（別紙様式５）

変革を駆動する先端物理・数学プログラム（FoPM）

国外連携機関長期研修　報告書

氏　　名	西山諒
所属部局	理学系研究科　　化学専攻
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I stayed in the U.S. for ~40 days for attending a conference and experiencing an internship at a company. Firstly, I arrived at Boston for attending a chemical imaging conference at Stonehill college located in Easton, a small town near Boston. The conference focused on chemical imaging, using various optical approaches such as fluorescence, transient absorption, and Raman microscopy. Throughout the event, I deepened my understanding of Raman spectroscopy, my specific field, and broadened my interest in other areas through engaging oral and poster sessions. During one of the poster sessions, I had the opportunity to present my research on ultra-bright Raman tags synthesis, originally intended for Raman flow cytometry applications, with potential in Raman microscopy applications. Fortunately, a lot of researchers stopped by the poster, and had fruitful discussions from the principles to applications. I also discussed potential collaborations with some of them, which have unfortunately never occurred so far. Apart from the scientific aspects, the conference provided valuable opportunities for communication and socialization. Participants shared meals and accommodations, fostering a sense of community. Especially, the nightly parties, featuring impressive lobster dinners, allowed for informal discussions on both scientific and non-scientific topics.

Following the conference, I traveled to New York by train, where I spent a few days. The primary purpose was to visit my collaborator Prof. Wei Min at Columbia University, deliver a seminar talk, engage in discussions, and familiarize myself with their technologies. The seminar provided an excellent platform to share my research directly with the professor and lab members, although I admittedly felt a bit nervous. Their critical questions, stemming from their specialties different from my current laboratory, consistently offered valuable insights, contributing to a deeper understanding of my own research. Moreover, receiving positive comments that highly evaluated my work brought me immense joy, even if it could be considered a form of praise inherent in American culture. The lab members hosted me for dinners, providing an opportunity to discuss a variety of topics, including research, life in New York, and recommended places to visit. As I am interested in working as a postdoc after the graduation, it was a very nice opportunity to know that. Also, I explored the New York city in the weekend, and visited some places like central park and Brooklyn Bridge, based on the recommendations.

After enjoying my stay in New York, I flew to the west coast, specifically San Francisco, to undertake an internship in San Jose. The company has cutting-edge technologies in optics, and I wanted to learn their essence throughout the internship period. Also, as I am interested in the applications of the developed technologies to industry, spending some time there and learning the speed of commercialization was a perfect opportunity for that purpose. In that period, I joined a project on the commercialization of a spectrometer, which is particularly of my interest. Specifically, I worked on the alignment of the optics, the fabrication of some apparatus as a part of the spectrometer, and the development of data analysis for the obtained data using a software. I was pleased to find that my previous experience in optics contributed positively to the project. Additionally, I gained hands-on experience in electronics and data analysis, areas where I usually rely on lab members for assistance. I believe this experience was valuable for my development as an independent researcher in the future. Moreover, I feel that I can contribute some of the insights gained during this experience back to my current laboratory. The people at the company were incredibly hospitable; they not only provided transportation from the hotel to the company every morning but also occasionally took me out to dinner and shopping. I was also impressed by their efficient working style; they didn't stay in the company until late at night but instead prioritized leaving early to spend time with their families and have dinner together.

Dring my stay in the west coast, I had some opportunity to visit my friends living in the area for doing their research, including my former lab mate and university friend. We shared experiences from the past few years and explored their universities, such as Stanford University and U.C. Berkeley. In addition to the conversations, I also enjoyed the lab tour they arranged for me, introducing me to other lab members there. I was happy to know they are doing well in the new places, and knowing research environments in various universities was helpful for me to decide future directions of my career. I also took advantage of weekends to explore San Francisco's sightseeing spots, such as Pier 39 and Golden Gate Bridge, for relaxation and refreshment.

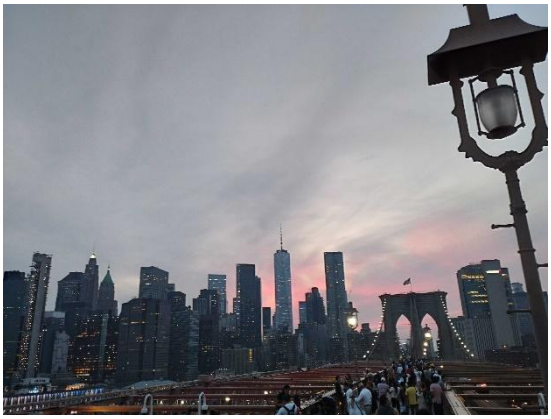
Overall, the visit was profoundly meaningful for me, exerting a positive influence on both my current research and future career development. I thoroughly enjoyed the experience, learning many things, and also had delightful weekends, sometimes spent with friends or colleagues. I am sincerely grateful to Prof. Goda for introducing me to a diverse network of people, Prof. Min and all his lab members for welcoming me into the lab and introducing me to such a wonderful conference. I extend my gratitude to Dr. Yang and all the people at Bayspec company for their warm and supportive acceptance. Finally, I appreciate the FoPM program, especially the coordinator Prof. Murayama and my sub-supervisor Prof. Uemura, for their support in making this experience possible.

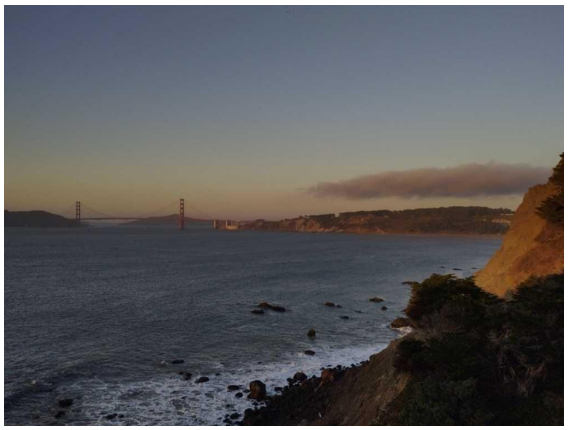


A giant lobster



Bayspec company





Sunsets in New York and San Francisco