

# ANKIT AGRAWAL

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## Education

Year	Degree/Certificate	Institute/School	
2013-present	PhD in Chemical Engineering	University of Texas at Austin	
2008-2013	B. Tech + M. Tech in Chemical Engineering	Indian Institute of Technology, Kharagpur	9.28/10
2008-2013	Minor in Mathematics and Computing	Indian Institute of Technology, Kharagpur	NA
2006-2008	Class XII: CBSE	Central Academy, Kota	88.4%
2004-2006	Class X: ICSE	St. Joseph Inter College, Gorakhpur	83.2%

## Publications

- Agrawal. A and Chakrobarty S. 2013. A Kinetic Study of Pyrolysis and Combustion of Microalgae *Chlorella Vulgaris* Using Thermo-gravimetric Analysis (TGA), *Bioresource Technology*, 128,72-80. (Impact Factor: 4.98)

## Poster Presentations

- Ankit Agrawal and Saikat Chakrobarty. 'Kinetics of Thermo-Chemical Conversion of Microalgae *Chlorella Vulgaris* for Bio-Oil Production'. *International Conference on Algal Biorefinery*, IIT-Kharagpur, January 10-12, 2013
- Ankit Agrawal and Saikat Chakrobarty. 'Pyrolysis of Microalgae to Produce Stable Biofuel'. *International Symposium on New Horizons in Bionergy*, IIT Kharagpur, January 14-16, 2013

## Internships and Projects

**Masters and Bachelors Thesis Project** 2011 - 2013

**Topic:** Thermochemical Conversion and Catalytic Upgradation of Microalgae for Production of Stable Bio-Oil

**Advisor:** Prof. Saikat Chakrobarty, IIT Kharagpur

- Studied thermal behavior and evaluated the kinetics of the decomposition using Thermo Gravimetric Analysis (TGA)
- Prepared, tested, and characterized novel catalysts for up-gradation using GC-MS, CHNS/O
- Performed detailed mathematical modeling of the integrated system using MATLAB, with varied process parameters to see its effect on the bio-yield

**Summer Internship: University of Houston, Texas**

May – June 2011

**Topic:** Catalytic Stabilization of Algal Pyrolysis Liquid for Bio-Fuel Production

**Advisor:** Prof. Michael P. Harold, University of Houston

- Optimized the protocol for the preparation of Ni-HZSM using different methods reported in literature
- Performed TGA of *Duckweed* and *Chlorella* to obtain an optimized temperature range for pyrolysis
- Conducted catalytic upgradation studies for Ni-ZSM5 and other catalysts in the same group

**Summer Internship: P K Sinha Center for Bio Energy, IIT Kharagpur**

May - Aug 2010

**Topic:** Harnessing Green Energy from Rain and Domestic Waste Water

**Advisor:** Prof. Saikat Chakrobarty, IIT Kharagpur

- Developed a self-sustainable purification system for rain and gray water
- Built an optimized filtering system after a thorough study on the efficiency of slow sand bed, charcoal bed, and membrane filtration using analytical parameters like COD, BOD, turbidity, and pH
- Presented findings at the "Sustainable Campus Conclave", IIT Kharagpur

## Entrepreneurial Projects

**Cleanovention: Novel and Highly Efficient Solar Modules**

**Role:** Cofounder and Chief Technical Officer

2010-present

**Aim :** To conceptualize and develop breakthrough and cost effective clean-tech innovations

- Description:**
- Developed an efficient and unique product, SolarEX, designed to harness the entire light spectrum giving an overall efficiency of 44% (30% electrical and 14% thermal)
  - The system provides safe drinking water as well as electricity, giving an added incentive to the ground level users in rural India to have proper maintenance of the solar lighting system

- Achievements:**
- Finalist at *The Rice B-Plan Competition 2012*, which put us amongst the top 42 international teams selected from across the globe
  - Adjudged the "Most Promising Technology" at *India Future of Change 2011*
  - Won a prestigious business plan competition during *Entrepreneurship Summit*, and Kshitij, a techno-management fest at IIT Kharagpur. Featured in the February 2012 edition of *Entrepreneurship* magazine

## **Arid Energy: Making Algal Bio-Fuel Economical**

- Role:** *Chief Technical Officer* 2011-present
- Aim:** Enhance production of indigenous algal biodiesel through design and technological innovations to reduce dependence on imported diesel and promote environmental sustainability by sequestering CO<sub>2</sub>
- Description:**
- Designed “Bio-Pyramids”, providing high yield for the growth of microalgae
  - The Bio-Pyramid is a unique pyramid shaped algae generator equipped with advanced propeller shaped stirrers, carbonation and aeration mechanisms, and automated pH control systems
  - The Bio-Pyramid has an inclination of 23° keeping in tune with the location where it is placed, i.e., the Tropic of Cancer. The pyramid shape and angle ensures optimum sunlight utilization.
- Achievements:**
- Our team won the *GE Ecomagination 2010* and was awarded a \$10,000 cash prize

### **Scholastic Awards and Achievements**

- *Ranked 1<sup>st</sup>* among all dual degree students in the Dept. of Chemical Engineering, IIT Kharagpur 2013
- *Shri.Mitrajit Mukherjee Award for the best Bachelor's thesis* in the Dept. of Chemical Engineering 2012
- Won 2<sup>nd</sup> Best Poster Award at International Conference on Algal Biorefinery 2013
- Awarded the *Gautam Dey Cup for being the best all-rounder* at Azad Hall of Residence, IIT Kharagpur 2011
- Awarded the *Shanti Gupta Cup for being the best graduating academician* at Azad Hall of Residence, IIT Kharagpur 2013

### **Other Activities**

- Captain of the gold winning Chemical Innovation team of Azad Hall of Residence. Designed a bio energy plant to produce fuel from Microalgae and Jatropha plant. 2011-2012
- Captain of the Product Design team of Azad Hall of Residence. Designed a solar thermal power plant for both day and night operations. 2011-2012
- Selected as a member of the hockey team under the National Sports Organization 2008-2010