

Swati Rao
1050 Hampton Street, NW, Atlanta, Georgia, 30318
Swati.rao@chbe.gatech.edu
404-889-0615

PROFILE

- Educated in India's premier engineering college: Undergrad from **IIT Bombay**, India's top engineering school, and graduate studies from Georgia Tech, USA
- An excellent academic record throughout- amongst the top 3 rankers in the class.
- Seeking a **Summer Internship** which utilizes my technical and analytical skills.
- Strong Modeling background and proficient in coding.

EDUCATION

Georgia Institute of Technology, Atlanta, GA Aug'07-May-'09
Master of Science in Chemical Engineering , **GPA: 4.0/4.0**

Indian Institute of Technology, Bombay, Mumbai, India Aug'03-May-'07
Bachelor of Technology in Chemical Engineering , **GPA: 8.72/10**

SUMMER INTERNSHIP

Monte Carlo Simulations to evaluate effective collision diameters for aggregates May '06 – July'06
University of Erlangen , Germany

- Investigated the kinetic and mechanical behavior of rotating and translating aggregates as well as agglomerates in the free molecular regime.
- Synthesized and implemented an efficient Algorithm in **Fortran** for Monte Carlo simulations to determine the collision rates for aggregates and agglomerates.
- The work for agglomerates has never been done before and has potential applications in future like the prediction of coagulation properties of aerosols.

ACADEMIC PROJECTS

Enzymatic Degradation of Fiber, *Georgia Institute of Technology* Aug'07-till date
Sludge disposal is an expensive proposition that includes dredging, dewatering and disposal. Conversion of fibrous sludge to energy serves the dual purpose of reducing sludge disposal costs and generating energy. Studying the kinetics of degradation of wood fiber with cellulase, with an emphasis on morphological changes.

Solution of Coupled PDEs using Numerical Methods , *Georgia Institute of Technology* Fall 2007
• Investigated a model to predict radial DO concentration and cell density profiles and solved the model numerically using Finite Differences and performed sensitivity analysis.

Synthesis of Metal Nanoclusters stabilized by Surfactants and Polymers , *IIT Bombay* July '06 – May'07
• Carried out an extensive and comprehensive literature survey of various methods of formation of nanoclusters.
• Determined the effect of physiochemical properties of stabilizers on the shape and size distribution of nanoclusters.

Conceptual design of synthesis of beta-isophorone , *IIT Bombay* Fall 2006
• Researched, selected and analyzed one of various existing routes for beta-isophorone synthesis.
• Performed conceptual design of process and generated process flow diagram using **HYSYS**.

Modeling of Oscillatory Chemical Reactions, *IIT Bombay* March 2006
Proposed and implemented modifications in the existing model to fit the experimental data which showed a good match with the experimental data

Flexible Polyurethane Foams (Undergraduate Review Thesis) Aug'05-Oct'05
• Carried out an extensive and comprehensive literature survey of modeling of the foaming process.
• The work delineated the two main models- **Homogeneous models** and **Cell Models**.
• Reviewed various characteristics and applications of Polyurethane foams.

Simulation of Polyelectrolytes (Undergraduate Research Opportunities Programme) May '05-Aug'05
• **Developed and implemented an efficient** algorithm in **C++** for computation of thermodynamic and geometrical properties of Polyelectrolytes by incorporating different system conditions.

- Examined the convective-diffusion equation for isothermal first order reaction in a laminar flow reactor.
- Computed the concentrations by using orthogonal collocation and optimization by variable step size.

HONORS and AWARDS

- Awarded an **IPST fellowship** (Jan '09-May'09).
- Awarded **Maharashtra Open Scholarship** for outstanding academic performance in 12th Standard.
- Was in top **10 %** in Maharashtra in the Indian Physics Olympiad (2002-2003).
- Was **one out of three** students selected for summer internship from 80 students in the Department of Chem engg.
- Ranked **1st** in my school in the **10th** Standard

COMPUTATIONAL SKILLS

Packages :MATLAB, SCILAB, Simulink , GAMS, Scilab , HYSYS, Aspen

Programming languages: C++, Fortran ,Basic

Operating Systems :Windows XP/2003

RELEVANT COURSES

- Transport Phenomena
- Mass Transfer
- Adv. Chem. Engg Thermodynamics
- Math Modeling
- Chemical Kinetics & Reactor Design
- Nanotechnology
- Process Equipment Design
- Design & Analysis of Experiments
- Molecular Cell Biology
- Biochemical engg
- Drug,Design ,Development and Delivery

EXTRACURRICULAR ACTIVITIES

Technological Activities

- Secured **first** prize in Techfest, IITB's Annual Science and Technological Extravaganza, for making a chemically driven car, which saw participation from students from all over India.
- Awarded the "**Special Mention for Technical Activities**" for active participation in technological competitions.

Leadership Skills

- As the **Events Manager** of Unnati, successfully organized events like salvation campaign, medical camps, collection of money for flood victims and a village trip.
- As the **Coordinator** of Entrepreneurship Cell, publicized the events well in advance, wrote articles, coordinated with reporters for the live coverage of events.

Sports

- Represented IIT Bombay at various Inter IIT Sports meets as a part of Table-Tennis and Basketball Teams.
 - Awarded "**Hostel Colour for Sports**" for active participation in sports events.
-