Arpita Sharma

Master's Student (Dual Degree Program)	M.Tech (2018)	GPA: 10/10
Department of Chemical Engineering	B.Tech (2018)	GPA: 8.7/10
Indian Institute of Technology (IIT), Kanpur	CBSE (2012), Class 12	92.4 %
arpitas@iitk.ac.in	CBSE (2010), Class 10	CGPA: 9.8/10

Research Interests

- Soft Matter physics, Renewable energy, Nanotechnology, Bio-inspired materials

Scholastic Achievements

- Recipient of TAMU-IITK summer undergraduate research scholarship 2016(awarded to 2 students from a department of 76)
- Recipient of BALJIT AND NIRMAL DHINDA SCHOLARSHIP-'13-'14 donor scholarship awarded to Department Rank-1 of Biological Science and Engineering Department
- Secured all India percentile of 99.91 in Joint Entrance Exam Mains-2013 out of 1.5 million aspirants throughout the country
- Received Gold Medal for session 2010-2011; Scholar Tie and Gown Holder for academic excellence in higher secondary school

Research Projects and Internships

Ongoing Masters Thesis — **Rheology and Characterization of Garamite® stabilized Pickering Emulsions**

With Prof. Yogesh M. Joshi, IIT Kanpur

- Performed Large Amplitude Oscillatory Shear (LAOS) tests on Garamite® and fumed silica stabilized high dispersed phase concentration pickering emulsions
- Determined the droplet size distribution of the emulsions by confocal laser scanning microscopy and shelf life of the emulsions by analyzing the centrifuge stability of the systems
- Currently investigating the *two step decay* behaviour of G' and G" shown by the Garamite® pickering emulsions to obtain insight into structural evolution of droplets and rheological properties at high amplitudes

May-Jul 2016 Internship — **Characterization of Radioactive Waste Containers**

With Prof. Sunil Chirayath, Texas A&M University, USA

- Designed and implimented a computational model using MATLAB that applied *point kernel method* and radiation shielding analytical formulations to estimate radioactivity for cuboidal waste boxes and calculated the sectional contribution different segments
- Optimized the computation time by performing order analysis and calculating an equivalent surface source for a volume source
- Developed a Graphic User Interface and a standalone software package deployable on any 64 bit PC

Course Projects

Jul-Nov 2016 — **CHE453A: Chemical Engineering Design**

With Prof. Nitin Kaistha, IIT Kanpur

- Designed and simulated an ester recovery system using aspen plus and HYSYS that breaks binary and ternary azeotropes of water, ethanol and ethyl acetate and maintains recovery percentage and purity for specified range of disturbance
- Engineered dynamic plant-wide control system for the flow sheet to maintain stable operation for pre-specified fluctuations in throughput, purity and compositions
- Optimized the process by identifying the dominant design variable technique and performed cost analysis and heat integeration in order to minimize the total annual cost of operation

Jan-Apr 2016 **CHE381A: Process Control**
With Prof. Naveen Tiwari, IIT Kanpur
- Modeled a control system for Rapid Thermal Processing of Si wafer using MATLAB and analyzed the system response for feedforward and feedback loops
- Determined the best tuning parameters for P, PI and PID controllers using Nyquist and Bode stability criteria and plots

Jan-Apr 2016 **Semester Project**
With Prof. Raju Gupta, IIT Kanpur
- Studied the various fabrication processes on synthesis of perovskite solar cells with focus on thermodynamic and kinetic aspects of the process
- Undertook a comprehensive literature review on the effects of various process parameters including humidity, temperature, reaction time and precoating process and purity on the morphology of films formed

Conferences and Presentations

- Presenting a poster on rheology of Garamite® stabilized pickering emulsions at *Compflu 2017*, Chennai (an international conference on soft matter)
- Participated in the *Student Research Convention-2014* held at IIT Kanpur

Relevant Courses

GRADUATE CHE COURSES	UNDERGRADUATE CHE COURSES	OTHER COURSES
Fundamentals of Colloids & Interfaces	Fluid Mechanics	Linear Algebra
Structure and Rheology of Complex Fluids	Heat Transfer	Probability and Statistics
Process Control in Microelectronic-Fabrication	Mass Transfer	Data Structures and Algorithms
Transport Phenomena	Reaction Engineering	Introduction to Electronics
Mathematical Methods in CHE	CHE Thermodynamics	Classical Mechanics
	Properties of Materials	Classical Electrodynamics
	CHE Design	Physical Chemistry
	Unit Operations	Introductory Biology

Technical Skills

Languages: C, C++
Software/Tools: MATLAB, Origin Pro, ASPEN Plus, HYSYS, TRIOS, Simulink, LaTeX, AutoCAD
Laboratory Skills: Rheometer, Rheo-microscopy, confocal microscopy, Cryo-TEM, and general undergraduate level lab skills

Teaching

Teaching Assistance - CHE 300A: Chemical Engineering Technical Skills (Aug-Nov 2017)
- Assisted in developing new course structure to introduce undergraduates to various aspects of technical writing and professional communication
- Conducted public speaking and group discussion exercises for students and provided feedback and guidance to help them improve
- Organized sessions with professors and senior batch students to help undergraduates know different career perspectives

Extracurricular/Managerial Activities

- Student Guide, Counselling Service, IIT Kanpur: Ensured the smooth conduction of Orientation Programme-2014 for junior batch comprising of 900 students; guided and counselled 5 first year students in their academic and emotional acclimatization to the university
- Alumni Contact Program, IIT Kanpur: Worked as link between the institute and alumnus and helped in raising funds through alumni donations

- Reading Room Secretary, Hall of Residence IV, IIT Kanpur: Administered the utilization of hall funds of Rs.50,000 towards providing good reading facility for residents and purchased 32 books for the expansion of hostel library
- Senior Executive, Public Relations, Techkriti'15: Ensured the smooth conduction of college technical and entrepreneurial festival; invited *Dr.Harald Rose* (Physicist and Wolf Prize winner 2011) for a guest lecture during the festival and managed his talk
- Assisted in successful conduction of social awareness campaigns- *Make a Wish* and *Adopt a Tree*
- Awarded A grade (excellence), awarded to top 10% in French beginner level course offered by Foreign Language Program IIT Kanpur
- Participated in *Dance Extravaganza* - 2016 and 2017, annual cultural event organized by Cultural Council, IIT Kanpur