**Applied Program: Biorelated Interdisciplinary Program**

500 hours is merely an indication of a duration of time for the average people, whereas it means a most memorable experience to me. As a young researcher, I once spent 21 sleepless days and nights in a state of anxiety at a most critical stage of one of my experiments as a graduate student. At that time, I was faced with a catalyst life experiment with a prolonged time of 500 hours which is aimed to demonstrate the industrial application of a certain product. For lack of adequate funds in our research group, I was the only person left to proceed with the difficult research work on this subject. It is beyond imagination of those foreign researchers if they could see me monitoring and operating round the clock amid the instruments all by myself. In the daytime, I would manage to snatch a few minutes' nap on the next-door desk. I had to spend most of the time alone working in the lab, constantly turning to music for consolation and refreshing myself with cool water. In the end, the remarkable success of the experiment made worthwhile my 21 days' toil and the 2.5 kilograms' weight loss. What is the inexhaustible source of such a mighty support for my persistence? The answer to this question is definite and indisputable--- it is my intense interest and fiery passion that have enabled me to maintain this persevering spirit.

Such a powerful enthusiasm and interest actually originate from my parents who are specialists in mechanics. Thanks to these two senior engineers, excellent graduates from Tongji University, I am not only endowed with talent and indispensable academic atmosphere, but also inherited their passion for research projects. My undergraduate studies of those basic theories and experimental courses offered in the Department of Applied Chemistry have laid a solid theoretical foundation for me. Specialized studies of environmental monitoring have gained me a better understanding of the strategic position and the positive outlook of the development of green chemistry and environment-friendly chemistry. During my graduation designing, I made a detailed analysis of the waste water disposal problem faced by two factories, consulted a vast literature and proposed a creative conception of "making good use of waste for the recovery of waste" with an effective method to treat fluoride-containing wastewater with the wastewater after steel casting. Two papers derived from my meticulous research can be considered as the first achievements in scientific research in my life, which have been included in the American CA with one of them evaluated as the Chinese core academic periodical. During my college life, I have received many honorary titles and academic awards such as Dalian Excellent Graduate and Three Good Student with an overwhelming advantage over other students as far as my scholastic performance is concerned. However, the tremendous passion and excitement brought about by my success in scientific research projects can not be paralleled by what I have achieved in my academic studies.

I was admitted to the Chengdu Institute of Organic Chemistry (the Chinese Academy of Sciences) to start my graduate studies upon the completion of my undergraduate degree program. I spent my first year learning in the Graduate School of the Chinese Academy of Sciences. Despite the potential challenges from those brilliant graduates from Tsinghua, Peiking, and Chinese University of Science and Technology, I still performed extremely well in my coursework, which greatly amazed all the teachers and students. Some of my assignments have been kept at the Academy as marvelous samples for the freshmen of each year to view and emulate, one of which is Report of Experiment in HPLC.

Staring from the second year after I finished all the fundamental courses, I returned back to its Chengdu Institute to devote myself to the research on organic catalysis, mainly to the research of heterogeneous catalysis. As for me, this is merely the beginning of real challenges. Since my research group was established for a short time, it was inevitably caught in an adverse condition of scientific research as to the lack of adequate funds, instruments, and reagent. Besides our ceaseless efforts to apply for a large outlay for scientific research, my teachers and I had no choice but to fetch those discarded and scrapped instruments, spare parts, and reagent from other research groups with a favorable research circumstance. Under our careful maintenance and assembling, the unserviceable could function again as the common instrument and devices. Shortly after our procurement of the needed outlay, my supervisor left for France for further studies in his capacity as a visiting scholar. I remained to continue the research project while other members in our group transferred to other research subjects. I had to assume all the responsibilities of the laboratory arrangements, such as its circuit, water pipe and decoration. I began to purchase after my detailed examination of the types, properties and purchase period of both domestic and foreign articles for scientific research. In the meantime, I was in charge of the financial affairs and office management in the lab.

During the absence of my supervisor, my painstaking efforts and diligence put me in many experts' good graces. In a way, all the prestigious experts became my academic advisor. They not only lent me their idle devices, but also passed on to me their cherished and valuable expertise. Moreover, they sent me their own reagent and tools, and always asked me to view and emulate their large-scale equipment installed in the center of operation, overhaul, maintenance, analysis and testing.

My dedicated efforts finally yielded fruitful results in my scientific research. The expert panel in the Institute have unanimously appraised my two papers for their industrial application value: one is The Preparation Method of a Solid-acid Catalyst with High Selectivity and Activity for Esterification; the other is A New Reaction Technology and the Equipment for Gas Phase Esterification. In view of their practical value, I thus applied for Chinese Invention Patent of the novel catalyst and reaction equipment and succeeded in my application, which can be regarded as an unprecedented occasion for a graduate student in China. My success has borne out my research ability, and my research level can more or less be placed on a par with those experts in Fudan University, Jilin University, and Lanzhou Institute of Chemical Physics, the Chinese Academy of Sciences.

After the completion of my master degree program, I began to work in the Institute of Applied Chemistry at the Graduate School of the Chinese Academy of Sciences. My outstanding hands-on ability and comprehension gained high appraisal and appreciation by Mr. Zhou Feimeng, an associate professor at UCLA. I was greatly honored by Mr. Zhou's invitation to join in his cooperative research group, and effectively learned the theories of nano-analytical science and bio-analytical chemistry under his meticulous guidance. In return for his great help and supervision, I helped him with laboratory construction, and taught his postgraduate students and senior visiting scholars how to operate the instrument and do the experiments. I also acted as an assistant professor for Prof. Yuan Zhuobin, president of our Institute for a year and a half. Mr. Yuan delivered the basic specialized courses of Science of Purification and Separation and Modern Instrumental Analysis to graduates, whereas I was responsible for supervision, experiments and examinations. My devotion to my duty was highly spoken of by the students and teachers.

Many years' dedicated efforts and accumulation gradually made me a versatile person. Since I could quickly adapt myself to different specialties in the field of Chemistry, I have built up a sound ideological system which perfectly combines the concept of green chemistry with advanced chemical research. I am eager to become a talented young man in the interdisciplinary programs. I firmly believe that only in the ideal academic environment in the U.S. will I be able to make the knowledge of many disciplines into a comprehensive body, to bring out the best in them, and bring the creative ability to the full play to achieve greater progress in the scientific research. Once a senior expert recommended me to do my doctoral program in Hong Kong University. As far as I am concerned, the real and ideal palace of knowledge is located nowhere but in the United States, if one is longing for the pursuit of genuine, sophisticated and first-rate knowledge.

It is my conviction that I have possessed all the fine qualities, and my academic preparation and intellectual sophistication can also meet the requirements to pursue advanced studies in the United States. My ultimate objective is to acquire the most advanced knowledge and keep myself abreast with the latest developments in my chosen field. The advanced experimental instrument, technology and facilities, the education system and academic atmosphere in the U.S. are far beyond their counterparts. The invaluable instructions by accomplished scholars make it possible for me to tap my abundant potentials. I can freely roam in a vast sea of books and literature, and be relieved to see adequate instrument and reagent. I have full confidence in my ability to reach the acme of my career in scientific research with the help of these favorable conditions.

**Study Plan & Career Objective**

My four-year research experience since the completion of my undergraduate program in 1997 has helped me to develop from a Bachelor in Engineering to a Master in Science. My research activities cover a wide range of fields including analytical chemistry, physical chemistry, organic catalysis, environmental science, instrumental analysis, nano-analytical chemistry, and biological analytical chemistry. I am proud to say that I have accomplished achievements in almost every of those fields. Based on my research findings, I have published a dozen research papers. In particular, I have received patents from the Patent Office of China for two major research results "The Preparation Method of a Solid Acid Catalyst with High Selectivity and Activity for Esterification" and "A New Reaction Technology and the Equipment for Gas Phase Esterification". Both of them have significant value in industrial application.

Nevertheless, I am acutely aware that, in the research fields I am interested in, there are still so many difficult subjects and challenges awaiting for solution. In physical chemistry, China is relatively backward in the fields of catalyst development, catalyst inactivation, reaction dynamics, reaction mechanism, geochemical reaction mechanism, environmental-chemical reaction mechanism. In analytical chemistry, China lags relatively behind its Western counterparts in areas such as instrumental analysis and theoretical analytical chemistry. Basically, China relies on import for large-scale analytical instruments. By contrast, the United States has many world-leading academic specialists and encourages interdisciplinary programs. It will accord me a stimulating and liberal academic environment, apart from the sophisticated research facilities. Rice University is my top priority in applying for a Ph.D. program and I choose to specialize in physical chemistry or in analytical chemistry.

At Rice University, I plan to learn broader-based foundational theories in my chosen fields. With my solid interdisciplinary knowledge and my ability for the quick assimilation of new knowledge, I intend to secure for myself a RA status to directly start my laboratory research under the guidance of my future advisor. I can also work as TA so that I can study while teaching and conducting my internship. I can apply, test and consolidate the theoretical knowledge that I acquire in the process of internship and degree program. Finally, through theoretical study and scientific research, I would endeavor to produce a well-written dissertation in which I hope to achieve some breakthroughs on both the theoretical and the research level.

After obtaining my Ph.D. degree, I intend to enter one of the top research institutes to delve deeper into some challenging subjects and to achieve some research fruits. After accumulating certain research experience at an actual research institute, I plan to return to China to work as a professor at a leading Chinese university, a position which will enable me to train many more academic professionals in physical or analytical chemistry. At the same time, I will also dedicate myself to turning my laboratory research results into yet more patents and inventions, which can further be developed into products with pragmatic applications.

During my studies in the United States, I will attempt at some detailed observations of its capital market, the most mature of its kind in the world, to acquire some necessary knowledge in company management and capital operation. For ultimately my career objective is to establish my own company to manufacture my own products, especially those environmentally-friendly chemical products, based on my patents and inventions.   
  
**Dear Sir or Madam:**

As ex-director of the Department of Applied Chemistry at Dalian Railway College, where Mr. Brooks Hu studied, I am very glad to recommend him to the Chemistry Department of your university to further his studies.

A veteran professor with over forty years of teaching and scientific research experience, I can proudly say that he was one of the best students in the history of our department and that he was the representative of the best students of our college in many aspects. First of all I must say something about his excellent classroom performance. When he was a four-year student, Mr. Hu ranked first in almost all subjects in the whole grade and proved to be excellent in many professional subjects. Not only so, but Mr. Hu was very strong in experiment operations. I remember when I was teaching the subject of Experiment in Environmental Monitoring, I asked all the students to test the particles suspended in the air on campus. When doing the experiment, Mr. Hu found an extraordinary added value in his experiment results. To many other students, this could well be considered as an entirely tolerable error. But grasping this phenomenon, Mr. Hu made a scrutiny of the surrounding environment. It turned out to be the result of a dust raised by a group of students doing physical training not far away. Such a discovery, though of scarcely any particular scientific value, demonstrated a valuable style of strictness and a capacity of independent thinking in Mr. Hu.

Such independent scientific research ability found even more concentrated expression in his graduation thesis research later. Entitled "Research on Treatment of Fluoride-Containing Waste Water with Waste Water," the thesis creatively suggested the technology of using the water from steel casting to treat fluoride-containing water. This technology was not only of theoretical significance, but would be of considerable practical application perspective. This marvelous work won his thesis the honor of excellence. Later on the basis of the graduation thesis, he published two theses of scientific research, which appeared in two different CA collection periodicals, known as Technology of Water Treatment and Shanghai Environmental Sciences respectively, something few undergraduates managed to do.

On top of these, Mr. Hu has many personal characters worthy of special recommendation. We may well say he was a full-fledged good student. In him there are many fine qualities of taking delight in helping others, and of being cheerful and optimistic, which will be the guarantee for his future successes.

Mr. Hu's excellent results in his studies and academic research, his fine scientific qualities and personal character make me sure that he will score ever greater success in his future studies and scientific researches. This is why I am warmly recommending him to your university for further studies.

**Yours Sincerely**