**Program Applied: Chemiscal Engineering**

I am convinced that the migration of the trout must be one of the most touching phenomena of life on this planet. In their thousands of miles’ journey of migration to the sea, the trout swim inexhaustibly, often against the currents, with little rest and consumption of food, shuttling through countless turbulent rivers and treacherous shoals, with the sole purpose to fulfill their sacred mission of life reproduction. It is precisely this tenacity of the will that has guaranteed the successful survival of the trout family in the entire history of evolution.

The story about the trout is of apocalyptical implications to me. In the very first semester after I entered University of XX 1996 where I majored in chemical engineering, I experienced a period of severe frustration and depression resulting from my low academic ebb. Although in July that year I won the honor of Outstanding Senior Middle School Student of XX Municipality (a special title awarded to only 100 students out of a total of several hundred thousand students of the city that year) and succeeded in the very competitive national college entrance examinations, I still went through a period of disorientation and maladaptation to the formal and challenging university education. All my academic efforts seemed to little avail and by the end of the semester I found myself below the average level of the class. I lost my past glory.

Nevertheless, I did not lose my self-confidence. Ever since the end of my primary school I had been the athlete of my school (by the second year of my senior middle school I had become the national level-2 athlete, winning second prize in the national juvenile sports meeting in the javelin event) and this athletic experience endowed me with the spirit of incessant perseverance, athletically as well as academically. As an athlete, I realized that, apart from perseverance, making strategic adjustments was also necessary. Therefore, while making psychological adjustments, I endeavored to improve my methods of study and gradually but unmistakably I achieved remarkable improvements in my academic performance. As a result, my sustained ascendance in academic performance led to my overall GPA 3.23 (3.61 for my specialty GPA), bringing me five scholarships and two Outstanding Student Leader honors. While laying a solid academic foundation in chemical engineering, my undergraduate education reinforced my already deep interest in chemical engineering and prepared me for a lifelong career in this field.

My thesis entitled The Experiment and Model Study on the Carbinol Synthesis Through the Flow Direction Switching is an indication of my research interest and potential. The research was aimed at exploring possible alternatives to fossil fuels, a cutting-edge subject in chemical engineering research. The Forced Unsteady-State Operation (FUSO) as used in my project has considerable practical value in industrial application as it is energy-efficient and cost-effective in addition to facilitating adequate reaction. Under the guidance of my advisor, a leading authority on catalytic reaction, I enhanced my research ability and broadened my academic vision. The panel that evaluated my thesis rated it as “first-class”, commenting on it as “clearly reasoned, with detailed and complete experimental data, demonstrating a thorough grasp of professional knowledge.”

On account of my strong background in chemical engineering and my research potential, I was recruited, when I graduated in 2000, by XX, China’s major research center and manufacturer of olefin catalyst. Over the past three years I have accumulated rich research experience by participating in a number of research projects. Those projects include the research on N-catalysts in high quality BOPP film production，research on high-activity high porosity catalyst, research on the effect of dealcoholation process on the catalyst performance and on polymer characteristics，research on the effect of more effective donors-Diethers in high performance polypropylene catalyst，and the improvement of the performances of N-catalyst.

My most important research experience happened in the project of producing CD Catalyst using domestic technology to substitute imported Japanese product. Together with my team members and experts from XX Company, the authorized dealer in U.S.A., I performed comprehensive analysis of the mechanical properties of polypropylene products made with NG catalyst and CD catalyst on the Amoco process device. By focusing on catalyst activity and titanium concentration, we applied multiple ester-added compression and decompression method. We worked out a number of experimental plans and made constant modification until ultimately，based on the plan that I proposed independently as the blueprint, we managed to produce a Chinese CD catalyst up to all technical standards. With its industrial application in XX Petrochemical Co. Ltd and XX Petrochemical Co. Ltd, two largest petrochemical enterprises in China, the quality of BOPP products has been markedly improved and profitability of the enterprises significantly raised. Capturing the general attention of China’s petrochemical world, our research findings won the First-class Award for China’s Scientific and Technological Advances in Petrochemical Research and for my unique contributions to this achievement as the key figure of the research team, I was selected as Outstanding Researcher of the Institute in the Year 2002.

Based on my formal academic training and my work experience, I would like to apply for a Ph.D. program in chemical engineering. I would like to focus on two specific fields—polypropylene catalyst research and simulation study and my motivation originates from my direct work experience. At present, I am engaged in the research on the new type super-active C5H6 metal and on the catalyst with diether as internally-supplied electron body. Those two new catalysts will be more effective as industrial catalysts but a lot of issues remain unresolved. On the other hand, as our research on the Ziegler-Natta catalytic system has achieved high activity, high isotacticity and controllability in polymer appearance, I am also interested in the structural optimization of the polymer.

My interest in simulation study is based on a series of considerations. Many of my research ideas involve large-scale experimentation but the prohibitive cost of the necessary experiments simply makes it impracticable. Additionally, some chemical experiments involve serious pollution and toxicity. In the cases of failed experiments, immense wastes in human labor and in financial and environmental resources would result. Considering the fact that off-line research and automated simulation are far from being extensive, I wish to master mature simulation technology so that I can abridge a technical gap in China’s chemical engineering research.

In filing this application of mine, I believe that I am well-grounded, well-motivated, and clearly-focused.  It has been my long-cherished expectation to enter your prestigious university for a Ph.D. program that will make possible my even more fruitful career development in the future. Apart from making academic contributions to your program, I believe I can make equally important athletic contributions to your extracurricular campus life. During my undergraduate program, I won two second prizes and one third prize at three XX Universiades in the javelin event and won two third prizes for cross-country team race at two National Universiades. Perseverance and strategy are two tools that I will inform my proposed degree program.