**Program: Chemical Engineering**

My  choice of research concentrations should be attributed to my considerations about doing scientific research: that the process of undertaking scientific studies is itself a joy and that the results of the research should arise from the execution of a scientific obligation and a sacred mission.

My option for chemical engineering as my specialty was first and foremost alloyed with the joy that the study of chemistry brought me. I originated a profound interest in chemistry as early as in my middle school education when I, as a third grader, I participated in XX and won the first prize in my region. From that time on I made conscious efforts to develop this potential, which finally landed me into the Department of Chemical Engineering, University of XX. My development of academic interest from chemistry to chemical engineering and then to biochemical engineering is based on an important consideration, that is, chemical engineering has demonstrated an obvious shift of focus over the past few decades, from its conventional goal of creating conveniences for the daily lives of the general public to its new objective of facilitating people’s ultimate happiness and long-term interests through a closer integration with biology, environmental science and medicine. This changed focus has given rise to wholly novel vitality and crucial opportunities for scientific advances in chemical engineering. It is precisely this recognition that has led me to concentrate on those interdisciplinary areas over the past three years of my Master’s. They involve pharmaceutics and wastewater treatment.

My love for chemical engineering and my determination to perform my mission have permitted to make some important achievements. In my Master’s program I chose to focus the Study of Production and Application of Saccharide Ramification and my specific research concentrations included the research on the process optimization of glucosemine production from biomass, the preparation of pH-sensitive chitosan alginate hydrogel system, study on the drug control and delivery in human intestines, and study on the absorption behavior for heavy metal ions by the modified mycelial biomass. I have written a total of 8 research papers including The Swelling Characteristics and Application of Compound Sodium Alginate Gel- a PH Sensitive Chitosan, Surface Molecular Imprinting on Penicillin Chrysogenum Mycelium and Adsorption Behavior for Heavy Metal Ions, Release Behavior of Ketoprofen in Chitosan/Alginate Microcapsules, Absorption OF NI2+  ON AMINE MODIFIED MYCELIUM FROM PENICILLIUM CHRYSOGANUM. Some of these have been published while others have been accepted for publication. In November I attended XX—“XX” during which I made a presentation on XX  I have filed for a patent for scientific invention concerning the treatment of wastewater containing heavy metal ions by using modified discarded biomass and my application is expected to be ratified soon.

Scientific zeal and the sense of mission along do not automatically bring achievements. A successful scientist must be able to apply effective methods. Motivated by this realization, I made conscious efforts from the very beginning of my undergraduate program to lay a solid theoretical foundation and to build up my experimental skills. Through extensive reading and experiments, I endeavored to understand how great masters of chemistry thought about and tackled specific issues. My devotion brought me concrete academic results. I was awarded scholarships for four consecutive years in my undergraduate program. I was the Outstanding Student of the University, an honor to commend students of comprehensive personal and academic development. My thesis was the only one rated “excellent” in my research group consisting of 10 members. My research achievements during the Master’s program won me “XX” Scholarship twice, a scholarship issued to students of outstanding research results. My dissertation was rated “Excellent” and I was honored as “Outstanding Graduate of the Year.”

My past education has given me two essential qualities—research ability and potential, and effective research methods and thinking. In doing experiments during my Master’s program, I have encountered tremendous challenges. Working out each challenge is a step upwards in my academic development. For instance, scientists tend to underestimate the importance of mycelial biomass for its low absorption capacity of heavy metal ions during wastewater treatment and limited number of re-use. By consulting relevant technical literature, I discovered that amino group has a high absorption capacity. I conceived the idea of introducing chemical modification into mycelial biomass by connecting the hydroxyl group with the amino group. My subsequent experiments modified the mycelial biomass to produce the biosorbent whose absorption capacity was raised by three times, comparable to that of chelating resin common on the market but much simpler in processing and much lower in cost.  It can be used repeatedly for ten times, twice and even twice as many as before the modification.

Since completing my Master’s program in 2002, I have been teaching Principles of Chemical Engineering at a local polytechnic college. I have also been engaged in drug development for a pharmaceutical company and working as a part-time editor for a chemical engineering publishing house. All those experiences have made me understand that the success in any field depends considerably on interpersonal communication and cooperation.

My educational background and my work experience have convinced me that The University of XX’s Ph.D. program in chemical engineering is extremely relevant to my future academic pursuit. I wish to expand my knowledge in biochemical engineering and venture into interdisciplinary fields between chemical engineering and biology, mathematics, and computer technology. The future of chemical engineering lies undoubtedly in the development of technologies and products in the central fields related to the improvement of human life through a combination with biological, medical and environmental sciences. With the help of your advanced research facilities and the guidance by senior professors, I wish to continue with some of the research I performed during my Master’s program, e.g. the absorption of heavy metal ions by biological substances in water treatment and the construction and application of drug delivery media. I am also interested in participating in relevant research projects of my potential advisor.

My academic aptitudes and research potential should make me a worthy candidate for your program and I am ready to make even greater efforts toward greater achievements. Of course, the realization of this objective starts with your favorable consideration of my present application.