Teaching Statement

We live in a world flooded with information ceaselessly generated and replicated. However, all the pieces of information are not so useful until they are properly sorted and put together. The knowledge obtained in this way becomes far more valuable when shared. I believe that teaching is a process of sharing well organized knowledge with others and motivating them to contribute to creating new knowledge. After I had learned something new, I always enjoyed talking about it with others. My teaching experiences in graduate schools at Stanford University as a teaching assistant have not only helped me to improve my teaching skills, but also have encouraged me to pursue a life-long career in teaching and research. Now that I am equipped with the knowledge of fundamental physics as well as research experience of material, electron microscopy, and biological sciences, I am eager for a teaching opportunity to share what I have learned and to inspire those young and fresh minds so often found in academia.

Teaching Experience

I taught general and advanced physics courses such as Mechanics, Heat, Electricity, Magnetism, Statistical Mechanics, and Classical electrodynamics at Stanford University as teaching assistants. This was my first time teaching college students, facing a new culture and using a foreign language. I was very excited, but at the same time a little nervous. Luckily, most of the students accepted my teaching methods fast as I was trying my best to extend their understanding based on my knowledge. For example, when I was teaching them Heat such as heat conduction, I told them an episode that my friend, Jack watched Dr. Osheroff in the physics department drank a cup of liquid nitrogen during one of his courses and he was totally fine. This brought about the students' curiosity, because they had never expected that drinking liquid nitrogen can be safe and it is related to heat conduction. When I instructed general lab courses such as Light and Heat Laboratory and Modern Physics Laboratory, I always started each lab with giving a brief lecture to introduce the background information of the lab and motivating them by asking some questions. The hardest and most rewarding course was Statistical Mechanics designed for graduate students. Dr. Peskin, a lecture of the course told me that he would not provide any answers or solutions for all of his homework problems and that he wanted me to come up with all the solutions and answers by myself. I was stunned and afraid at first, but I determined to solve all the homework problems alone and I did it. In my first discussion session, only several graduate students came to get some help about the homework. As time went by, more and more graduate students participated in my discussion session and almost all of the students taking the class came to my session. The course made me extremely busy during the entire quarter, but it also taught me that my thorough preparation and critical thinking about the course significantly affects students and greatly increases their level of understanding. During my postdoctoral years, I have had several chances to help and guide undergraduates and graduates students in the biology department at Texas A&M University. What surprised me was that their way of thinking is somewhat different from the way I learned to think and approach problems in physics. As they had conversations with me on their projects, my understanding of their views on the projects made me quickly grasp their interests and develop ways to guide them more effectively. The experiences would also help me to lead students having background of physics to work on projects of biological importance more efficiently.

I have also been teaching University Physics to students of various majors who attend Texas A&M University or Blinn College. I always make efforts to convey key physical concepts and knowledge and motivate students to understand real physical phenomena and problems by applying them. I believe that combination of different teaching methods would be the most effective although I change the combination slightly depending on background knowledge of students taking my class. I usually use stepwise web-based assignments that students are required to enter their answers to various problems because such assignments help them to think over what the lectures covered; they are also asked to solve more challenging problems as groups to increase their engagement and critical thinking by exchanging their ideas in class. I also find that reviewing what they learned in the previous lecture along with an

intriguing question strongly helps students to feel ready to take more learning. Furthermore, whenever I find some students who feel lost, I ask them to solve a few problems by showing their work in front of other students because it really motivates the students to catch up with what they have been learning and makes them more engaged. I feel extremely happy whenever students show gratitude of learning physics and different views of the world around us by taking my class. Such happiness motivates me to try harder to become a better physics instructor.

Based on my teaching and research experiences, I would like to teach most of physics courses to both undergraduate and graduate students of various majors.

Teaching Philosophy

In my view, a great teacher is like a great storyteller who draws attention of students with a variety of backgrounds and drives them to retell and improve the stories again and again for a very long time. Each student has his or her own interest and tends to pursue the meaning of life in his or her own way. So a great teacher is not a person who simply transmits information and help students earn the best grades, but a person who encourages and motivates students to view our environments or problems through the scope of specific tools they learned and also inspire the students' interest and creativity toward developing their critical thinking ability and getting them prepared for the complicated world they will face after they graduate. Based on my own experiences of being a student, a teaching assistant and a researcher, I think the following principles are the most crucial ones in good teaching:

First, passion is the most key factor for effective teaching. It results in more thorough preparation providing a continuous desire to improve teaching skills and an intense delight in helping students learn. How well students can learn and understand significantly rely on how passionate and how devoted a teacher is.

Second, teaching is not only a way to pass on knowledge but also a method to raise interest in a subject. Students are intrigued by the world around them because they are naturally curious. Teaching is far more effective when students' curiosities are truly aroused, because they will actively learn and digest new knowledge rather than feeling like they are struggling to learn passively from their teacher.

Third, teaching should encourage critical thinking of students by motivating them to come up with different opinions or approaches. This will help students truly engaged with the subject and to be respectful of diverse opinions. A teacher should be prepared to challenge and be challenged by the students with their unique perspectives.

Fourth, each student deserves an education tailored to his or her strengths and needs. Texas A&M University's campus hosts over hundreds of international students. As a foreigner myself, I understand the difficulties and needs of students studying abroad. Their English abilities, cultural backgrounds and fundamental knowledge may vary greatly. It is my responsibilities to help them overcome these learning obstacles.

Finally, course materials should be presented in an interesting and interactive environment, which will help students learn and understand more information. For this reason, I believe that using computer based technology such as multimedia, slides, and internet, is an effective way to complement traditional lectures, laboratory exercises and even exams. Nevertheless, readings combined with traditional lectures are still the foundation of the educational experience.

My pursuit of higher education and being a scientist is partly due to several teachers who have inspired me and taught me necessary skills to achieve these goals. Now I would like to join their ranks and be a catalyst for others to fulfill their dreams. I believe my passion for teaching, various past teaching experience and strong academic background will make me an excellent teacher.