

Anusha Agnoor

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EDUCATIONAL QUALIFICATION

University of Pittsburgh | M.S. in Chemical Engineering (Aug 2016 – Present) | G.P.A – 3.94/4

Relevant Coursework – Fundamentals of Reaction Processes, Mathematical Methods in Chemical Engineering, Polymer Engineering, Fundamentals of Micro and Nano Manufacturing, Engineering Management, Biodegradable Alloys

IIT Bombay | Bachelor of Chemical Engineering (2012 - 2016) | G.P.A – 3/4

Relevant Coursework – Process Control, Chemical Process Design, Process Equipment Design & Economics, Mass Transfer Operations, Process Fluid Mechanics, Material Science, Numerical Analysis, Colloid Engineering

WORK EXPERIENCE

Photochlorination of PVC in High Pressure CO₂, University of Pittsburgh

Jan 2017 – Present

Graduate Research Assistant | Guide : Prof. Robert Enick

- Currently working on proof of experiment to demonstrate a waterless alternative for making CPVC. Specifically working on photochlorination of PVC in a reactor that is hydrostatically full of a single-phase high pressure liquid or supercritical fluid phase composed of CO₂ (rather than water), chlorine and hydrochloric acid generated during reaction
- Advantages for using carbon dioxide as a carrier liquid include ease of removal of CO₂ and HCl, miscibility with chlorine and HCl to form a single fluid phase mixture and minimal effect on PVC and CPVC resin

Thermodynamic Properties of Fluids, University of Paderborn, Germany

May 2016 – July 2016

Research Intern | Guide : Prof. Jadran Vrabec

- Performed acoustic measurements on Novec-649, an engineering fluid that allows for a fast and convenient access to the speed of sound. Measured ultrasonic speed of sound was used to develop equation of state and to determine a number of thermodynamic properties of organic liquids at high pressures
- Analyzed results using REFPROP, a database software used in scientific research

Optimization of Fluorosilane Coatings, University of New South Wales, Australia

May 2015 – July 2015

Research Intern | Guide : Prof. Jayashree Arcot

- Worked on optimization of fluorosilane coating on nanocellulose composite films to improve hydrophobicity on developing biodegradable food packaging material from agricultural waste like banana pseudo stem
- Worked on Optical Tensiometer and achieved superhydrophobicity using nanoparticles like nanoclay and graphene. Analyzed statistical data for optimization using a software called IBM SPSS Statistics

Study of Polymer Characterization Techniques, Council of Scientific & Industrial Research

May 2014 – July 2014

Industry Intern | Guide : Dr. Kvsn Raju

- Analyzed characterization techniques of functional polymers such as transmission electron microscopy, differential scanning calorimetry, dynamic mechanical analysis and thermogravimetric analysis
- Studied different analytical and spectroscopic techniques used in polymer characterization like nuclear magnetic resonance spectroscopy (NMR) and fourier transform infrared spectroscopy (FTIR)
- Developed hydrophobic silane and epoxy coatings in association with Asian Paints

ACADEMIC PROJECTS

Artificial Neural Networks (Machine Learning), University of Pittsburgh

- Worked on back propagation algorithm of artificial neural networks which is majorly employed in medical streams
- Analyzed binary input and output training data using multi-layer neural networks approach through error minimization technique. Implemented the algorithm using Python and achieved negligible error in the results

Process control and Simulation, IIT Bombay

- Worked on three stirred tanks and a long pipe mixing system in series and developed transfer functions based on SISO and MIMO requirements
- Implemented feedback, feedforward, cascade controllers to the system and evaluated output for different inputs using SIMULINK and designed different controllers (P/PI/PID) using Direct Synthesis and Zeigler Nichols methods
- Analyzed best controller performance based on settling time, over shoot and other parameters

Methanol Sensors, IIT Bombay

- Proposed a sensor alarm arrangement to detect methanol vapors in biodiesel chemical plant as blindness and CNS depression are subsequent manifestations of methanol toxicity
- Calibrated MQ-3 gas sensor which has high sensitivity to alcohol vapours and worked on Figaro gas sensor, as it is prominently featured in gas detection equipment. Both the sensors are incorporated in the pilot chemical plant of IITB

Student Project Biosynth: Biodiesel Plant

- This project involves production of Bio-Diesel from waste vegetable oil and finally tested on institute motor vehicles
- Performed esterification, trans-esterification experiments, mass calculations, carried out free fatty acid tests and analyzed different operating parameters of the pilot plant. Studied various optimal control problems in biodiesel production in a reactor under uncertainty using MATLAB and used Runge Kutta methods for optimization

TECHNICAL SKILLS

Programming – MATLAB, MS Office, Python, C++, REFPROP, IBM SPSS Statistics

Management Skills – Six Sigma, Decision Analysis, Project Management, Cost Management, Lean Manufacturing

HONORS & AWARDS

- **Central Sector Scheme of Scholarship for College and University Students** - Outstanding student in 12th central board examinations with a percentile of 98.1. Ranked top 10 in the state among 2,00,000 students
- **South Indian Chemistry Olympiad (SICHO)** - Ranked 18th in the country for SICHO, 2010
- **National Science Olympiad (NSO)** – Top 100 in the country for NSO, 2009

LEADERSHIP SKILLS

- **Organizer, Technical Festival of IIT Bombay** – Techfest is the annual science and technological festival of IIT Bombay. Managed events at the exhibitions section, where people from various organizations display their products/robots. It helped me improve my leadership skills
- **Group Head, Bio-Subsystem, University Rover Challenge (URC)** – URC is an annual international competition hosted by Mars Society for university and college students. Managed the timelines of the bio-subsystem for University Rover Challenge (URC) and responsible for strategic planning of team work

INTERESTS & EXTRA CURRICULARS

- Member of **Pitt Badminton & Squash club**
- Member of **Dark knight Chess Club**, IIT Bombay
- **Interests** : Photography, Music