of electromagnetic induction
- Diagnosed methods for further increasing the efficiency of the prototype

TECHNICAL SKILLS

- **Programming and Scripting**: C, C++, PHP, HTML, MATLAB, SEQUEL,ORIGIN, LabVIEW
- **Microcontrollers**: AVR Atmega 16, Arduino
- **Characterization Techniques:** SEM, FTIR, XRD, Spectroscopic Ellipsometry
- **Operating Systems:** Windows, Linux

CO-CURRICULAR ACTIVITIES

- **Mentored** a group of freshmen to make **automated robots** for competitions organised in the institute
- Participated in **technical competitions** like "F1 Car Racing" and "Line follower" organised by Technic, Tech Club of IIT Bombay
- Participated in a **panel discussion** on the development of next phase of **Kyoto Protocol**, organised by Energy Club, IIT Bombay *(2012)*
- Participated in **National Student Science Seminar** and delivered a speech on "Global Climate change and its Impact" at **zonal and central level** *(2008)*
- Secured 2nd position in 42nd Youth Parliament conducted by Ministry of Parliamentary Affairs (2*009-10)*
- Represented IIT Bombay at 2 National Level Debate Competitions

KEY COURSES UNDERTAKEN

Energy

- Introduction to Renewable Energy Technology
- Physics of Thin Film Technology
- Introduction to Nuclear Engineering
- Equipment Design and Control
- Power Generation and Systems Planning*
- Energy Systems (L)
- Solar Energy (L)*

Electrical

- Electrical Energy Systems*
- Digital Electronics
- Power Electronics

Mechanical

- Combustion Engineering*
- Fluid Mechanics
- Heat and Mass Transfer
- IC Engine and Combustion (L)*

Others

- Economics
- Environmental Chemistry
- Environmental Management
- Introduction to Numerical Analyses
- Data Analyses and Interpretation

POSITIONS OF RESPONSIBILITY

- **Hostel Sports Councilor – Hostel 10, IIT Bombay** *(Ongoing)*
  Elected representative of 400 students, leading a two tier team of 5 students to manage various activities, events and facilities related to sports with a budget of over INR 200,000
- **Coordinator, Competitions Department, Techfest-2012** *(2011-12)*
  Led a team to conceptualize, publicize and execute a social entrepreneurship competition "IDEATE"