STATEMENT OF PURPOSE- NAMRATA JAIN

Applicant for the MSc. Program in Chemistry

As I reflect back, I realize, that the manner in which my interest in chemistry has grown, has been very definite. My first introduction to real science dates back to the 'Onion-Peel' experiment, and I remember being fascinated by the world of micrometer dimension. Over the years, the deepness of the Quantum Theory, the uniqueness of each element, and the deceptive symmetry of DNA, kept me hooked to Chemistry and related area. I have always been astounded at the ever increasing capacity of Science to answer questions that have vexed mankind since ages. But as I learnt more, I was impressed even more by the methods developed by scientists all over the world, to address this curiosity**.** The joy of problem solving as I have experienced in my own research pursuits, and my wish to contribute to our understanding of the natural phenomenon from a truly scientific standpoint, have motivated me to seek an MSc. in the Chemical Sciences. It is my future goal to engage in research based on Organic Synthesis and Biochemistry.

My first exposure to Biochemistry and Organic Chemistry was during high school. During grades 11 and 12, Chemistry as a subject started intriguing me more than other topics. I found myself relating to the understanding of Organic and Inorganic Chemistry more than my peers; and finding symmetry in the otherwise random mechanisms would give me a sense of pleasure and achievement. After qualifying among the top 1% percent of more than 400,000 applicants to the Indian Institute of Technology entrance exam, I joined the Department of Chemistry at IIT Guwahati. This decision was guided by my interest in Chemical Sciences since high school and the uniqueness of my B.Tech program 'Chemical Science and Technology', which gave Chemistry a technological edge.

I have proactively looked to engage in research activity throughout my undergraduate program. In the summer after my sophomore year, I was one among a few people selected for training at CIPLA Ltd, a known pharmaceutical entity in India. I worked in the Quality Control department of the plant and got to learn a variety of analytical techniques. The Department of Microbiology, in particular, was fascinating to me. Having learnt about different analytical techniques in the labs at IIT, it was gratifying to see these techniques being used at such a huge scale in an industrial setup. This industrial experience nourished my then unripe desire for higher studies in Chemistry, while adding into my knowledge.

During my sophomore and junior years, I took many courses and labs in the Chemistry field. Among those courses, Mechanisms of Organic Reactions, taught by Dr. Lal Mohan Kundu, intrigued me unusually. The systematic study of the kinds of mechanisms and the effect of factors like solvent, NGP, stereochemistry etc. on them, was something I found enrapturing. Apart from courses in Chemistry, I also took elective courses in interdisciplinary areas, where a course 'Nanobiosciences' in the Department of Biotechnology, further enhanced my fascination towards Biochemistry as a topic.

Inarguably the most important motivating factor for me in paving the way to choose graduate studies over several other appealing alternatives was my internship at Prof. George Agnes' lab at the Department of Chemistry, Simon Fraser University, Canada. The work in the Agnes lab was focused on Air Pollution. The project that I worked on was the

installation and calibration of a Nebulizer. During this work, I learnt and used a variety of techniques including Cell culturing, ICAM-1, ELISA, Fluorescence spectroscopy and MALDI-TOF-MS. The protocols involved in cell culturing and the methods developed by biologists and chemists to capture what goes on in the cells during these events, fascinated me beyond measures. On this particular internship, apart from the technical experience, it was important for me to see for myself if I could work on a research problem with a certain degree of independence. I came back satisfied on this count. I could figure out appropriate ways to approach problems and propose useful experiments. My time spent with a multi-cultural team environment made the learning experience one to be relished. The experience increased my confidence in my aptitude for research, while instilling in me qualities of patience, independence and persistence.

Another course I took during my junior year, Applied Organic Chemistry, motivated me to go deeper into the realms of that particular field, and I chose AOC for my undergraduate thesis work. Under the guidance of Prof. Parameswar K. Iyer, I worked on developing new Polyfluorene based derivatives for potential applications as Chemosensors for toxic metal detection in aqueous media. A new technique to develop a facile way for C-H alkylation in water was developed and utilized to prepare “defect-free” alkyl substituted fluorene monomer. Apart from being a formative contributor to my knowledge base and sharpening my research skills, the experience reinforced my desire to pursue a graduate degree.

Believing that a well-rounded development would be important for success in any future endeavors I take, I have ensured a healthy balance between academics and extra-curricular activities. Apart from being an active member of the Music club, Badminton club, Drama club and Radio and Anchoring club of the institute, I have worked as Event Organizer on hostel and institute levels, and participated in various Techno-management and Cultural fests. Despite my regular involvement in the extracurricular activities, I have successfully managed a substantial figure of 7.61/10 for my GPA, with 8.73/10 as GPA in core-courses.

My overall undergraduate training has strengthened my ability to take difficult decisions backed by logic and helped sharpen my time management skills, and my proactive attempts at gaining research experience have adequately prepared me for graduate school. I have gained ample research experience, working in industry and academia, in my country and abroad. Over the last four years, my energy and positive attitude has helped me refine my logical and mental framework. All this has not only prepared me in terms of knowledge and work skills, but equally importantly, helped me train my temperament in a way that is geared towards facing the challenges of graduate school.

Realizing that Graduate School is going to be the most crucial phase in determining the course of my career,I would like to train in an excellent research environment under a good mentor and inspiring fellow graduate students, all of which I think University of Western Ontario can provide. I am attracted to the Department of Chemistry here, for its high research output and involvement in pioneering research over the years. I am particularly interested in the research work being conducted by Prof. Elizabeth Gillies and Prof. Michael Kerr. With this background and a sense of commitment to all my undertakings, I am confident that I will be able to perform well in graduate school. I hope I will be found adequate for a position in the Msc. Program at the University of Western Ontario.