**Program: Analytical Chemistry**

It has been discovered that the chemical element Cr produces important therapeutic effects on diabetes. But the commercial application of Cr has so far been rather limited because the process to convert Cr from inorganic state to organic state, which is a necessary step in making Cr therapeutically effective, has been complicated and difficult. Existing literature indicates that the conversion ratio in the international academia has not even reached 40%. In my BS thesis project entitled XX, I allowed beer yeast to ferment in the beerwort that contained inorganic Cr. In this way, I obtained high concentration of inorganic Cr ready to be converted into organic Cr. By optimizing the content of the beerwort, the pH, the concentration of inorganic Cr, fermentation temperature, fermentation duration, and other relevant factors, I created the optimum conversion conditions，and made the conversion ratio up to 60%. My thesis, though not formally published, has been permanently collected by our university’s library. As an undergraduate, I deem it a rare achievement.

On completing my university education, I came to work at XX Group and the first time I used the High Performance Liquid Chromatography (HPLC), I immediately became fascinated with its magic power. To imagine that, based on just 5 microlitres of sample, I could ascertain the concentration of certain substances in 100 tons of beer contained in the fermentation tank. This fascination led me to become seriously interested in HPLC analysis. With due efforts within two years, I have developed myself in to a HPLC specialist of the Center. Together with my training in drug analysis at the Drug Research Institute, I have further mastered the practical methods of chromatographical analysis. At present, as the product manager of a company engaged in the production and sales of chromatography consumables, while doing market promotion, I have devoted most of my energy to labwork, developing various chromatographical applications ranging from the ordinary positive/negative phase analysis, the chromatographical separation of chirality compounds, to the evaporative light scattering detection of traditional Chinese medicine (TCM). It can be said that I have been working on the cutting-edge of China’s chromatographical research.

For me, the successes of this kind have never been accidental. They are the direct result of my conscious development of scholastic aptitudes and knowledge buildup throughout my undergraduate program. Having completed the first two years of study in my undergraduate program at the Chemical Engineering Department of XX (now changed to XX University), and driven by the desire to perform chemical research, I volunteered to enter the lab led by Prof. XXX, a leading expert in China’s fermentation industry.

As a matter of fact, my interest in analytical chemistry developed at the very beginning of my undergraduate program, long before I actually took up the Analytical Chemistry course as a sophomore. In doing experiments, I discovered that each experiment involved chemical analysis, either qualitative or quantitative, concerning the final substance that was obtained in order to have a clear idea about the components of the substance and their respective quantities. Analytical chemistry plays a vital role in determining the success of a given research project in that a correct analytical approach can ensure that the experiment is heading in the right direction.

Under the fruitful guidance of Prof. XX, to whom I will be indebted for the rest of my life, I started my largely independent research. For the last two years of my undergraduate program, I completed a number of projects, ranging from inoculating the saccharomycetes，control of the fermentation experiment, to the testing of the changes in the fermentation process of the saccharine substances. Compared with my classmates, I acquired many more experimental skills and developed more advanced problem-solving abilities through intensive labwork.

While making conscious efforts to improve my hands-on abilities, I was equally aware of the importance of laying a solid and comprehensive academic foundation. Apart from four classical disciplines of chemistry—Inorganic Chemistry, Organic Chemistry, Physical Chemistry, and Analytical Chemistry, I was also deeply interested in Biochemistry and Microbiology. But I excelled most in analytical chemistry, for which I achieved the highest score in my class and was designated the course coordinator. In my undergraduate program, my overall GPA reached 85/100 and I was the only student in my class to have received scholarship in each academic year.

My professional experience since my graduation in August 1999 has been closely connected with analytical chemistry, which has allowed me to test and enrich my knowledge and to develop analytical expertise. I first worked at XX Group where I was responsible for HPLC analysis and for Gas Chromatography (GC) analysis. To compensate for my inadequacies in the theories of chromatography, I self-studied Instrumental Analysis, Chromatography, and Spectrography. I became acquainted with the state-of-art analytical instruments like Agilent HPLC 1100 and Agilent GC6890.  Within one year, I developed the amino acid derivation HPLC method, monosaccharide and oligosaccharide HPLC method, tannic substances HPLC method, and beer flavor material GC method. I was acknowledged as our Center’s specialist on chromatographic experiments.

Two years later, I joined XX Institute, which is affiliated to XX Group where I was responsible for analytical experiments and organic synthetic experiments and research. The chromatograph used was the 10A HPLC by XX ’s XX Corporation. In the development of a new drug, designated as the state category-II drug, I completed all the chemical analyses of the drug within 10 months, which would otherwise require a whole year. My analyses provided an important foundation for the drug to pass the examination by XX and XX. As far as I am concerned, the most important part of this experience was that it enriched my knowledge in analytical chemistry and improved my experimental techniques in chromatographic analysis. In addition, I deepened my understanding of the chemical synthesis of the western medicine.

Since Jan. 2003, I have been working at XX Inc., directing the development of chromatography on Diamonsil HPLC column and GC Capillary column. As product manager, I represented my company to attend XX on Chromatography and made a presentation on GC capillary column and on the reversed phase LC C18 column. What is worth mentioning is that everyday I receive about ten clients with whom I discuss technical issues in chromatographic experiments and this enables me to become acquainted with the latest developments in pharmaceutics, food engineering and environmental science. In this way, I have significantly broadened my professional perspective.

Based on my years of ample experience in experiments and research in chromatography, I am preparing to write a book entitled XX. The book will give a comprehensive introduction to the chemical knowledge in chromatography. In addition, by drawing on my practical experiences in experiments, I will give a full account of the application of chromatography in lab research and in quality control of the factories. I hope that my book will become the most detailed textbook in the basic theories of chromatography in China. To make my book a success, an advanced education in analytical chemistry and the acquisition of useful research experience from a top-ranking university in XX become essential. This reason, as well as a strong yearn to further my research experience, has led me to apply for a Ph. D. program from the Department of Chemistry of XX University.

Without much exaggeration, I can say that my educational background and my abundant practical experience in many projects have put me into the rank of leading chromatographers of the young generation in China. But I am strongly aware that, to score important breakthroughs, it is necessary for me to become a part of the research team in a world’s top research institutes to develop new research concepts and to evolve advanced research approaches. My extensive comparisons of leading chemistry departments in XX indicate that your well-respected university boasts unparalleled strengths in the fields that I am interested in. Your research-intensive program is a perfect match for my educational background and work experience. Naturally I would like to prioritize on your university for my proposed program in Analytical Chemistry.

In retrospection of my academic development, I believe that, during my undergraduate program, winning the seasoned guidance from a senior professor and obtaining the opportunity to accumulate important experimental experience in his laboratory played a vital role in creating a solid academic foundation and allowing me to distinguish myself from most of my classmates. Based on the same consideration, I expect that your esteemed university can seriously and favorably consider my application so that sufficient conditions can be created for me to pursue a researching career. I also wish that my past educational background and relevant work experience may contribute to the diversity of your program.

In view of my 4-year university education and 4-year work experience, I have come to two important conclusions. My study of the basic knowledge of analytical chemistry and my research experience under the nurturing guidance of Pro. XX during my undergraduate program have equipped me with the scholastic knowledge and aptitudes to undertake more advanced academic pursuit. My work experience, while enhancing my practical research ability, has made me increasingly aware of the inadequacy of my existing knowledge and necessity to receive further academic and research input in a first-rate academic and research institution in the world. It is important for me to develop a comprehensive research thinking. This is the most important motivation in my applying for your well-respected Ph.D. program.