

As a faculty, I look forward to taking the responsibilities of teaching and mentoring students, and inspiring young generations' interest in science through the outreach activities. I will dedicate to the education in classroom, laboratory, and surrounding community.

Classroom

At Columbia University, I was a teaching assistant of Quantum Mechanics and Partial Differential Equations. My duties included leading discussion sessions to complement the main lectures and holding office hours with one-on-one interactions about specific questions in the assignments. As a new faculty member, I can teach these subjects to undergraduates. I will hold informal discussion sessions in addition to the main lecture and encourage students to ask questions in an open atmosphere. Also, I strongly believe hands-on experience will enhance the understanding of textbook concepts. I will welcome undergraduates to my laboratory. A mini project will be assigned to help them connect the physics lessons they are taught in class with objects and phenomena in the current state of science. Third, it is important to broaden the horizon and stimulate the interest of students. I intend to develop courses in modern condensed matter physics, introducing frontier research in low dimensional quantum materials, nanotechnologies, and advanced experimental techniques such as angle-resolved photoemission spectroscopy and femtosecond laser. The final project will be a group presentation about a specific material or technique they are interested in and I will give instructions on the literature review. My group meeting will also be open to all undergraduates who are interested in my research topics.

Mentorship

Across my graduate and postdoctoral careers, I have successfully mentored 3 graduate students and 3 undergraduate students. I have taught them experimental techniques, troubleshooting skills, data analysis, programming and data visualization, etc. I feel that the strategy of mutual communication is the key to an efficient mentorship. First of all, I will motivate my group members based on their interests and expertise and I will encourage cooperation and discussions. Second, in my doctoral research, I benefit from direct collaborations with national laboratories and from the discussions with other synchrotron facilities users working on diverse research topics. As a faculty, I intend to provide opportunities for my group members to carry out experiments and I will encourage them to seek potential collaborations at the conferences. Third, I will let the senior group members to take the opportunities to mentor undergraduates. This will help the senior group members establish their own style of mentoring by working with students with different backgrounds and characters.

Outreach

As a member of OSA/SPIE Columbia Student Chapter, I participated in part the Girls Science Day at Columbia and Maker Faire event at New York Hall of Science as one of the organizers. In Girls Science Day, we presented basic concepts in optics to middle school girls from upstate New York. Then we conducted demo experiments to illustrate the working principles of waveguide using laser pointers and Jell-O. After the demo experiment, we inspired them to summarize their observations and deduct the critical angle based on Snell's law. In the following Q&A section, we discussed the questions they raised about the optical phenomena in real world and enjoyed the delicious Jell-O. The event was ended with a guided tour of state-of-the-art optics laboratories. It was exhilarating to see young females of diverse backgrounds delightfully engaged in science. I also found that efficient learning occurs best in the integration of lecture, demo and discussion. As a faculty, I intend to incorporate outreach opportunities in my laboratory and inspire high school students to pursue science in summer.